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Regional Types of British Agriculture

ADVISORY PROVINCES OF GREAT BRITAIN



Regional Types of British Agriculture

by

Fifteen Authors

Edited by

J. P. Maxton

M.A., B.Sc., B.Litt.

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Preface

THE original conception of this volume of essays was to provide a brief outline of the farming in all parts of Great Britain, for the benefit of foreign visitors to the Fourth International Conference of Agricultural Economists, held at the University of St. Andrews, 1936. It is felt, however, that the collection of these essays into one volume is likely to prove valuable to a much wider public than that for which it was originally intended.

In the whole of a fairly large body of agricultural literature in Great Britain, there is no up-to-date volume which provides for the whole of the country an outline of the farming which one is likely to find in any part, and it is this gap which *Regional Types of British Agriculture* goes some little way to fill. A few articles about one or two, but by no means every county, are to be found scattered through the volumes of various journals of the past twenty years; a very few books, such as Sir A. D. Hall's *Pilgrimage of British Farming*, now nearing its quarter-century, and Professor Scott Watson's *Rural Britain*; these are all in this century's literature which one can turn to.

In this single volume, simple and unpretentious in its design, the whole of Great Britain is covered, and the main systems of farming to be found in every part are briefly described. The task set the authors was in many ways not an easy one. They had to proceed on the assumption that the readers had little or no knowledge of the distribution of farming in this country. They were faced with the mass of complex conditions which influence types of farming and the mass of variations in systems of management within even a short radius. They had to endeavour to reduce these complications to simple outlines, each for a province of upwards of two million acres, and they had to do so within a space of less than a score of pages.

A word is necessary on the method of partitioning the country. Under the advisory and research scheme financed by the Ministry of Agriculture and the Department of Agriculture for Scotland, England and Wales are divided into eleven and Scotland into three "advisory provinces." The division of the country into these fourteen provinces is the method adopted in this volume. With one exception, the outline of each province is contributed by the agricultural economist who is, or has been until very recently, the head of the economics research department of the province.

The editor is very much indebted to the contributors for their willing co-operation in the work and for the trouble which they have taken to achieve a substantial measure of uniformity of treatment in the essays. Absolute uniformity is impossible in view of the very varied conditions from John o' Groats to Land's End and is perhaps undesirable on other grounds, but efforts have been made to furnish a general similarity of method while leaving the authors free to apply their own style, judgment, and emphasis to their own part of the work. In the case of the maps which go with each province, the editor holds himself responsible for the foolhardiness with which the boundary lines of the agricultural regions are drawn. An accurate dividing line between one type of farming and another rarely, if ever, exists and the lines drawn on the maps are provided for very general guidance only.

The editor is also indebted to his colleagues, Mr. James Grant and Mr. J. J. MacGregor for their help in very many ways.

Finally, acknowledgment is due to Mr. L. K. Elmhirst and Mr. J. R. Currie, President and Secretary of the International Conference of Agricultural Economists, for their support, and to Mr. Elmhirst and the Dartington Hall Trustees for providing facilities without which it would have been impossible to carry out the work.

J. P. M.

OXFORD
June 1936

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Chapter I

General Features of Farming in Great Britain

By A. BRIDGES

Agricultural Economics Research Institute, Oxford

CHAPTER I

General Features of Farming in Great Britain

THE highly industrialized character of Great Britain overshadows the extent and importance of its agriculture, but one of the influences of industrialization is the almost universal utilization of all available land for agriculture. Out of a total land area of about 37 million acres in England and Wales, 68 per cent is under arable crops and permanent pasture, and another 15 per cent is classed as rough grazings and heath land in agricultural use. About 5 per cent is under forest and woodland. Industry and commerce, the housing of the millions of population, roads, railways, etc., in England and Wales and the land in no sort of use at all take up only about 12 per cent of the area. In Scotland, owing to the mountainous nature of a large proportion of the area, the figures are different. The total area is about 19 million acres, of which only 24 per cent is under arable crops and permanent grass and 50 per cent is mountain and heath land used for grazing. Forests and moorlands take up about 7 per cent, leaving about 19 per cent for Scotland's other activities and as completely waste and, not a high proportion considering the country's mountainous character.

A significant feature of British agriculture is the very great variety of agricultural conditions. This is surprising, when it is remembered that Great Britain is a comparatively small area lying within a narrow range of latitude between 50° N. and 60° N.; that no part of it is more than 80 miles from the sea and its moderating influences on climate; that, outside parts of Scotland, and the North of England and Wales, very little of it is higher than 800 feet above sea-level; and that the extremes of rainfall and temperature are not great. Agricultural conditions, in

Great Britain, compared with many other countries, in one or other of these respects, vary within a narrow range of extremes, but, within those extremes, the economic position of the country has made the variations important by using them to the best advantage.

The essays which follow show in some detail the variation in conditions which determine the farming throughout the country, and in this introduction all that is attempted is to outline the broad differentiating features of the country as a whole.

First, from the altitude map, it can be seen that the outstanding feature is that the high land lies mostly in the west and the broad acres of low land are to be found in the eastern half of the country. This is particularly true of England. If a line is drawn due south from Newcastle-on-Tyne, it will be found that hardly any of England to the east of that line is over 800 feet and only a few small areas are over 400 feet. To the west of the line, however, the large part of the North of England from the Scottish border southwards as far as Derbyshire is over 800 feet, and stretches of it are over 1,200 feet. The rest of England, even in this western half, has no highland region to compare with the Pennine and Cumberland ranges of the North of England, but uplands of over 400 feet continue in Staffordshire and Warwickshire, Gloucestershire, Wiltshire, and Somerset, with the higher ridges of the Cotswold Hills and the Salisbury Plain. In the south-west, Dartmoor and Exmoor Forests rise above the 1,200-foot level. To add to the highland impression of the west country, the whole of Wales presents an almost entirely mountainous appearance with its great central blocks of country lying above 1,200 feet. The whole of this western half of England and Wales is not, of course, highland. The lowland plains of Lancashire and Cheshire, the Severn Valley and a large part of Somerset are outstanding exceptions, while innumerable broad valleys exist everywhere.

Scotland in some respects shows totally different physical features. It is true that the most of the lowland country is in the east, but high land predominates over the whole country; so much so that it is easier to point to the lowland stretches than to the hills. The valleys of the Forth and Clyde, the Ayrshire coast, the south coast of Wigtown and Dumfries, the lower valley of the Tweed, the Lothians, Fife, Forfar, and the coastal strip following the east coast at greater or less width to the Pentland Firth, comprise almost the whole of the lowland of Scotland, and the rest, apart from steep narrow glens, is in three main blocks of hills rising over 1,200 feet; the Southern Uplands occupying the large part of the country between the English border and the valleys of the Forth and Clyde; the vast central range of the Grampian Mountains occupying the large part of the country between the Forth and Clyde in the south and the Caledonian Canal in the north; and the Northern Highlands which occupy almost the whole of Scotland north of the Caledonian Canal.

The climate of the whole of Great Britain is determined by the Gulf Stream drift, modified by the anticyclones of the Continent. In any particular district these influences are profoundly modified by topography. Thus the areas of lowest rainfall (20–25 inches) are found in the low-lying regions along the eastern side of the country. As one moves westward higher altitudes are encountered, the rainfall rises steadily, reaching 100 inches and over in parts of the western hills. Even in the western parts the rainfall of the lower levels may be very little more than in the eastern districts. The normal precipitation of the Cheshire–Shropshire Plain, for instance, ranges round about 20 inches.

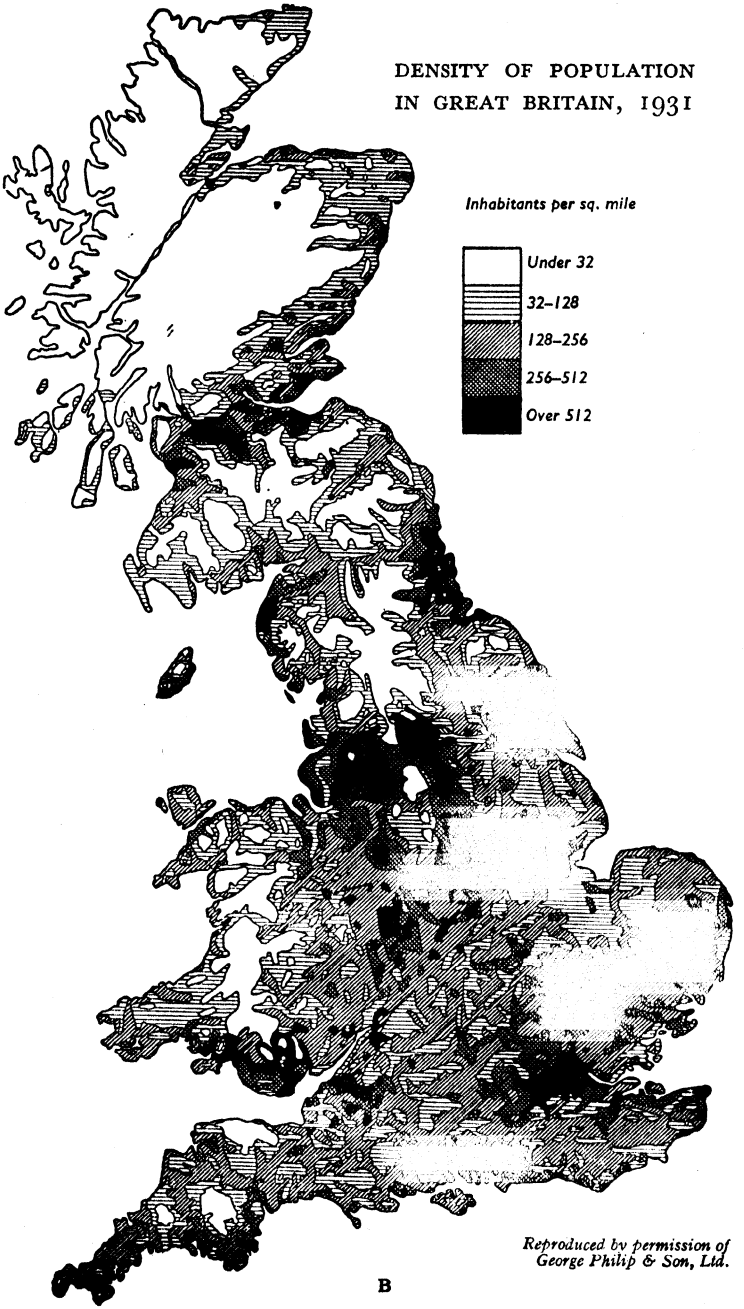
Generally, the 30-inch line of rainfall, which may be regarded in England and Wales as critical for arable cultivation, runs in a sinuous line from Berwick at the extreme north-east corner southward to the Isle of Wight. East of this line the rainfall may be as low as 20 inches, and arable

farming tends to predominate; west of it, except in certain areas, by far the greater part of the land is in permanent pasture. Even in the east, prolonged drought or frost is rare, so that England and Wales is essentially a country of grass and trees and fully justifies, where the towns do not defile it, the description of "a green and pleasant land."

In Scotland, rainfall is generally higher, but again the eastern parts have a lower mean annual rainfall ranging from 25 to 30 inches, contrasting with a rainfall in the rest of Scotland generally exceeding 35 inches and even 40 inches in the cultivated parts, and increasing with altitude to over 100 inches.

Soils also have a profound influence on the type of farming practised, but the soils of England and Wales are so diverse and such small headway has been made so far in mapping and classifying the surface soils, that no general description is possible. It can be said, however, that in the main the youngest soils, in the geological sense, are found on the east coast. Here are an extraordinary variety of alluvia, sands, gravels, loams, and clays, while characteristic features of the south and east are the low ranges of chalk (the downland) and oolitic limestone (the wolds), usually running from the south-west to north-east, which give rise to a rather special type of farming. Travelling westward, one rises on to progressively older formations, large areas of land being derived from the underlying sandstones and still older granites. The western soils are for the most part sedimentary, while those of the east have been profoundly influenced by drift erosion and flood deposition.

Classification of soils in Scotland is an even more complex and baffling task. The geological foundation is older and in some respects simpler than in England. Large tracts of the mountains north of the Central Plain are on pre-Cambrian rocks with areas of granite. The coastal belt of the north-east coast (particularly round the Moray Firth),



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a cross-country belt on the north side of the Central Plain, and parts of the south, are on Old Red Sandstone. The Southern Uplands are mainly on the Silurian and in the Central Plain itself many formations appear, including Carboniferous Limestone and Coal Measures. The soils, however, are the product of the glacial period and usually consist of the crushed and ground-up remains of igneous and metamorphic rock. Profound chemical weathering has not taken place as in the south. The soils of the North, Central, and Southern Highlands are agriculturally of little importance, while in the cultivated districts of the Central Plain and the coastal belts, boulder clay, Old Red Sandstone, reclaimed peat, alluvia, especially the carse lands of the river mouths, and raised beaches are scattered in considerable profusion.

Another factor which has an important influence widely throughout the country, but has a special influence on the farming of certain favourably placed areas, is the concentration of industry and population. The total population of Great Britain in 1931 was nearly 45 millions. One half of the population is located in eight large, densely populated industrial areas, in most cases associated with coalfields. These areas stand out clearly on the population map. London and its surroundings is the largest. The others in England are the Black Country round Birmingham, with the Potteries round Stoke-on-Trent and the Northampton–Derby area not far distant; South-east Lancashire; the West Riding of Yorkshire; and the north-east coast round the Tyne, Wear, and Tees estuaries. Outside of England, the two industrial belts are the South Wales coal and iron area and the shipbuilding, iron and coal industries round Glasgow and the Clyde.

Where this intensive industrialization occurs, it tends to outweigh to a large extent the physical features of altitude, soil, and climate. Bleak unfavourable hillsides such as are found in South-east Lancashire and in South-west Yorkshire,

in Welsh valleys, and in parts of the country round Lanarkshire have become intensive regions for the production and sale of milk, while in less unfavourable parts market-gardening and other forms of intensive cultivation of perishable products have taken advantage of proximity and easy access to large centres of population, an advantage which in days of less mobile transport and less well-organized marketing was greater than it is to-day.

The relationship of all these factors of altitude, climate, soils, and the populous industrial centres with the farming is without the scope of this introductory essay, and is the main purpose of the essays which follow in this book. For the purpose of following further the general outlines of the farming of the whole country, a short résumé of the main products of agriculture presents a different angle from that followed in the rest of the book. In this England and Wales are first dealt with, and Scotland is dealt with separately later.

Wheat is grown to some extent all over England and Wales where the soil and conditions are suitable, but the greatest concentration is in the eastern arable counties, which account for almost half of the total acreage. Barley, though formerly ranking almost equal to wheat in acreage, occupies at present barely half the area. It is not nearly so widely distributed as wheat, because the conditions for growing good malting barley are more limited. Its cultivation is for the most part confined to the east and particularly to Norfolk, and it is grown in preference to wheat where light soils prevail. On the other hand, barley is closely associated with the chalk and limestone ranges of hills which slant across the Midlands of England from the Yorkshire and Lincoln coasts to Dorset. Oats is the most widely distributed of the cereal crops. Its total acreage in England and Wales is somewhat less than that of wheat, but a few years ago before the increase of wheat acreage which followed the introduction of the Wheat Act, 1932,

the oat acreage was the largest of the cereal crops. The crop can be grown successfully in practically any district, and as both grain and straw are used extensively for stock-feeding on the farm, they tend to be of much greater importance as the staple cereal crop of the Midlands, the west, and the north.

So much for the cereal crops. The root crops grown for sale on a large scale are confined to potatoes and, in the past ten years, sugar beet. Although potatoes are grown all over the country for local consumption, commercial potato growing tends to be very much localized. Only four counties have over 15 per cent of their plough land in this crop. These are Lancashire and Cheshire in the north-west, and the Isle of Ely and the Holland division of Lincoln in the east. Other important areas are to be found in the Yorkshire Vales of York and Pickering; the north Lincoln district of the Isle of Axholme and the lower Trent; the suburban farms round London; and on the sandstone soils adjacent to Birmingham. All of these smaller areas are located conveniently to large consuming centres. Sugar beet has been introduced into British farming only in the past decade. Its cultivation is governed not only by suitable soil and labour conditions but also by proximity to factories. Nearly 40 per cent of the total acreage is in Norfolk and Suffolk, and the greatest concentration is round the Isle of Ely. Lincoln and Yorkshire have together about one-quarter of the crop, and together the eastern counties from Essex to Yorkshire have about 75 per cent of the acreage. In the west the only important growing areas are round the factories of Allscott (Shropshire) and Kidderminster (Worcestershire).

The other root crops which are extensively grown are for winter stock-feeding. Turnips and swedes, the traditional root crops in the four-course rotation, and largely used for the feeding of sheep and fattening cattle, occupy the largest acreage and are generally grown on all arable land. They

have become of much less importance recently, having been partly displaced by sugar beet. Mangolds are grown on about half the scale of turnips and swedes. Other feeding crops like cabbage, kohl-rabi, etc., are increasing in importance, but still do not rank with the staple root feeding crops.

In one sense, the most important "crop" on arable land in England and Wales is the rotation grasses and clovers. They occupy about a quarter of the arable land, considerably more than any other single crop. Nearly $2\frac{1}{2}$ million acres are grown of which nearly two-thirds are cut for hay. Throughout the south and east, one-year leys are the general rule and are almost invariably cut for hay. In the north and west and in Wales the ley is frequently left down for several years, and in some parts less than half is cut for hay. Other crops, particularly vegetables, hops, and fruit tend to be confined to special areas, and are best left to the essays on the various regions.

Live stock, it need hardly be said, plays a very large part in the farming of England and Wales, and in live stock farming dairying now ranks first in importance in most parts of the country. The density of dairy-stock varies greatly from 28 cows per 100 acres in Cheshire down to a mere 2 or 3 per 100 acres in some of the eastern counties.

Dairying finds its natural home in the equable moist climate that prevails in Wales and throughout the western and west midland counties from Cumberland in the north to Cornwall in the south-west. The climate enables the herds to be maintained very largely on pasture and has an important influence on the cost of hand-feeding and shelter. Other factors, however, intervene to spread dairy farming over other areas as well, by far the most important being the proximity of large cities and towns, which gives us, for example, the density of dairying in the counties round London. Where the two factors, mild moist climate and a near-by dense population coincide, the highest intensity of dairy stock is found, as in South Lancashire, the Potteries,

and the Black Country. The group of counties serving these industrial areas have nearly one-quarter of the cow population of England and Wales maintained on about one-eighth of the area. The next largest dairying region is of a different type, consisting of the mid-western counties of Somerset, Wiltshire, Gloucestershire, and Dorset. Here there is no large industrial area immediately accessible. Bristol and the South Wales iron and steel area are the most local markets. Formerly a great deal of milk was manufactured, but more and more the produce of this area finds its main outlet in London. There are comparatively few counties which can be said to be definitely non-dairying. They are all eastern counties with a high proportion of arable, except Northumberland, which is mainly a hill sheep county.

The breeds of dairy cows are almost too well known to be mentioned. Dairy Shorthorns, Ayrshires, and British Friesians are the most universal. Jerseys, Guernseys, Red Polls and South Devons have their supporters and special districts. In Wales and the West of England, Herefords and Welsh Blacks and their crosses with the Shorthorn are popular, owing to their thriftiness and the keen demand for store-cattle of this type.

The other main branch of the cattle industry, namely the fattening for beef, has lost some of its former position with the progress of dairying. Cattle fattening falls into two distinct categories, the fattening of cattle on grass, i.e. summer fattening, and the fattening of cattle in yards, i.e. winter fattening. Grass fattening is confined to very favourable grazing conditions and has tended to become more and more associated with a few famous areas. The most notable area occurs in the great clay belt of the Midlands, associated mainly with the county of Leicester and parts of adjacent counties. The Vale of Aylesbury and some of the coastal marshes, for example in Lincolnshire and Norfolk, are also well known for their fattening pastures. The system of management of fattening on the Leicester

pastures will be found in the description of the east midland counties, and no more need be said about it here. The winter fattening in yards is traditionally associated with the Norfolk four-course rotation and belongs to all the distinctively arable counties. Store cattle of two years old are bought in the autumn and fed on home-grown fodder and on concentrates, and the straw trodden down in the yards provides plentiful supplies of dung for maintaining the fertility of the fields. The system has proved costly in modern times and has fast been losing its universal popularity.

Another branch of the cattle industry, namely store-raising, is complementary to the fattening for beef and has for long been carried on independently of the fattening business. The rearing of cattle tends to be definitely associated with low-rented hill-grazing. It is carried on mostly therefore in the west, in Wales particularly. The eastern and midland counties are importers of store cattle in their respective seasons.

Great Britain from its earliest history has been famous for sheep farming. One of the important exports of Britain in the early century, wool is still one of the few British agricultural products which has an export market, mainly for the coarse black-face wools from the mountains. The number of sheep in England and Wales is about 18 million, compared with 6½ million cattle of all kinds and just over 3 million pigs. Sheep farming falls into two distinct categories, the one associated with arable farming and the other with grazing.

The distinction is sufficiently marked that all the main breeds can be classed as either arable or grass sheep. In point of numbers the sheep population on grass is considerably more important than the sheep on arable land. The latter system is linked mainly with the arable farms on the chalk and limestone formations, already mentioned in connection with barley growing. There the sheep are folded

on roots or green fodder crops and the treading and manuring of the light soil by the sheep is considered an essential feature of maintaining fertility on these soils. It is from this system that the Easter lamb trade is largely supplied. The Down breeds, or short wools, associated with the arable sheep system include the Hampshire Down, Shropshire Down, Oxford Down and Southdown (the parent breed), and the Dorset Down.

The grass sheep systems are of two main kinds. In the hill districts, they graze the poor high-lying pastures in the summer. They are run on large areas or sheep walks. On farms where more lowland pastures are also available, the sheep are wintered there, but in other cases are "wintered away" on quite distant lowland farms. Hay is occasionally fed to the flock except with the hardiest breeds, but other foods are rarely given. There are numerous hill breeds, many associated with particular localities, the most important being the Scottish Blackface, the Cheviot, the Herdwick, the Lonk, the Wensleydale, the Welsh Mountain, the Clun Forest, the Exmoor Horn, and the Dartmoor. Lambs from the hill ocks are usually sold as stores in the autumn to lowland feeders, who finish them off on roots, with the aid of hay and concentrates.

The lowland grass flock is of less importance numerically than the hill flock; it is usually much smaller, and may receive some extra feeding. The breeds used in this system where it has been long established are generally longwools, the commonest being the Lincoln, the Leicester, the Devon Longwool, and the Romney Marsh, and a great variety of crosses with the Down breeds. The crossing of longwool breeds with Down rams is perhaps the outstanding feature of post-war sheep management on lowland farms. The purpose has been to get a small and quick maturing lamb, which can be finished on grass in the summer without the aid of hand feeding. As with fat cattle, the age at which sheep are slaughtered for the market is nowadays much lower

than formerly. The "fat teg" of over one year old is almost unknown.

Pigs have never played a very large part until recently in British farming, as the number of just over three million in England and Wales shows. Pigs, being fed largely on purchased foods and presenting few problems of transport and requiring little land, can be kept almost anywhere, irrespective of soil, climate, or even situation. The production of pigs is, therefore, general but thinly dispersed over the country. One or two areas, however, stand out somewhat, and these are associated with three types of situation: (1) suburban areas, such as Middlesex, Surrey, and the West Riding of Yorkshire, where there is available quantities of swill from household, hotel, and shop waste; (2) certain arable counties, such as Norfolk, Suffolk, Ely, Cambridge, and the Holland Division of Lincolnshire, where feeding barley and inferior grain and potatoes generally are available; and (3) the dairy regions, where cheese-making provides whey as a by-product, as in Cheshire, Lancashire and Shropshire, Somerset and Dorset, or where butter and cream provide a by-product of skim milk, as in Cornwall and Flint.

Poultry is another type of live stock which is not tied to soil or climate and is widespread throughout the country. Although, however, almost every farm maintains a poultry flock of sorts, the density of poultry varies considerably throughout the country, and a high density appears to be exceptionally dependent on trade connections. In spite of the rapid expansion of recent years, the poultry industry still tends to confine its strongest development to areas possessing easy and well-established market connections with some large consuming area. The counties with the most dense poultry population are round the Lancashire and West Riding of Yorkshire industrial belts, and around London, both on the south-east and in the eastern counties north of London. It is, however, probably true to say that poultry have become in recent years everywhere a more

serious and in some cases a more intimate part of the general farm, as well as showing a marked expansion on specialist farms.

In all of this outline of the products of farming, England and Wales only have been dealt with. Scotland requires a separate outline, which can be simplified considerably as a result of much already said. Wheat is grown in Scotland on a comparatively small area, less than 5 per cent of the acreage in England and Wales. The large proportion, about 80 per cent, is grown in the eastern counties of Berwick, the Lothians, Fife, Forfar, and East Perth. Very little is grown either north or west of these counties. The barley acreage is large but, as in England, more selected in its areas. The acreage follows a ribbon along the east coast from Berwick to the Beauly Firth. The crop extends much further north than wheat, and the coastal plain of Easter Ross, Inverness, Moray, Nairn, Banff, and Aberdeen, which grows little wheat, has more than one-third of the total barley acreage of Scotland. Practically none is grown more than 20 miles from the east coast.

Oats is the universal cereal crop of Scotland. Its acreage outnumbers wheat and barley by nearly 6 to 1, and has an area of over half that of England, as compared with 4 per cent of wheat and 10 per cent of barley. Most counties have between 20 per cent and 30 per cent of the arable land in the oat crop. Some of the counties with a small arable acreage have between 30 per cent and 40 per cent. The only county with less than 20 per cent of its arable land in oats is East Lothian, which is the most intensive wheat and barley county in the country. In the east, a large part of the oats is grown for sale, and in the west and the stock counties generally they are used for feeding stock on the farm.

Potatoes are grown on a large scale on most of the arable land. The total area in the crop is between one-third and one-quarter that of England. The most intensive areas are

the same as for wheat, namely, the Lothians, Fife, and Angus, and large acreages are grown in the north-east and throughout the Central Plain and on the Ayrshire coast, where a large part of the early crop is grown. Seed potato growing is an important feature in many areas.

The feeding root crops are turnips and swedes and take up about one-eighth of the arable land. They are grown generally where there is arable land. Mangolds are rarely grown and sugar beet occupies an inconsiderable acreage around Fife, where the one Scottish factory is situated.

Rotation grass is even more an important feature of Scottish farming than in England, nearly half the arable acreage being occupied with this "crop" as compared with less than one-quarter in England. The practice of sowing down a grass crop with oats and leaving the crop down for a period of three or more years is almost universal, and in some parts, particularly the whole of the north-east coast north of the Tay, rotation grass far exceeds the permanent grass in acreage. Over the country, the area of rotation grass is about equal to that of permanent grass (not including of course the rough grazings which occupy so large a part of Scotland), whereas in England the area of rotation grass is less than one-sixth that of permanent grass.

The live stock industry in Scotland also presents somewhat sharp contrasts. Although dairying is widespread in all farming parts, two areas stand out from all others (1) in and around the Glasgow and Clyde Valley industrial area and in North Ayrshire, particularly where the county has given its name to the most universal of the dairy breeds used in the West of Scotland, and (2) the extreme south-west, in Wigtown, Kircudbright, and in Kintyre, where farm cheese-making forms the basis of the farming. The beef cattle industry in Scotland, although also general in most parts, is particularly associated with the north-east, whence the Aberdeen-Angus name and breed is derived and whence the prime Scottish beef, which commands its

premium in the London market, is exported. About one-third of the beef cattle are in the north-east from Aberdeen and round the Moray Firth, 20 per cent being in Aberdeen county alone. One-quarter of the beef cattle is in the counties of Angus, Fife, East Perth, and Stirling, while the beef industry is also important in the south-east and in the south-west where Galloway has given its name to one of the notable beef breeds.

Store cattle raising is to be found in all the hill country between lowland and mountain, and in the glens which abound in the real Highlands. Owing, however, to a large number of Scottish farms having hill runs attached to lowland farms, there is less of a clear specialization in some parts between store-raising and fattening, as is to be found in England and Wales. The raising and sale of stores is, however, a specialized branch of farming in many parts, and a market for the stores is found in the fattening areas among beef producers who do not rear any or enough of their own animals.

Sheep far exceed all other live stock in importance in Scotland, mainly because sheep hold the mountainous north, central, and south of the country. Sheep outnumber cattle over the country by over 6 to 1 compared with a mere 2 or 3 to 1 in England and Wales. The greatest density is in the border counties of Berwick and Roxburgh, where the sheep number nearly 150 per 100 acres of all agricultural land (i.e. including rough grazings). Selkirk and Peebles, the neighbouring counties, are also high. Also ranking high are the two arable counties of East and Midlothian, which carry an average of about one sheep to the acre. The western counties of the Southern Uplands, Kircudbright and Dumfries, are also heavily stocked. The majority of the other counties carry between 40 and 60 sheep per 100 acres of all agricultural land. Those counties less heavily stocked with sheep are the northern Highland counties of Inverness, Ross and Cromarty, and Sutherland,

which carry between 20 and 30 sheep per 100 acres (a large number in view of the amount of land which is very rough grazing of a mountainous character), and the north-east arable counties of Moray and Nairn, which carry just over 20 sheep per 100 acres. The various systems of managing sheep are dealt with in the regional essays on Scotland.

Pigs have attained even less importance in the farming of Scotland than in England and Wales. In the southern counties of Great Britain the numbers of pigs are equal to about 40 per cent of all cattle. In Scotland they are only just over 10 per cent. Of the total number of pigs in Great Britain, Scotland contributes only 6 per cent. The small numbers are dispersed fairly evenly throughout all the more lowland parts and the main concentrations are around the large cities, especially Edinburgh, and in the cheese-making counties of the south-west.

The total poultry in Scotland is about one-tenth that of England and Wales. As in the south, poultry flocks are to be found everywhere, but there is evidence that the more intensive commercial production is located within convenient access to the large markets. The one most notable exception is the Orkney Islands, where a very high population of fowls is maintained for an export trade of eggs to the mainland.

By taking the products of farming one by one, as has been done in the past few pages, the impression may be given of a state of farming where specialization in production is the prevailing practice. Actually the contrary is the case. Very little complete specialization exists in British farming, though it is to be found with poultry and pigs, and to a large degree in the rich summer-fattening pastures and on the Highland sheep farms, and to a lesser degree in some forms of milk production. By far the largest number of farms, however, must be described as "mixed." Most farms have some arable and some permanent grass. Even where there is practically no grass, there is a variety of crops

grown, and where the farms are all grass, the grass may be used for a variety of live stock enterprises. Most farmers produce many products and it is by no means unusual for a farmer's income to be derived from a dozen or more different sale products, ranging from wheat and beef-cattle to eggs and cider. The mixing of enterprises is partly due to a conservative desire to cover market and other risks, but it is also and perhaps mainly due to what is, or has been, a sound economy of dovetailing several enterprises to utilize land, labour, and capital to the best advantage.

It is necessary, in reading the descriptions of farming, to bear always in mind this generally mixed character. The farming of Great Britain may be roughly said to consist of five main types: (1) arable farming, (2) dairy farming, (3) sheep farming, (4) cattle grazing, and (5) a general group of special types, ranging from poultry or pig keeping to market gardening and fruit growing, but the classification depends almost entirely on the *emphasis* placed on one or two of the products rather than on the production of these products to the exclusion of all others. In some areas, the conditions exclude entirely some farming enterprises, as for example wheat or sugar beet or intensive dairying are excluded from the remote Highland parts, but they do not exclude the farmer who depends mainly on sheep having some acres of oats, some young cattle growing up for stores, a few milking cows for butter-making, and some poultry. It is this mixed nature of most of British farming which is its most striking characteristic.

Three other features of British farming require a brief reference in this general outline, namely, the system of tenure, the size of farms, and the employment of labour. Up to the War, the system of tenure throughout the whole country was almost wholly a system of tenancy, the land being owned for the most part in large estates and let to tenant-farmers at a fixed annual cash rental. The conditions of the tenancy were governed by agreement between

landlord and tenant, and by a special body of legislation known as the Agricultural Holdings Acts. After the War, a general movement towards the breaking up of the large estates took place and many tenant-farmers willingly, or of necessity, bought their farms. The detailed statistical information on the subject is somewhat unreliable, but official returns record that while the proportion of farmers who owned their farms before the War was about 10–12 per cent in almost every part of the country, by 1922 about 25 per cent were owners. The official returns were not made after 1922, but a special inquiry in 1927 reported that the proportion of owner-farmers in England and Wales was 37 per cent. This is a very large change in the system of tenure compared with pre-war days, as it represents that over 100,000 farms which were formerly occupied by tenants had become owner-occupied farms. The change, however, assuming that the movement has not gone on at the same pace since 1927, leaves the British system of agricultural tenure still preponderantly a tenancy system. In Scotland, where figures have been published up to date, the change is much less. In 1930, 79 per cent were tenant-farms, and in 1934, 76 per cent were tenant-farms.

Contrary to a very widely held view, Great Britain is a country with a high proportion of small farms. The average size of holdings officially recorded is between 60 and 70 acres, and between 60 and 70 per cent of all holdings recorded over one acre are less than 50 acres in size and only 3 per cent are over 300 acres. This proportion of small farms is general throughout the country. In England and Wales, for example, only three counties have over 80 per cent of their farms under 50 acres, and only three counties have less than 50 per cent under 50 acres. The former counties occur where intensive cultivation takes place in market gardening, fruit, potatoes, and suburban dairying. The counties with a small proportion of small farms occur where there is a large area of arable land which is not of

the highest fertility or where sheep and cattle grazing, other than dairying, predominates. In Scotland, seven counties have more than 80 per cent of the holdings under 50 acres. These are all, with two exceptions, Highland counties, where the figures are influenced by two factors, first the prevalence of the old "crofting" system and, second, the fact that many of the farms, although they have large areas of sheep walks, have only a small acreage of land under "crops and grass," and only the area of land "under cultivation" is recorded in the size of farm. The two exceptions are Orkney and Shetland, where conditions and tradition favour the small croft. On the other hand, no county in Scotland has less than 20 per cent of its farms under 50 acres. The counties with the smallest proportion of small farms are Ayr and Kinross, where the percentage of farms under 50 acres is 39 in each case.

Although, therefore, the majority of farms in Great Britain is small, and there is only a small proportion over 300 acres, the larger proportion of the land, probably over two-thirds, is farmed in medium or large-sized farms of over 100 acres. Very large farms consisting of thousands of acres of crops or permanent grass are very few, but the medium scale on which the major part of the land is farmed provides considerable scope for the employment of wage-paid labour.

According to the annual agricultural returns there are nearly 400,000 holdings in independent occupation in England and Wales, and about 75,000 in Scotland. A large number of the smallest farms are probably part-time occupation for men who have other sources of income, but roughly the number of full-time farmers in the country can be taken as between 300,000 and 400,000.

The annual agricultural returns also give the number of wage-earners in agriculture. The total number of men and boys regularly employed in the whole of Great Britain is about 600,000. Women and girls regularly employed total

about 71,000. The numbers returned of those casually employed is about 92,000 men and boys and about 37,000 women and girls. The numbers have been declining in recent years, particularly in the employment of casual labour and of the younger males under the age of twenty-one.

The employment of labour works out on the average for the whole country at about 20 regular male wage-earners and about 2 regular female wage-earners per 1,000 acres of farmed land. In Scotland, the average employment of regular male workers is only 17 per 1,000 acres and of regular women workers is 4 per 1,000 acres. Employment varies throughout the country mainly according to type and size of farm. Male employment is highest in areas of intensive crop cultivation found round the Fens and round London, all these eastern and southern counties employing over 30 men regularly per 1,000 acres, rising in Middlesex to over 100. The counties with the lowest employment of under 15 men per 1,000 acres are all typical grazing counties such as Leicester and Rutland in the Midlands, and Northumberland, Cumberland, and Westmorland in the North. The majority of the Welsh counties employ less than 16 men per 1,000 acres, and none of the Welsh counties employs as many as 20. Employment in Scotland is generally lower. Only 6 of the 33 counties employ more than 20 men regularly per 1,000 acres. Three of these are the arable counties of Angus and East and Mid-Lothian. The others are Highland counties. Only one, namely Shetland, has a regular employment of over 25 men per 1,000 acres. All other counties in Scotland employ from 13 to 20 men per 1,000 acres, the higher proportions being found in the dairy counties round Glasgow and in the north-east arable counties between Aberdeen and Inverness. The lowest employment of 13 to 15 men per 1,000 acres is found in the border counties and in the extreme south-west.

Employment of women regularly also varies considerably. In England, half the counties employ fewer than 2 per

1,000 acres, and employment of women is fairly high only in those counties with intensive cultivation round London, and in the Fens, where as already mentioned the employment of men is highest, and to a lesser degree in the northern counties. In Middlesex the regular employment of women is nearly 25 per 1,000 acres, and in Norfolk and the Holland Division of Lincolnshire it is 10 and 8 respectively. The northern counties have round about 3 to 5 per 1,000 acres. In Wales, women are more uniformly employed, but the range of all counties is only between about 2 and 5 per 1,000 acres. In Scotland, women are also more generally employed, but except in the Orkneys and Shetland where women are employed almost in equal numbers with men, the range per county is between 2 and 8 per 1,000 acres. Of the farming counties, employment of women is greatest, about 6 or 7 per 1,000 acres, in the counties of Clydeside, Ayr, Lanark, Renfrew, and Dumbarton, and to a slightly less degree in the Lothian arable counties. It is lowest in the border counties and in the south-west.

This rapid summary of some of the facts of British agriculture necessarily leaves more things undealt with than are mentioned. It is in some ways easy to skim over the surface of the agriculture of Great Britain as a whole, but the variations and the "mixed" character of farming throughout the country have already been emphasized. A rapid sketch of the country cannot therefore hope to be adequate. More importance attaches to the other essays in this book which deal with the localization of British farming.

Chapter II

The North of England

THE COUNTIES OF
NORTHUMBERLAND, DURHAM, CUMBERLAND,
and
WESTMORLAND

By D. H. DINSDALE
Armstrong College, Newcastle-upon-Tyne

CHAPTER II

The North of England

THE North of England Province consists of the administrative counties of Northumberland and Durham to the east, and Cumberland and Westmorland to the west. It is bounded on the north by Scotland, on the east by the North Sea, on the south by the counties of Yorkshire and Lancashire, and on the west by the Irish Sea. From Berwick-on-Tweed on the Anglo-Scottish border to Darlington on the river Tees, the Province stretches for a hundred miles and is approximately the same distance at its widest part, from Hartlepool on the east to Whitehaven on the west.

The total area of the province is approximately 5,300 square miles of which 1,778,000 acres are under crops and grass and 1,230,000 acres are rough grazings.

The province may be most conveniently considered in two divisions, east and west respectively. A casual glance at a contour map will explain why. Through the centre of the province from north to south, there runs a high range of limestone hills, the Pennines, familiarly described as the "Backbone of England." These hills rise to their highest point in Cross Fell, 2,930 feet above sea-level, and form an effective barrier to free communication between east and west. The Pennines also serve as a natural watershed from which the main rivers run in a series of parallel valleys eastwards to the North Sea. On the west, however, between the Pennines and the Irish Sea, there is a broken mass of higher hills including several peaks over three thousand feet which form the English Lake District, well known to the tourist and the rock climber. The Cumbrian Hills of the Lake District are separated from the Pennines by the fertile valley of the River Eden which runs northward to the Solway Firth, a wide inlet from the Irish Sea. In the north, along the

Anglo-Scottish border are the Cheviot Hills, taking their name from the highest peak, the Cheviot, which is 2,676 feet above sea-level.

Since the prevailing winds are mainly from the west and south-west, rain-laden from the Atlantic Ocean, there is appreciably heavier precipitation in the western division of the province where the mean annual rainfall is about 40 inches. Over the eastern division, the average rainfall is about 26 inches. The moderating influence of the Gulf Stream is evidenced by the narrow range between winter and summer temperatures, particularly in the west.

While the physical features of soil, climate, and latitude have determined the character of much of the agriculture in the Province, certain economic features dominate the picture, particularly on the coastal plains of Durham, Northumberland, and Cumberland. If we exclude the higher slopes of the Pennines, and the upper valleys of the Tees, Wear, and Tyne rivers, then practically the whole of Durham county and south-east Northumberland is an important industrial area, economically dependent on the heavy industries of coal mining and coal exporting, ship building and ship repairing, and in north-west Durham and at the mouth of the River Tees, iron and steel making. In addition there are numerous subsidiary industries though some of these have declined during the last 40 years. In the west of the Province on the Cumberland coast there is a similar though very much smaller area surrounding Whitehaven, Workington, and Maryport. The striking contrast between the eastern and western divisions of the province in respect of the density and distribution of the population is sufficiently illustrated by the following facts relating to the year 1931.

Northumberland has a population of 757,000 on an area of 1,279,000 acres, a density of 60 persons per 100 acres; Durham has a population of 1,486,000 on 628,000 acres, a density of 237 per 100 acres; Cumberland has a population

of 263,000 on 969,000 acres, a density of 27 per 100 acres; and Westmorland has a population of 64,500 on 505,000 acres, a density of 13 per 100 acres. The density of population in the two eastern counties together is 118 per 100 acres, and in the two western counties together is 22 per 100 acres. The eastern counties have nine towns of over 50,000 inhabitants (Newcastle, Sunderland, Middlesbrough, Gateshead, South Shields, Darlington, West Hartlepool, Stockton-on-Tees, and Tynemouth), and thirty-two towns of over 10,000 inhabitants. By contrast, the only town of over 50,000 inhabitants in the western counties is Carlisle, and only four towns have over 10,000 inhabitants.

Of the total population of Durham and Northumberland, amounting to almost 2¼ millions rather more than 80 per cent is located in a strip of about 24 miles inland from the east coast and extending from the River Tees in the south to some 20 miles north of Newcastle-upon-Tyne. As might be expected, this densely populated area is, from an agricultural standpoint, a consuming and importing area requiring a large measure of wholesale and distributive services. The western division, by contrast, is an exporting area.

During recent years the highly industrialized eastern section of the province has suffered the unenviable distinction of being one of the so-called "Special Areas" which, owing to continued depression in the heavy industries, have provided some of the most intractable problems of unemployment relief. Despite this evidence of intensive industrialization, this part of the province in no way deserves the widely held opinion that its landscapes and scenic qualities are completely marred by forests of chimney stacks and unsightly pit waste heaps. On the contrary, there will be found in the heart of the coalfield itself, samples of rural beauty which will stand comparison with more widely acknowledged beauty spots in other parts of the country.

From this angle, the western division, on the other hand, needs no advertisement, since it consists largely of the English Lake District which attracts a considerable volume of tourist traffic throughout the year. It may be mentioned, in passing, that, in addition to the wide range of interest which the province as a whole offers to the agriculturalist, the economist, and the tourist, there is equally interesting material to attract the historian, in the form of visible contacts with the Roman occupation of Britain (up to the fourth century A.D.), and the numerous peel towers and castles which recall the struggles and disturbances on the Anglo-Scottish borders before the political union of the two countries.

Before proceeding to a detailed description of the distinctive agricultural regions in the province, there are one or two general characteristics which deserve mention.

Apart from the relatively intensive mixed farming in the industrialized parts of the province, the area as a whole is essentially one of live stock breeding and feeding, for which it is particularly suited because of its soil, climate, and topographical conformation. The variety which characterizes the physical conditions produces a corresponding variety in farm organization and practice, but the farmers themselves, taken as a whole, have acquired by traditional usage and experience a high degree of skill in the arts of the live stock breeder and in the management of grassland.

So far as systems of land tenure are concerned the province reflects the same general tendencies as the rest of the country during recent years. The majority of farmers are tenant-farmers, and though there has been a marked increase since the Great War in the numbers of occupying-owners, the decision to purchase, in most cases, was the outcome of a desire for security against disturbance.

Although there is a general trend towards the disintegration of large landed estates, it is interesting to note that, in the industrialized eastern division of the province, there

is an appreciable amount of agricultural land owned by colliery companies and industrial undertakings. Years ago when horse transport above and below ground was much more significant than it is to-day, the collieries provided a valuable market for locally produced oats and hay. The mechanization of mining transport, however, has caused a decline in this market and the main reason for agricultural landholding by colliery companies nowadays is that it enables them to deal more readily with the many claims by tenant-farmers for compensation for crop damage as a result of underground subsidence.

A further important feature of the industrial part of the province which is not revealed by the official statistics is the extensive development of "allotments" by industrial workers. The "allotment" is usually a vegetable garden, producing for home consumption. It is often large enough to accommodate a small piggery, a small poultry flock, or a greenhouse. As a supplementary source of income and as a hobby, the allotment has considerable social importance. Practically every town and village has its association of allotment holders whose scope and influence have been still further developed and encouraged during recent years for the purpose of relieving in some measure the economic distress arising from the depression in the heavy industries.

Another factor of general significance throughout the area is the development of road transport. This will be referred to again in connection with the change-over from cattle breeding to liquid milk selling in the dales. Its influence is also shown, however, in the concentration of fat-stock marketing. During recent years the smaller country auctions, at which weekly and bi-weekly sales of fat stock were held, have experienced declining business, while the more centralized markets in the larger towns have shown a corresponding increase.

In all parts of the province poultry farming is carried on both as a self-contained enterprise and in conjunction with

mixed farming. While the majority of poultry flocks are found on mixed farms, the concentration of population has encouraged the development of many self-contained enterprises. No one system of management can be said to be characteristic and considerable experimentation is going on in the effort to find the most economic way of dovetailing the poultry enterprise with other mixed farming enterprises. Considerable progress has in fact been made in raising the general standard of poultry equipment; in the selection of breeds and strains; and in the general technique of poultry management.

So far as hired workers are concerned it may be pointed out that throughout the northern counties the system of long-term hiring agreements is still general and characteristic. Workers are hired in May and November for terms of six or twelve months. On the larger farms, they are provided with cottages and on the smaller farms they live with the tenant or owner-occupier as the case may be. This system of engaging hired workers has an important social significance in that it tends to keep in employment men who might otherwise be stood off in slack periods. This tendency is illustrated by the fact that since 1921 the decline in agricultural employment throughout the province was largely confined to casual workers. In Durham county more particularly the numbers of regular workers have remained fairly constant, a fall in the numbers of women regularly employed being offset by a rise in the numbers of men regularly employed. It is noteworthy also that the employment of women on general farm work is a common practice in the non-industrial parts of the province. In the industrial areas, when the industrial demand for labour is good, farmers have difficulty in securing women workers, but of recent years the lack of alternative employment has resulted in some increase in the numbers of women engaged in agriculture. Further, the effect of industrial competition for labour throughout the area has been shown by the steady

migration of younger people from the rural areas to the towns, with the result that the present generation of farm workers includes a relatively high proportion of youths and older workers.

Against the physical and social background previously described, it is now possible to discuss in more detail the distinctive farming regions in the province. These fall roughly into three main divisions:

I. The East Coast Lowlands, consisting of
   (*a*) the industrial belt
   (*b*) the mid-Northumberland coastal area
   (*c*) Tweedside

II. The Hill Country, comprising the higher slopes of the Pennines, Cheviots, and Cumbrian Hills

III. The Solway Plain in North Cumberland

I. The East Coast Lowlands

(*a*) *The industrial belt*

Throughout this part of the province, the prevailing type of farm is the mixed dairy and cropping farm producing for direct consumption, milk, mutton, beef, pigs, poultry, potatoes, and to a small extent, the coarser vegetables. The chief cereal crop is oats, grown mainly for consumption on the farm, while the acreage under wheat has expanded during recent years as a result of the country's fiscal policy. These farms range in size from about 50 acres to over 200 acres. They are of the type which is described as the family farm in that, broadly speaking, according to the intensity with which they are farmed, they are of a size capable of providing a modestly reasonable standard of livelihood to an average family without recourse to hired labour. On most of these farms, the main enterprise is the milking herd which is usually supplemented by a small flock of sheep, a few pigs, and in many cases a small poultry flock. Practically

the whole of the output from these farms is marketed within the area.

Such commercial market gardening as there is in the province, it may be noted here, is centred round the large towns such as Newcastle and Tyneside generally, Sunderland, Hartlepool, Stockton, Darlington, Morpeth, and Carlisle.

(*b*) *The mid-Northumberland Coastal area*

Moving northward through the eastern division of the province, the character of the farming changes as soon as the coalfield is left behind. The loams and alluvial soils overlying the coal measures give place to the cold boulder clay which is characteristic of the greater part of Northumberland, stretching almost as far north as Tweedside.

This is the type of land whose responsiveness to phosphatic manures was so strikingly demonstrated by the historic plots laid down at the Cockle Park Experimental Station, three and a half miles north of Morpeth. Throughout this part of the province, up to an altitude of about 400 feet above sea-level, will be found outstanding examples of skilled pasture management. The farms are large, ranging up to 2,000 acres in size, and producing high quality beef, mutton, and lamb. The land is mainly under grass, either temporary or permanent pasture, although between a quarter and one third of the acreage is devoted to roots and cereals (chiefly oats) for winter forage.

Throughout the area, the changing public demand for beef and early lambs has stimulated a good deal of experimentation amongst the enterprising stockfeeders, and various crosses of the Galloway, Shorthorn, and Aberdeen-Angus breeds will be found on the grazing pastures. The typical sheep of the area is the well-known half-bred (Border Leicester ram × Cheviot ewe) which is again crossed with the various Down breeds, such as the Suffolk and Oxford, for early lamb production. Outstanding examples of this

type of farming will be found in the district round Alnwick.

(*c*) *Tweedside*

Passing on to the northern edge of the province, the visitor enters Tweedside, a fertile valley of rich sandy loam, admirably suited to arable farming. Here the prevailing system of farming is a combination of beef, mutton, and lamb production, with such arable sale crops as barley, potatoes, and sugar-beet. The development of more intensive cropping is limited by the remoteness of consuming markets, and by the comparatively short, late summer. The same factors rule out milk production, and in fact, few of the farms are equipped for this form of enterprise. The proportion of land under the plough is high, and winter and summer feeding of cattle and sheep is the general practice.

II. The Hill Country

Moving westwards into the hills, the visitor enters one of the most important live stock breeding grounds not only of England, but of the world. The thin soils and open, treeless moorlands of the Cheviots and Pennines are the areas of rough grazings which figure so largely in the crop statistics. They are the breeding grounds from which the lowland farmers, not only in the province itself, but in the more southerly parts of the country, draw their supplies of store lambs and hogs for mutton production. Of the 16½ million sheep in England and Wales in 1934, more than 15 per cent were located in the northern province.

So far as breeds are concerned, the Cheviots, as might be expected, predominate in the north; further south, on the poorer grazings, increasing numbers of Scotch Blackfaces appear, and yet further south, the strong Swaledales. On the high rocky fells of Cumberland and Westmorland, the hardy and picturesque little Herdwicks take pride of place. Cross-

breeding is common, while a further interesting characteristic is the prevalence, on many of the hills, of "hefted" stocks, i.e. flocks which are bound to their hills because of their acquired immunity from diseases. The spring and autumn sales of lambs, gimmers, and draft ewes throughout the area are notable events in the agricultural calendar.

While the sheep hold undisputed sway on the exposed parts of the hills, the more sheltered slopes, particularly in the upper reaches of the river valleys, support extensive herds of breeding cattle. These are principally of the Shorthorn breed, with still a preference for the dual-purpose type, although excellent herds of the Friesian and Ayrshire breeds will occasionally be found. Certain districts are specially noteworthy. For example, the valley of the Tees between Durham and Yorkshire is the original home of the Shorthorn breed, developed by the Brothers Colling, who farmed near Darlington about 1780.

Allendale, a sheltered valley lying to the south of the Tyne, was famous thirty years ago as a breeding centre for excellent Shorthorn cattle. Since then the development of road and rail transport has gradually encouraged a change-over to the sale of liquid milk with a corresponding decline in breeding activities. The same tendency may be noticed also in most of the districts which have hitherto been regarded as mainly breeding centres. In fact, it may be mentioned that while the increase in the number of wholesale milk contracts over the country as a whole, as a result of the stabilization of milk prices by the recently created Milk Marketing Board, was 13·62 per cent, the northern province showed an increase of over 36 per cent.

Throughout the counties of Cumberland and Westmorland, particularly on the Solway Plain around Wigton, this same tendency is strongly in evidence and every country lane is dotted with the familiar platforms of milk churns awaiting the collecting lorry. The Cumberland Shorthorn, one of the best of the dual-purpose types, is now having to

meet the competition of a variety of crosses of the established milk breeds. Nevertheless, Cumberland and Westmorland have long been one of the foremost breeding areas for Shorthorn cattle, and the sales of pedigree stock, which are held regularly at Penrith, are attended by buyers not only from all parts of Great Britain but also from overseas.

Throughout these breeding areas the farms are mainly small, ranging between forty and one hundred acres. The breeders' art does not lend itself to large-scale organization. The smaller holdings serve admirably as the lower rungs of the agricultural ladder and many of them are occupied by one-time hired labourers.

This brief survey of the important breeding activities in the province would not be complete without a passing reference to the area in North-east Cumberland, on the upper slopes of the hills, which is the recognized home of the Galloway cattle. This particular breed, crossed with the Shorthorn and/or Aberdeen-Angus, produces excellent stores for the feeders, and is particularly suited to the moist and harsh environment where it is found.

III. The Solway Plain

The western part of the province is so dominated by the hill country that one is apt to lose sight of the stretch of flat country lying around Carlisle and along the shores of the Solway Firth. A narrow strip of lowland also runs round the Cumberland coast in the small space left between the mountains and the sea. Although a lowland area, the Solway Plain is not distinguished for its proportion of arable or of arable crops. Very little wheat or barley is grown. Oats, turnips and swedes, and rotation grasses, all for stock feeding, are the chief arable crops. Cattle, both beef and dairy stock, and sheep are the focus of the farm business and poultry are fairly widespread.

The chief reason for giving this area separate recognition

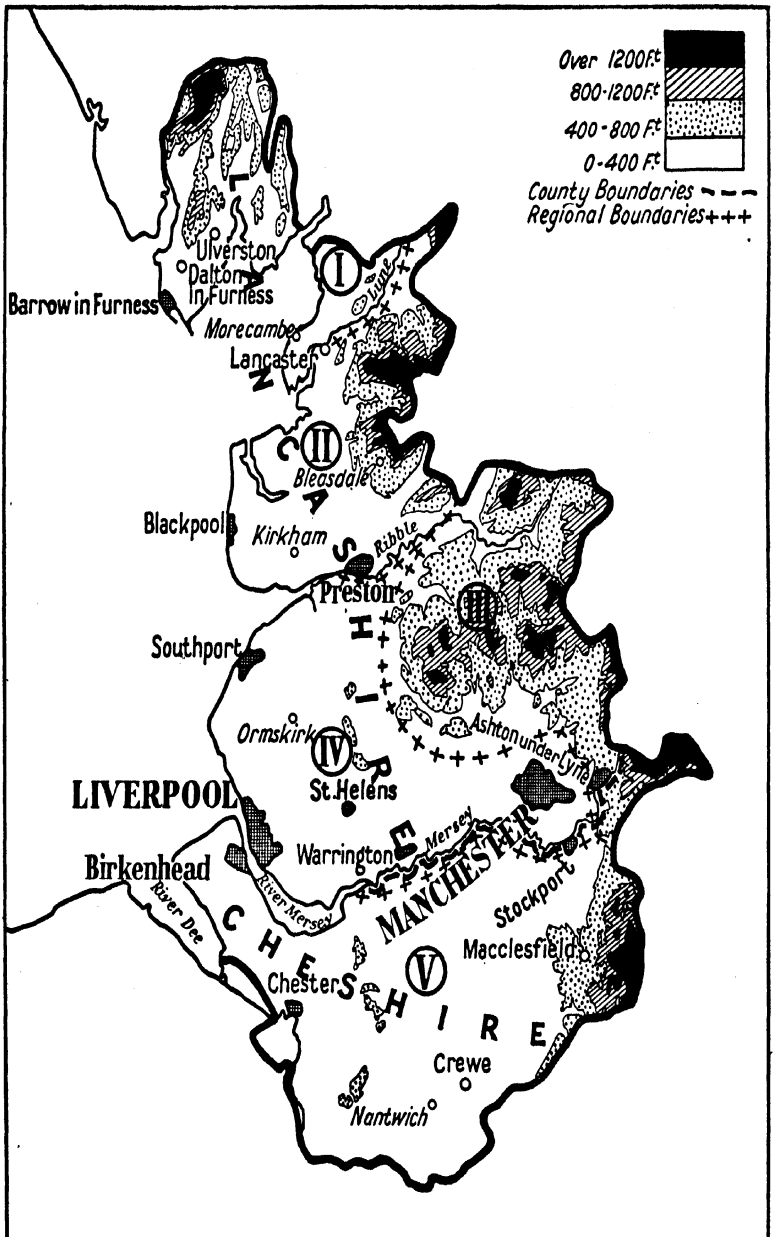
is because it illustrates in a striking way the reactions of an area formerly devoted to the breeding of beef and dairy stock to modern transport methods and milk sales organization. Taken in conjunction with what was said in the previous section about the importance of the area as a breeding centre, it is to be noticed that at Aspatria, some 20 miles west of Carlisle, the Milk Marketing Board instituted one of the first of its own factories for the processing of surplus milk. A similar factory under private enterprise has operated in the same area for a number of years.

Together with the rest of Cumberland and Westmorland, the area is an exporting region for milk, dairy, and poultry produce, which is sold in such adjacent areas as the north-east coast, North Lancashire and the West Riding of Yorkshire, and the Glasgow and Edinburgh areas in Scotland.

Chapter III

Lancashire and Cheshire

By JOHN ORR
University of Manchester



MAP OF LANCASHIRE AND CHESHIRE

CHAPTER III

Lancashire and Cheshire

THE province consists of the two counties of Lancashire and Cheshire. Its western boundary is the coast of the Irish Sea and its inlets. In the north and north-east it abuts the northern province, in the west the provinces of Yorkshire and the East Midlands, and in the south and south-west those of the West Midlands and of Wales.

The total land area of the province is 1,830,000 acres of which 1,190,000 acres are classed as "cultivated land" and 162,000 acres are in rough grazings used for agriculture, leaving 478,000 acres in non-agricultural use in towns, factories, or waste land.

The highly industrialized character of a large part of Lancashire is a predominating feature of the province. Lancashire is still famous for its cotton industry, even if it has declined from its greatest heights of the past, for its engineering, for its coal mining, and for a number of subsidiary industries which contribute to the support of its vast population. The area of the county is only about one-twentieth of that of Scotland, but the population of over five million people is greater than Scotland by some 200,000. The density of population over the whole county is nearly five persons per acre, the greatest of any county, except London, in the whole country. By far the greater proportion of this population is settled in the south-east of the county between the Ribble and the Mersey, in towns which occupy the valleys or slopes of the hills or on the bank of the Mersey. About 32 per cent of this vast population in Lancashire live in Manchester and Liverpool, both noted as shipping centres. A further 30 per cent occupy towns of over 50,000 inhabitants, and another 10 per cent are in boroughs of over 20,000 inhabitants, all situated in the south and south-east

of the county. Altogether 72 per cent of the county's population is in boroughs of over 20,000 people, situated in this industrial belt. The other large centres outside of this are Barrow-in-Furness (66,000), Lancaster, Morecambe and Heysham (together 68,000), Blackpool (with Fleetwood, St Anne's, and Lytham, (151,000), and Southport (79,000). From Barrow in the north to Liverpool in the south, the coast-line of Lancashire is almost entirely occupied by towns famed as pleasure resorts.

In this respect, Cheshire differs from Lancashire, the density of population over the county is 1·7 persons per acre, low beside that of its northern neighbour, but high compared with the majority of counties in England and Wales. Its most populous centres, Birkenhead and Stockport, which contain 25 per cent of the county's population, may be regarded as overflows from Lancashire's teeming industries. The large towns detached from the Lancashire border are Chester (41,000), Crewe (46,000), and Macclesfield (35,000).

In physical features, these two counties form two links in the chain which runs from north to south of England. In the north-west, Lancashire includes mountains, lakes, and rough land generally which belong to the Lake District. In the north-east, it catches some of the fells of which the greater number are typical of Yorkshire. The highlands of these northern and north-eastern parts continue down the east side of the province, with a difference of character rather than of altitude, and fence off a widening plain on the west, which terminates first on the coast and later in the hills of Wales. Some outlets of the sea bite deep into this western plain, Morecambe Bay and the estuaries of the Ribble, the Mersey, and the Dee. The Ribble is still an important waterway to and from the docks of Preston, and the Mersey with its service of the Liverpool and Manchester docks is only less famous and less hard-worked than the Thames. The western plain varies from a gentle undulating

country near the hills to a very flat tract near the sea, with stretches of low-lying land which might have been part of the Fens with its ditches, mires, and difficulties of draining.

The main features of agriculture in Lancashire and Cheshire have long been set. The growing population of Lancashire has confirmed rather than changed them. In both counties, the farms on the average are smaller than in England as a whole. The average size of farms in England including all kinds of holdings recorded in the official statistics is 68 acres. In Lancashire, it is 41 acres, and in Cheshire it is 47 acres. The proportion of farms under 50 acres in England is 62 per cent. In Lancashire it is 72 per cent, and in Cheshire 68 per cent. The proportion of farms over 150 acres in England is 13 per cent, but for Lancashire it is only 3 per cent and for Cheshire 7 per cent. It should be remembered in this connection that these figures include only cultivated land and many farms in the northern hills of Lancashire may be small in respect of the land under crops and grass, but may have large acreages of rough sheep pastures attached to them. Nevertheless the industrialization of much of the province has accentuated the small scale of the farming in some parts.

Although the farms are generally small, the employment of wage-paid labour is higher than the average for England. Male workers of all ages regularly employed are, on the average, 22 per 1,000 acres in England, while for Lancashire they are 29 per 1,000 acres, and for Cheshire 26. Women and girls regularly employed are also proportionately higher in numbers, being 5 per 1,000 acres for Lancashire, 4 per 1,000 acres for Cheshire and only 2 per 1,000 acres for England as a whole. The employment of casual labour is about the same as for the rest of the country. The minimum rate of wages for adult male workers is about 32s. to 35s. a week, some shillings higher than in southern counties, but about the same as in the neighbouring northern counties.

The system of tenure is still mainly that of landlord and

tenant, but it is certain that Lancashire and Cheshire shared in the movement taking place after the War, whereby a large number of tenant farms were purchased by the occupiers. No official statistics are available to show the recent developments.

The main outline of the farming of the province might be briefly summarized in one sentence. In the north, hill farming with sheep, stock-raising, and some milk; in the east, mainly milk and poultry for the vast industrial population; in the Lancashire coastal plain, arable land with in parts a high proportion of sale crops; and in Cheshire, milk formerly devoted to the production of farmhouse cheese.

The features already outlined enable us to divide the province roughly into five regions for a somewhat more detailed, though still very general description of the farming. These regions are:

I. North of Lancaster
II. Between the Lune and the Ribble
III. East and South-east Lancashire, south of the Ribble
IV. Merseyside and South-west Lancashire
V. Cheshire

A rapid tour of these regions will give us a bird's-eye view of the farming.

I. North of Lancaster

This region is easily defined as the whole of the county lying north of the River Lune and the town of Lancaster, but it is necessary to remember the broken-off part of the county which lies north of Morecambe Bay. This corner which seems to have been bitten out of Cumberland and Westmorland has an extremely mixed character. In the north of it, the hills rise to 2,500 feet. Lakes, tarns, and woods are features of the scenery, and the description of the hill farming in the northern province may stand also for this

part. Further south, still in this detached portion of Lancashire, the hills decline from the greater heights, but the lower altitudes do not signify more amenable conditions. Some of the hardest, most rocky, least tractable land in the country is found in the middle of this outlying part of the county. Broken by rocks and possessed by bracken which cannot be controlled by cutting owing to the rocks, there is a considerable area from which little is produced. Here and there are free spaces with a few small fields on which cultivation can be bestowed.

Towards the south of the peninsula of Furness, the hills gradually melt into the lower undulating ground round Ulverston and Dalton. Again, the agriculture here resembles that of West Cumberland more than that of any part of Lancashire. The soil conditions, the methods of cultivation, the mixture of arable and permanent grass, the convenient if limited markets, are features common to these areas. Hills stocked with a hardy breed of sheep, a considerable stretch of useful land which might carry any class of stock and grow any kind of crop from the plough, have the town of Barrow-in-Furness convenient to themselves as a market. The mountainous part is geologically on the oldest rocks, on the volcanic or on the Silurian; the lower hills are on limestone or on Red Sandstone, with Alluvium by the river estuaries. The shape and situation of the peninsula of Furness, the mixture of farmland and towns, suggest that it might be self-contained, almost insular in character. There are variations in the surface soils, but for the most part they are boulder clay, useful loam, or black soil, and although the area is limited in extent, it is a part of the county where farmers have an opportunity of making attractive by good farming scenery attractive by nature.

More of this detached corner of Lancashire has been ploughed in the past than in the present and could be ploughed, but on the balance the market for saleable crops has weakened. Oats, straw, and hay are less in demand and

the plough is used to provide food for live stock more than for the market. On the other hand, the number of cows in milk and the number of sheep have increased. These two branches of farming have been relatively profitable since the War. Permanent grass and rotation grass have been more heavily stocked, although this has been compensated by a reduction in the number of heifers reared. For generations the breeding ground for good, heavy dairy Shorthorns in the west has extended from the Border to just south of Lancaster. Some of the most beautiful cows of the breed have been reared in this part. They have been sold as heifers to farmers in the south, and have won honours for them in the show rings. This is still a big part of farming, but there is a smaller output to replenish the larger home herds of milking cows, or to enrich those further south. Leaving this detached corner of Lancashire to join the main part of the county again after traversing the part of Westmorland which gives that county access to the sea, we find land which has much the same character as that already described. The fells of Westmorland and of the West Riding of Yorkshire give way to the lower hills of Lancashire, which lie on the east side of Morecambe Bay. Some of the limestone hills here present an unusual terraced appearance. There is too little soil over the rock to clothe it properly and produce good grazing, and it is hard in a different manner from that of the Coniston district.

Comparing these two districts of this region, the reduction in the area under the plough between 1913 and 1931 was 17 per cent in the detached corner and 37 per cent in the "mainland" district. The uneven country in which the Cumberland mountains end towards the south has been put out of plough cultivation more than any other section of the county, for in Lancashire as a whole the reduction in the ploughed area was only 16 per cent. The increase in milk cows was 21 per cent in both districts and in sheep about 27 per cent.

Although this is a part of Lancashire where farms by the nature of the country should be large, there are still 56 per cent of the holdings which do not exceed 50 acres in extent.

II. Between the Lune and the Ribble

The two rivers, the Lune and the Ribble, adequately define this region, but marked off by towns it consists of the whole width of the county from Lancaster to Preston. The road from Lancaster to Preston approximately divides this region into the hill district on the east side and the level plain on the west side.

The eastern side of the region is fringed with the fells or the grouse moors which run into Yorkshire not far behind the ridge visible from the Lancaster–Preston road. The limestone country and the small fields of North Lancashire end north of Lancaster and the river Lune. The Millstone Grit meets with them, and with it the character of the scenery and farming changes. This formation runs southwards along the western slopes of the Pennines with few interruptions and provides the foundation of most of the agriculture of East Lancashire. The Lune Valley itself is one of the fine and distinctive things in English scenery. With the highest of the Yorkshire fells rising as barriers in the east and its own workable land in the bottom and on its not too steep and not too heavily wooded slopes it offers a tamer and more fertile beauty than the more northerly section of the county.

Mostly small farms with the major part of their area in grass occupy the greater part of this area. Moors, shared exclusively by grouse and sheep, run out to the Yorkshire boundary which pushes itself aggressively to within a few miles of the Irish Sea. The comparative remoteness of the district together with other features suggests that it is eminently suitable for rearing young stock, but the drift of forces has altered that. Milk production more than ever,

heifer-rearing a little less, sheep and poultry are the principal branches of farming here. Motor haulage has brought what was formerly an outlying district within easy reach of markets and the troublesome surplus supply of milk is increased from farms in Bleasdale and on the slopes of the fells. Preston is an important centre from the farmers' point of view. It has three live stock markets in the week. Buyers from every quarter meet sellers from as many.

In the western half of this region south of the Lune, we make our first acquaintance with the plain of Lancashire. There seems to be no physical reason why this section of the county, the Fylde, should not be as completely under the plough as any in the country. The soil is workable and would grow any kind of crop, but for generations it has been predominantly under grass. Before the change over to the sale of milk became so general, this was the centre of Lancashire cheese-making. A green, level, fertile country, it resembles a part of Cheshire more than any other and the reasons which made Cheshire a cheese producing county were also operative here.

Towards the coast and in the Kirkham district, a considerable proportion of the land is ploughed and in the neighbourhood of Blackpool market gardening and intensive cultivation generally are extending. Moss soil and mixtures of moss and sand, which are so common here and in the Ormskirk-Southport district, and generally in the South-west Lancashire region, lend themselves to the most progressive methods. Farmers who feed these soils find in them the most friendly nurses of heavy crops. On the many soils which are on the light side, in times gone by farmers repaired this particular weakness by digging out the marl which frequently underlies the sand and mixing heavy and light to produce one of the most useful combinations attainable. The whole of the Fylde is marked with marl pits, disfigured like a face stricken with smallpox. The fertility thus created by hard and skilful labour still operates in hundreds of places,

but the exhaustion of it on the other hand obtrudes itself by comparison. These lingering results of marling, showing themselves here and there in crops of grass, represent generally a higher standard of cultivation than that reached with the help of substitutes for marl.

It was in this area that the poultry industry in its present intensive form took root and from which it has spread. A few farmers who specialized in breeding for egg production became famous. Poultry keeping as a branch of farming and not as a casual adjunct to it was shown to be profitable. The county of Lancashire as a whole has retained the lead in developing the industry which took its origin here and the fowl population of Lancashire is now about 50 per cent greater than its human population. Needless to say the industry has not escaped the drawbacks which it has encountered elsewhere in the diseases which have arisen from the forced development.

Blackpool, a name hardly less famous than Manchester, providing holiday recreation and entertainment as a playground for men, women, and children not only from Lancashire, but from distant parts of England and Scotland, provides this district of the Fylde with a market basis of its farming no less good than its soil basis.

III. East and South-east Lancashire

South of the Ribble begins the district where the industries other than agriculture have planted themselves so thickly, for the most part on the hilly eastern side. The little towns, the hardly broken lines of extended villages, and the big towns look as if some giant fellow had strode over the whole of this area broadcasting the seed of these things in a careless manner, some of the seeds germinating badly, some less badly, some well and others in splendid manner, so that all sizes of urban development from little villages to the great cities were the uneven but widespread crop, straggling here

and there, but likely in time to tiller and gather root. One may in places think in driving through parts of this area on a main road that a beautiful stretch of unspoiled country has been found, but a turn to left or right would reveal a deep cut watercourse, with an iron work or a paper mill in the bottom, its chimneys hidden below the banks and the habitations sticking to the steep sides of the valley.

The farming is distinctly influenced by the industrial character of the whole region more than by the physical features, for much of it lies at altitudes and on a type of soil where normally one would not expect to find an intensive output. The farms are thickly dotted over the hillsides. They are generally too small for full-time farmers. They were measured off at a time when men were part-time weavers or quarrymen and part-time farmers. The farms added to an income and did not provide it completely. Before the factories were built, men carried the yarn from the towns to their houses on the hills and returned it woven from the handlooms. When the factories grew, and with them the towns, they increased the number of their cows and became farmers and milk-retailers, instead of being farmers and weavers. And now a man with 11 or 15 acres, and getting the last penny which milk will yield, keeps one cow to the acre, feeds it generously enough on purchased food, and is classed as a farmer. Out of over 200,000 acres in this section very few thousands are ploughed. Climate and soil have contributed to this. The climate is cloudy and wet. The altitude is high. Crops grow, but often do not ripen. If they do, they are often spoiled by rain. The soil is acid on the Millstone Grit. It does little to keep itself in condition. On the whole, the suggestion made by circumstances to farmers is not to be farmers there; if they are, the suggestion is that they should not grow corn, but grass which does not require a great deal of sun.

The farms, villages, and towns are so intermingled among these hills that the market for milk is brought close to the

cows. Scores of milk floats enter each of the East Lancashire towns and villages. In their capacity as salesmen, farmers get rid of their milk and eggs to the best advantage. Competition is keen, especially in this period of unemployment and short time. The personal connection between farmer and customer counts for a great deal as it does with shopkeeper and customer.

From the agricultural point of view, the aspect of this countryside is not attractive. There is a comparative dullness in the best farmed grass as against well farmed arable land. The more vivid green of young corn, the clean, fresh, brown or dark soil prepared for roots and potatoes, the crops of good rotation grass put life into a farming landscape. It needs active cultivation of grass to make it approach this in variations of one colour of green, but when, as in the West Riding of Yorkshire and in East Lancashire, grass is allowed to look after itself, when the soil is short of lime and phosphate, when it is never opened and stimulated by cultivation and when a large proportion is ungrazeable, it makes an ugly picture. In the county as a whole, 72 per cent of the workable area is under permanent grass. In East Lancashire this percentage must be about 95.

The foothills in the west of this industrial region, forming a boundary with the next region of Merseyside and South-west Lancashire, has lent itself partly to the plough. Potatoes, oats, and wheat are cash crops, but cows have grown in number and with their increase permanent grass has encroached on the ploughed land. Nothing in the agriculture here arrests the attention, unless it be the occasional sections where it has deteriorated to a shocking extent. There is no consecutive high standard at all, and it might be said to be interrupted by mining and by different kinds of urban and industrial growth. Strip development of buildings, which has been a cause of complaint in the last fifteen years in many parts of the country, might have been a grievance here for generations. Houses, sometimes scattered, more often in

rows, occupy the frontages. The fields are hidden behind them. They have been cut and carved, and probably where this has taken place a sort of blight falls on the practice of agriculture. Nothing of estate management and nothing of "home farms" exercises a good influence on the farming in general. There are "farming families" attached to the district, but the market more than pride in the farms seems to hold them. There are men who have learned to farm well here, who say they are going to stay long enough to make some money, but that as soon as they have done so, they mean "to go to the country" to farm. By the country, they mean a southern or eastern county where the air and water, trees and crops are clean.

IV. Merseyside and South-west Lancashire

This region consists of the plain on the west side of Lancashire, south of the Ribble, and the valley of the Mersey above and below Manchester. To the east of Manchester, there is a stretch of moss which runs to near Ashton-under-Lyne. To the west of Manchester there is Chat Moss and other stretches of moss which run almost to Warrington. In an irregular area between St. Helens and Ormskirk and again on the west side of the road from Liverpool to Preston, much of the soil is moss, some of which lies below the level of the sea and is drained by pumping. Towards the coast this soil is mixed with sand and provides the basis for the most intensive farming in the county. Generally it is used to grow potatoes, but in addition to this it is used for all market garden crops. West of Manchester from the time of early rhubarb to the time of celery, the harvest goes on. Train-loads of lettuces leave wayside stations for southern markets.

A significant fact about considerable areas of this land is that their settlement for agriculture was comparatively recent. Moss land had to be drained and the expense and difficulty led to its postponement till the eighteenth century.

The work of reclamation has proceeded slowly since that time and there are still stretches of raw, unbroken moss between Manchester and Warrington which await the enterprise of pioneers. Some of the older generation of farmers, who reclaimed all or nearly all the land which they now farm by literal back-aching spade work and expenditure on lime or marl and the patient waiting for results, say that the younger generation will never undertake the labour they performed. A historian of railway engineering writing of the railway laid across Chat Moss by George Stephenson says, "Chat Moss is an immense peat bog of about twelve square miles in extent. In most places, it is so soft that it is incapable of supporting a man or a horse, and if an iron rod be placed perpendicularly on its surface, it sinks by its own weight to a depth of some thirty feet. Unlike the swamps of Cambridge and Lincolnshire, which consist principally of soft mud and silt, Chat Moss is a mass of soft vegetable pulp, the growth and decay of ages." The names of Roscoe and Wakefield are associated with the drainage and cultivation of much of Chat Moss long before George Stephenson drove his railway across it. John Chorley did the same for Rainford Moss.

The soils produced by reclamation at heavy cost are valuable, even if now the reclamation would not repay the labour. Holt, in his survey of the agriculture of the county in 1795 says, "Trafford Moss was formerly not worth one shilling per acre, but such of it as has been drained is now reckoned worth about £3 per acre per annum," and again, "Bootle Marsh, in the neighbourhood of Liverpool, was let before being improved at ten shillings per acre, and is now worth about £3." To-day, no soil produces such heavy crops. If abundance of manure is given in a warm and dry summer, the moisture in the soil makes it a forcing ground for every kind of crop. The average yield of potatoes on well-managed farms over a series of years is more than 10 tons per acre.

Where the moss is mixed with sand, or where sand predominates, early potatoes are grown, for sand if it does not keep the moisture catches the heat and with generous treatment of dung will force early development. It is in this area of soils so easily worked, so quick in action, that the percentage of ploughed land is so high. In an extent of over 50,000 acres there is 90 per cent under the plough. The farming is good. Rents are high, and men who do not get a big yield from their land go out. If visitors wish to see living of a high standard, they may drive from Southport to Bickerstaffe and from Bickerstaffe to Liverpool. The farms generally are not large. The farming has produced men with leisure and with ambition for education. They have been workers with their hands. They have been steady and thrifty and have come through bad times without serious losses. Probably more than in any other part of the county and certainly as much as in any part of the country, farmers here take a pride in their work and their cultivation is finished and tidy.

This region is the centre of potato growing. Over-concentration on this crop has brought pests which have made its cultivation risky. During the War, a large increased acreage of potatoes was planted to increase the food supply, and in the years immediately following they were planted to obtain the high prices. They came too often in the rotation. Farmers are now lengthening their rotation and reducing the area under potatoes. Other counties, however, have increased production, so that Lancashire has not benefited in price as a result of the reduced supply in the county. Lancashire grew 45,571 acres in 1913 and only 37,180 acres in 1934. Lincolnshire, on the other hand, had 75,890 acres in 1913 and 108,938 in 1934. Potatoes from the eastern counties and from Ireland have a higher reputation for quality than those of Lancashire, and it is only by a higher yield, if this is possible, that the growers on the dark soils can hope to equalize.

Alongside of potatoes, West Lancashire farmers grow cabbage and other green crops. There is a steady local market for these, but the great profit from these crops comes when drought hits the south and south-east of England and the London buyers come north. Sometimes also a spring frost which affects the London area misses the low-lying area of Lancashire near the sea. At these times, a few acres of cabbage will give financial returns greater than those from the rest of the farm.

Glass-house cultivation is extending in the whole area of West Lancashire. Climate, soil conditions, and markets favour it. The coast-line of the county from Morecambe Bay to Liverpool is occupied by crowded holiday resorts, and market gardeners working on the soil close behind them have not been slow in producing the lettuces, tomatoes, and flowers for which there is a demand. Their success as growers opens markets for them far beyond their own neighbourhood.

V. Cheshire

The Mersey separates Lancashire from Cheshire almost along its whole course. As is so common in the country as a whole, a change in the county coincides with some change in the agriculture. This is modified by the influence of the Manchester market, and does not hold in the eastern portions of both counties. Whether it is the West Riding of Yorkshire, East Lancashire, East Cheshire, or Derbyshire the slopes of the Pennines are devoted to one kind of farming, to the production of milk, where the land is less adapted for the use of the plough, and given up to grass and hay. For a few miles south of the Lancashire boundary the factory towns cling to the sides of the hills, or spread along the narrow valleys and more level ground close to them, and farmers find their markets for milk close to their cowsheds.

Along the south side of the Mersey to the west of Man-

chester and down through the centre of the county mixed farming is more common over a larger area than in Lancashire. Men who grow large areas of corn, of potatoes, early and late, keep large herds of cows. There are many districts where the soil is too light, more probably than where it is too heavy, and the character of a leading dairying county which Cheshire has held for centuries is not due to any peculiar quality of soil which renders it unsuitable for other purposes. Clay and sand and mixtures of them are distributed over the greater part of the county. In the Nantwich district, in Broxton, and along the Dee Valley south of Chester, and in the Wirral, there is a great deal of clay. This is not the place to discuss the reasons for developments of farming in different directions, to inquire why Cheshire farmers have reduced their acreage under potatoes, while English farmers generally have increased theirs. In 1900 there were 25,514 acres under potatoes in Cheshire and 396,936 in England; in 1934 there were 20,496 in Cheshire, a decrease of 19·67 per cent and 487,558 in England, an increase of 18·58 per cent. The aggressive development of potato growing in the rest of the country was accompanied by, and probably was one cause of, its shrinkage in Cheshire. No doubt there have been financial reasons of which the farmers have become sensible, and it is reasonable to think that their inclination would be to expand in dairying rather than in crop growing, and that they would use the plough to raise food for cows rather than for sale. Since 1900 they have increased the number of dairy cattle from 107,406 to 139,999, or by 30·34 per cent.

Traditionally a dairy county, the most significant change which has taken place in Cheshire since 1925 is in the destination of the milk produced. There has been an accelerated decline in the amount made into cheese on the farms, and a corresponding increase in the amount sent to market in liquid form. This change will probably be permanent and far-reaching. When cheese was made at home

the operation called for the labour of the women members of the family. The cheesemaking farms were not on the hills. They were mostly in the best parts of the county. They were comparatively large, and the herds and quantities of milk were large. Cheesemaking was heavy and exacting work. It required a great deal of skill, watchfulness, and care. The responsibility for avoiding any accidental injury to the whole yield from a milking was serious, and every day till midday the women were engaged in this task. This direct and active engagement of women in the operation on the farms from which most of the revenue came seems to have had the most significant influence on the results. Cheshire, like all other counties, has been through agricultural depressions, when the prices of its produce have been very low. But it is doubtful if the body of farmers in any other county have stood the shocks and held their ground so firmly. In looking for the explanations of this steadiness, there is nothing which suggests itself so forcibly as this feature of farm economy. By standards which might be considered not unreasonably high this task imposed on women, with the discipline involved in it, is too stern. But there it has played its part for generations. It may be inferred, and probably affirmed with truth and justice, that where women are brave enough and strong enough to perform an essential and critical part of the productive work with the interest of full participants in the business the structure of the organization is rendered strong enough to stand any strain. The influence of this participation must have been decisive, and the history of agriculture here differs from its history in most other parts of the country. Not only habits which are thrifty, but activities which are fruitful are the contribution of Cheshire farmers' wives and daughters to agriculture. In farmyards to-day there may be seen handsome and expensive cheese vats devoted to inferior purposes. It is a sign of a revolution. The Milk Board will doubtless make good Cheshire cheese in its factories, but this cheese will have lost the individual

touch which was given to so much of it by skilful handling in the farmhouse, and which made it famous in the hotels and clubs of London. Cheshire farmers have moved in large numbers into North Shropshire, and in considerable numbers into Wales, and have taken their system of farming with them. A few Welsh farmers have crossed the boundary to redress the balance.

Cheesemaking has been complemented by pig-feeding. The whey from the cheese has formed the basis of the feed, and Cheshire bacon and ham have been appreciated hardly less than Cheshire cheese. When employment and wages are high in Lancashire, miners and other men who work hard do not grudge good prices for the food which sustains them best.

Like Lancashire, Cheshire is a county of small holdings. Out of a total of 10,493 holdings 7,181 are not over 50 acres, and there are only fifty-six above 300 acres. The proximity to Lancashire markets has served as a foundation for the success of small farmers. The change from cheesemaking to the sale of liquid milk by hundreds of farmers will make a difference. It has added to the embarrassment of the Milk Marketing Board. Ten years ago the district south of Chester, nearly all under grass and with its heavy stock of cows, employed a large number of men per 100 acres. Since that time there has been a growing resort to the milking machine, a movement which will slightly reduce the labour employed. This adoption of the machine is much more general among the large herds in the plain of Cheshire than it is among the smaller herds on the hills of either county. And apart from milking, the care of cows will always call for a comparatively large staff of men. So long as the first are maintained the numbers of the second will not be seriously diminished.

The agriculture of this part of England represented by these two counties has not changed materially in the course of centuries and it is not likely to change. The influences of soils, markets, and climate have been playing with con-

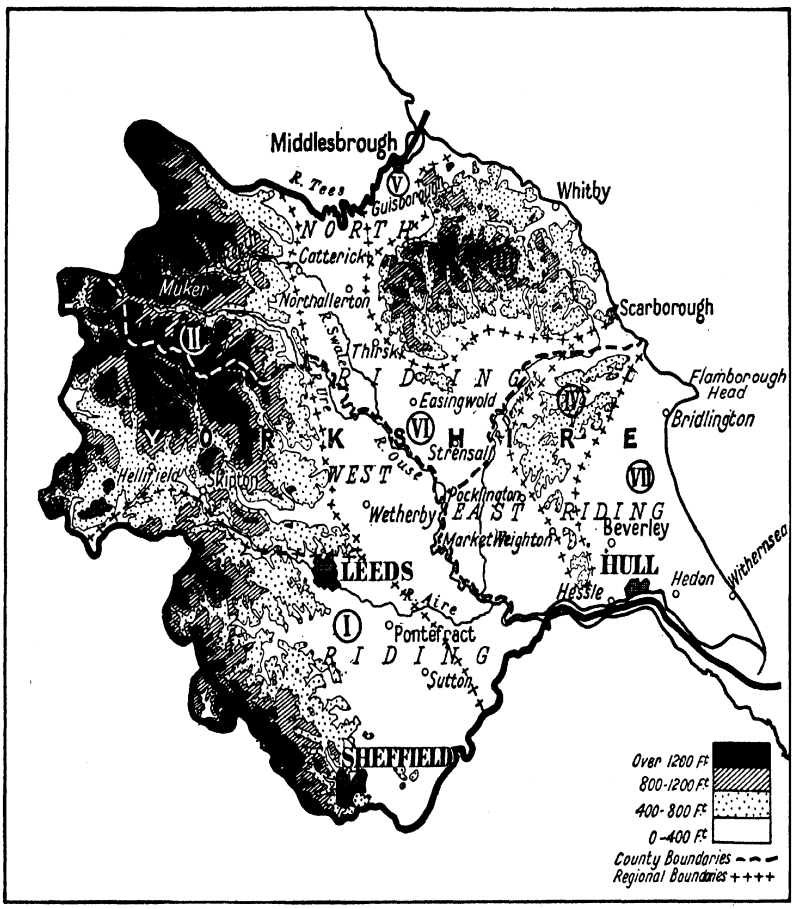
sistency in shaping the system, and unless some unexpected experience of the markets occurs the soft green fields of Cheshire and of the Fylde of Lancashire will prove themselves supremely suitable for the production of milk and its derivatives. With a slight difference the hills all along their eastern borders serve the same purpose, and if they are required to produce more the call on them will most likely be for more live stock, more sheep, more poultry, and even more cows rather than for corn. If the plough is wanted it may be for grass, for potatoes, and for green vegetables.

The most interesting aspect of agriculture from the economists' point of view is the intelligence and spirit shown by the farmers, landlords, and workers in its development. From what has been said it will be evident that there is no lack of enterprise. Lancashire has broken ground with poultry, and leads all other counties by a long distance in the number of fowls kept. A movement which is as remarkable as any is the change in attitude towards research and education which has come over the farmers. The larger resources placed at the disposal of the county authorities have enabled them to extend scientific knowledge more widely. The farm institutes with the dairy schools and demonstration farms attached to them enable the staffs to educate a percentage of the young men and women from the farms. Lectures and discussions in numerous centres bring before a much larger circle of experienced men the latest discoveries of research on problems with which they are actually confronted.

Chapter IV

The Ridings of Yorkshire

By A. G. RUSTON
University of Leeds



MAP OF YORKSHIRE

CHAPTER IV

The Ridings of Yorkshire

THIS province consists solely of Yorkshire, which for administrative purposes is divided into the three Ridings, North, West, and East. The land area of the county is 3,876,000 acres, of which 2,519,000 acres are under crops and grass and 722,000 acres are rough pasture in agricultural use, leaving 635,000 acres of land in non-agricultural use. The county is the largest in England and Wales, and has about one-ninth of the agricultural land of the country within its borders.

The large proportion of the county is entirely rural in character, but in the south-west corner lies the densely populated area famous for its woollen, coal, iron and steel industries. The total population is roughly 4½ millions, of which 75 per cent are to be found in the industrial West Riding, though this forms only 43 per cent of the total area of the county. The industrial area includes the cities of Sheffield and Leeds, which together have almost a million inhabitants, and another million is housed in boroughs of over 20,000 inhabitants in the industrial part of the West Riding. The density of population of the county as a whole is 119 persons per 100 acres, but in the West Riding, which includes the industrial belt, the density is 206 persons per 100 acres.

Outside this famous industrial belt the only other densely packed centres of population are the iron and steel town of Middlesbrough (138,489) at the mouth of the Tees in the North Riding, the large seaport of Hull (313,366) on the Humber in the East Riding, and the holiday resorts round Scarborough and Bridlington on the east coast.

Although the county taken as a whole is thickly popu-

lated and provides a large consuming public, it cannot be said that the whole of the agriculture of the county finds a market at its very doors. Many areas are distant from the industrial belt and were until recently comparatively inaccessible.

The physical features of the county also vary considerably. To the west are the Pennines rising in many places to over 2,000 feet. The chain of these hills is broken by a narrow belt of relatively low altitude through which the Aire has made its way and makers of roads, canals, and railways have found easy means of communication. North of this Aire Gap the Pennine Heights consist mostly of an elevated plateau of Carboniferous Limestone on which stand the Yoredale rocks, capped with Millstone Grit. South of the Aire Gap, the rocks consist mainly of Millstone Grit and Coal Measures. The division is even more pronounced economically since in this hilly country south of the Aire Gap lies the great Yorkshire coalfield. The Aire for the most part forms the northern boundary of the industrial belt.

In the east of the county lie two distinct upland masses. To the north, the North-east Uplands of the Cleveland and Hambledon Hills consist of Jurassic limestone, sandstone, shale and clay, while south of these and separated from them by the upper valley of the Derwent, lie the Chalk Wolds.

Between the hilly sections of the west and of the east, lies the great Plain of York, stretching from north to south in the middle of the county, and drained by the Ouse and its many tributaries. Two other lowland areas require special mention. To the north between the Tees and the Cleveland Hills lies the Cleveland Lowland, and to the south-east between the Wolds and the North Sea and Humber estuary lies the plain of Holderness.

The rainfall in the county varies in different districts from 20 to 80 inches, with the highest rainfall on the upper

slopes of the Pennines, and the lowest in the low-lying plain of Holderness. To the west of a line following fairly closely the Great North Road, rainfall varies from 30 to 60 inches in the typical grassland country, and, to the east of that line, between 20–30 inches in the typical arable country.

Geologically, practically every formation, certainly from the Carboniferous to the most recent outcrops, occur in the county, and consequently almost every type of farming is to be met with within the "County of Broad Acres." In addition, a very high proportion of the national production of certain special crops, like chicory, liquorice, rhubarb, flax, carrots, and peas is produced in the county.

For the whole county the distribution of size of farms is not markedly dissimilar from the rest of the country, but over a large proportion of the area farms of a larger size predominate. In England and Wales, 20 per cent of the holdings are over 100 acres. The corresponding figure for the East Riding of Yorkshire is 35 per cent and that for the North Riding 29 per cent. In the West Riding, however, only 15 per cent of the farms are over 100 acres; while more than 70 per cent of its total agricultural holdings do not exceed 50 acres in extent.

In spite of the relative intensity of the farming method, and the many intensive crops grown, the labour employed is by no means high. The employment of regular male labour over 21 years of age is 13 per 1,000 acres in the East and West Ridings and 10 per 1,000 acres in the North Riding, compared with 17 per 1,000 acres over England and Wales. The regular employment of youths and women and casual employment in the county is about the average for the country.

The physical and economic features outlined earlier enable the farming of the county to be roughly subdivided into seven regions for the purpose of more detailed description. These divisions are as follows:

I. Southern Pennines, consisting mainly of the industrial belt
II. Central Pennines and North-west Uplands
III. North-east Uplands
IV. The Yorkshire Wolds
V. The Cleveland Lowland
VI. The Plain of York
VII. The Holderness

I. Southern Pennines or South-west Uplands

The Southern Pennines, flanked on the east by the Yorkshire coalfields and on the west by those of Lancashire, consist mainly of Millstone Grit. Scores of industrial towns occupy the valleys and thin out towards the hills in this region. The spaces left for farming possess poor thin soil not naturally adapted to arable cultivation, and most of it is under grass, moorland, or rough grazing. It is capable of improvement under good management, but rapidly goes back if not carefully watched.

These areas, which but for the proximity of industrial markets would naturally run to sheep walk, have been made capable of giving agricultural outputs of twenty, thirty, and even forty pounds per acre, by the energy and initiative of small farmers. The land is mainly under grass, and dairying and poultry keeping are the main enterprises, supplemented in some parts by the production of specialized crops from the small amount of arable in the district.

The market being "at the door" the main object of the dairying is the production of milk and much of it is retailed by the producers themselves. Of the 7,030 West Riding milk producers registered under the Milk Marketing Board, no less than 4,045 or 57 per cent are producer-retailers. The concentration of dairy cows in this area is greater than anywhere else in the county, and, as one might expect, very little breeding and still less rearing is carried on. Most of the calves are sold directly off the cow, and the herds are maintained almost entirely by purchase.

Also largely owing to the fact that the industrial population in the vicinity affords excellent marketing facilities for the disposal of their eggs, we find that this region has also the highest concentration of poultry in the county. Poultry occur in large numbers everywhere, even on the exposed heights and bleak hillsides of the Southern Pennines, on land on which even these men have found it impossible to carry cows.

On the small amount of arable land in the region specialized crops have been developed, notably rhubarb in the Leeds area and liquorice in the district around Pontefract. Rhubarb growing is carried on mainly within a rectangle 12 miles long and 6 miles wide on the acid coal measure soils at an altitude of less than 600 feet, on possibly some of the worst agricultural land in the country, and where the smoke pollution is at its worst. Rhubarb, however, is an acid loving plant, and its broad spreading leaves prevent the stomata underneath being choked by soot. The plantiful supply of cheap fuel from the neighbouring coal pits makes forcing easy and inexpensive.

The sheep found in this region are almost entirely Lonks and Gritstones, and numerically and economically are now relatively unimportant. Within the last twenty years or so their number has been declining for various reasons, including the tendency of the smoke and acid fumes from the industrial towns to intensify the acidity of the soil, and the opportunities through more convenient access to the industrial towns of going in for more intensive products like milk and poultry.

II. Central Pennines and North-west Uplands

This region is a land of wild fells and bleak uplands, divided by walls of stone into vast sheep pastures. The hillsides are terraced with alternations of precipice, grassy slope or scree, and flat platforms often curiously eroded.

A quarter of a century ago this area was tenanted by store cattle of the Shorthorn breed and by Scotch Blackface sheep. To-day the Swaledale sheep has almost entirely replaced the Blackface, while improving transport facilities are tempting many of the men even in the more isolated areas to turn their attention to the production of liquid milk. Breeding and the production of store sheep stock are, however, the general enterprises of the region.

On the hill sheep farms two main systems of management are adopted dependent upon the amount of good quality pasture available. Among the wilder fells where there is little inland pasture and meadow, and where the ewes must find subsistence throughout almost the whole year on the open moors, pure Swaledales are kept for the production of Swaledale lambs. Some of the ram lambs may be sold for breeding, but most go in store condition at the autumn sales mainly for feeding on grass. The gimmers are retained for breeding and after dropping about three crops of lambs are sold for further breeding at lower altitudes where less rigorous conditions prevail.

In districts in which good inland pasture is available, in addition to the moorland grazing, a Swaledale breeding flock is kept and crossed with a Wensleydale ram. The progeny, known locally as the "Mashams," provide much of the material for winter feeding on the arable farms in the lowlands. Ewes which turn again after the Wensleydale ram, are mated with a Swaledale ram, and the gimmer lambs thus dropped are raised to help maintain the Swaledale ewe flock. At lower altitudes the breeding of Masham lambs may go hand in hand with the sale of liquid milk if transport facilities are available, or with the summering of in-calf cows.

As far as cattle are concerned in this district, every farmer breeds. All the heifer calves are reared and most of the bull calves sold off their dams, the main objective being to turn out good young dairy cows, most of which find their way

into the adjacent liquid milk producing districts of Lancashire and the industrial area of the West Riding. The best type of dairy cow in the county and possibly in the country is to be found in the Dales of this region, notably in Swaledale and Wensleydale, which go in largely for butter and cheese.

In the Craven area, just to the north of Skipton and the Aire Gap, an increasing number of the farmers are now making a practice of buying from the town dairies their dry and lying-off cows, giving them a rest among the hills, and selling them out again after calving. One such man turns over each year in this way 295 head, keeping them quite cheaply, with practically no cake, for about four months before selling again to intensive dairy farmers.

As a good deal of this area came within the range of old Border raids, we find many of the farmsteads have evidently been built with an eye to the protection of their stock. Walburn Hall forms an excellent example of the old "fortified manor." In the upper reaches of Swaledale, particularly around Reeth and Muker and as far south as Hellifield, on commanding positions, are still to be found both farms and churches furnished with the old Peel Towers —watch towers and towers of defence.

III. North-east Uplands of the Cleveland and North Yorkshire Moors

In the north-east of the county rise the Cleveland and Hambledon Hills forming swelling heather-clad moors cut into by steep and abrupt valleys of great beauty, and covered for miles at a stretch at a height of 1,000 feet with boulder clay brought by the Scandinavian ice sheet.

With little or no industrial development, except in the Cleveland area, there has been no special tendency to develop along the lines of liquid milk production or poultry keeping; the concentration being, as in the uplands of the

north-west, on sheep and the rearing of young stock. The sheep are mainly Scotch Blackface crossed, as we find in Yorkshire almost invariably to the east of the Pennines, with a Leicester ram. In this area, as one might expect, all heifer and bull calves are reared, and sold off as store stock to be finished either in the fold yards in the arable areas or on the good grass in the Wetherby and Holderness districts further south.

Possibly owing to the fact that a large proportion of the moors has been subject to glacial action, one finds in this upland area a larger proportion of the land under the plough than in the western uplands at a similar altitude; and it is by no means uncommon to find a moor farm in this area growing roots to feed hill sheep, and corn mainly for consumption on the farm.

While sheep and store cattle are the mainstays of the farm, pigs are more important in this area than in the uplands of the west. A dales-bred pig having its origin most probably in Bilsdale—the well-known "blue and white," in contour not unlike the Landrace in Denmark—is to be found not only on the eastern uplands, but in every part of the North Riding.

Much of the land on and near the Whitby Moors is readily capable of reclamation; but reclamation at a cost which is only likely to be incurred when the land is farmed by an occupying owner. Motoring between Whitby and Scarborough, one sees left and right of the road quite a number of holdings which have been reclaimed in this way. Two excellent examples are to be found lying just off the main Whitby–Guisborough Road, the one started in 1921 and the other in 1926. Any one seeing these holdings at the time of their purchase and again to-day would scarcely recognize them as the same. Much of the moorland is disappearing; in place of heather and bracken, grass and clover are beginning to appear; the stock carrying capacity of the holdings is rapidly rising; serviceable buildings have

been cheaply erected; the stock are looking well and beginning to do well, and we even find grass-fed fat bullocks now being finished on land which some years ago was nothing but a mass of heather and whins; while the growing fertility of the small amount of land put under the plough is most striking. In the process of land reclamation there has been no royal road, the methods adopted being varied and many-sided. In the early stages sheep were folded on the rough grass, and fed with hay in the folds; thus ensuring close grazing, consolidation and manuring of the land while at the same time it was being seeded with indigenous grasses.

All the land has been slagged, most of it has been limed, surplus water has been got rid of; all the dykes and water courses have been cleaned out and kept clean; the really bad places have been tile-drained; where possible the cheaper method of mole-draining has been adopted; the water has been directed into suitable and useful channels, a ram has been erected and convenient watering-places for stock provided. Some of the worst grass has been ploughed out and reseeded. Financial improvement, though sure, has been slow. Land of this description after improvement is unfortunately of a type adapted only for products which have an unsheltered market and low selling prices have made it difficult for these land reclamation projects to become really sound economic propositions. Possibly an improvement in beef prices would help these men more than anything else, for the reclaimed land produces ideal store-stock.

IV. The Yorkshire Wolds

The uplands of the south-eastern quadrant of the county consist of the Chalk Wolds which sweep in a broad belt from Flamborough Head to Hessle and Ferriby.

Originally, the chalk formation spread over the whole

of the Riding east of the Wolds, but the "Pennine Uplift" gave to the chalk from Garrowby to the Humber a dip to the east, and the Howgill-Cleveland fold had given to the chalk from Garrowby to Flamborough a general dip to the south. In consequence of this south-east dip, the chalk forms a bold escarpment on its northern and western sides, but gradually sinks to the east below the glacial clays and sands of the Holderness Plain, being covered by them to an approximate depth of 30 feet at Beverley, 55 feet at Sutton, 120 feet at Hedon, and 150 feet at Withernsea.

About a century and a half ago, most of the Wolds were probably uncultivated sheep walks and rough grazing, but with the spread of turnips and the four-course rotation, this land became arable land, growing corn for sale and turnips to be folded to sheep in the winter and seeds for the sheep in summer. Barley was the most important grain crop, and the "golden hoof" of the sheep was reckoned to be the vital factor in maintaining fertility of the otherwise impoverished soil. This system is still the chief type of farming to be found on the Wolds. During the War, the adaptation of this area to war requirements consisted of taking an extra corn crop in the rotation and reducing the root crop and seeds acreage, and consequently the flocks of sheep carried. The land was not recouped for the heavy toll taken by the corn crops and received a check from which it has not yet recovered.

Since the War, conditions have not favoured recovery. Owing to the decline at home and abroad in demand for beer, the market for malting barley has been seriously reduced, and although first-class malting samples are able to claim a reasonable, if not necessarily a high, price, an ever increasing proportion of the barley crop must find its outlet for stock-feeding. The other limb of the Wold farmer's business has also been subject to adverse changes. The typical Wold sheep was of the big, heavy woolled type, weighing anything from 80 to 120 lb. deadweight when

mature, with plenty of fat. To-day the demand for heavy-weight mutton has declined. The smaller grass-fed sheep is more in demand and, in addition, the expensive system of folding on roots and seeds finds difficulty in competing with the sheep fed on a grass range.

That in general is the situation which has caused a more marked and more baffling state of depression in the Wolds than elsewhere in farming, since the system is based almost entirely on markets for products which appear to be suffering a more or less permanent eclipse.

In meeting the situation by reorganization of the system of farming, the Wold farmer is severely handicapped. The feeding of pigs provides an alternative outlet for the barley crop, but is restricted by difficulties of obtaining the necessary water supply. The area is one of low rainfall and few springs, and the depth of the chalk makes it difficult to find water except by deep boring possibly down to 300 or even 400 feet. Distance from markets and poor road and rail communication make milk production precarious except in specially favoured positions, while the small poultry population, until the opening of the egg collecting station at Beverley might, to a large extent, be attributed to the same main causes. The chalky soil is too thin for good grass, with not sufficient depth to grow carrots, sugar beet, or even potatoes economically. Much of the land would be suitable for green peas, but lack of casual labour would make the crop extremely risky and speculative. Good wheat is being grown, and it speaks well for the technical skill of the Wold farmers that such excellent crops are to be found at such an altitude, but the observations of Dr. Best, which are largely in accordance with our own, suggest that wheat is only being grown successfully on that part of the East Riding which has been subject to glacial action.

Unlike the West Riding farmers and the North Riding farmers near the Cleveland mining and shipbuilding area, the Wold farmer does not have an industrial market at his

door. The nearest markets are Hull and the seasonal market of the seaside holiday resorts. There is also for the Wold farmer a present-day lack of good railway communication, good roads, and waterways.

The farms are as a rule large and enclosed within a ring fence and admirably adapted to mechanized farming, though, as yet, tractors play an exceedingly small part in the working of the land. It will be on land of the Wold type that mechanized farming will prove most useful. One example of the kind in operation illustrates the changes effected, on a holding of 747 acres, 647 acres of which are under the plough. Formerly this farm, on typical Wold lines, employed 18 men and 39 horses. Apart from horses, the only stock were bullocks expensively fed and Leicester sheep folded equally expensively on roots. To-day the holding is run with five men and the labour bill is 18s. 4d. instead of 50s. per acre. Tractors and combine-harvesters have replaced horses and binders. Wheat, barley, and bare fallow constitutes the rotation, and 66 per cent is under sale crops instead of 28 per cent. The same number of breeding ewes is kept but the Leicester has given place to grass sheep, like the Masham or Baumshire, and the yearly outlay on purchased foods has been reduced from £2,444 to £200, and on fertilisers from £450 to £330. The land is cleaner and more time is available for attention to hedges and ditches. The output per acre is low, but a farm formerly losing money is now being run at a profit.

V. The Cleveland Lowland

Of the lowland areas between and about the upland masses, we meet in the extreme north the Cleveland Lowland, where, particularly in the neighbourhood of Middlesbrough, is to be found some of the best land, and possibly some of the best and most progressive farmers in the county. Farmers in this district have from time to time shown

progressive spirit by being among the earliest to try out milk recording, the intensive Hohenheim system of grass land treatment, the development of open-air pig keeping on both grass and arable, and the eradication of tuberculosis from dairy herds.

Roughly speaking, 50 per cent of the land is under the plough, and both pasture and arable land are well managed. In texture most of the soil might be described as well-bodied loam, capable of growing a wide variety of crops, including good wheat and excellent samples of malting barley.

As one would expect from the position and soil type of the region, the system of mixed husbandry prevails. The main farm enterprise is usually milk production, but the methods of herd management differ very considerably from those followed in the regions already mentioned. The herds are largely self-contained, the cows being as a rule kept for about three, and occasionally four, lactations. More home-grown foods and less purchased concentrates are fed in the ration, and there is heavy feeding of roots.

The grass land is heavily stocked with dairy cows and heifers, but no feeding bullocks. The sheep are mainly north country ewes crossed with Suffolk or Down breeds, and some of the earliest lambs in the whole county go to the butcher from this area. A good type of native breed of sow is kept, which when crossed with a large white boar gives high-grade pigs for the bacon factory.

But although the output of stock products is high, the region is one in which stock and crops are possibly more ideally blended than in any other part of the county. The soil when managed with judgment is productive, the rainfall fairly light, averaging 24 inches, the climate mild, and the position well sheltered, with the result that crops are remarkably early, considering the latitude. Wheat, malting barley, potatoes, cabbages, and other market-gardening crops are all grown for sale. The land is too heavy for

carrots, and although of a suitable texture for sugar beet, little is grown so far north owing to the heavy transport costs to the factory.

VI. The Plain of York

The Great Plain of York may agriculturally be divided into three main areas.

(*a*) *Heavy Boulder Clays of Northallerton and District*

The arable land of this heavy Boulder Clay is typical wheat and the grass typical bullock-feeding land. Wheat is practically the only sale crop grown, as the land is too heavy and wet for potatoes, and it is difficult if not impossible to get a really good sample of malting barley. The arable land is worked on a four-course rotation with about half of the cleaning crop (roots) for consumption on the holding, and half either bare or bastard fallow. Live stock is the mainstay of the farming.

With the drop in the price of beef and increasing transport facilities, many of the farms in this area have lately switched over to liquid milk production, though few of the holdings were well equipped with the necessary buildings. Possibly in few areas is the need for a better and more rational system of milk distribution more evident than here, as some of the milk produced finds its way to Leeds and the industrial area of the West Riding, some to the mining and industrial towns of the Durham and Cleveland area, and a great deal is sent north to Appleby whence, after processing, it is again sent on its way south to help cater for the London market.

The district is to a large extent cold and backward. The sheep kept are mainly grass-fed Mashams, which are wintered on grass but very rarely finished here. Very few pigs are kept, in spite of the proximity of the bacon factory at

the Vale of Mowbray, and the heavy, damp clay is not ideal for poultry.

(b) The Light Land of Thirsk, Easingwold, and Pocklington

Passing south, through the boulder clays of the Northallerton district, the light sandy soils of Thirsk are reached, on which excellent crops of potatoes, carrots, beet, and peas-picked-green are grown, as well as really good cereal crops.

Here, again, is an arable area like that of the Wolds, but a district in which the farming community is not so badly hit. On this light land in the Thirsk area, much of it glacial drift, some the Keuper Marl, the main energies of the farm are concentrated on growing crops for sale. The land is of a type naturally adapted to the growing not only of cereal crops, but also of those already mentioned, which may be looked upon as safeguarded or sheltered to a greater or less extent, either naturally by their bulk or perishability, or artificially by Government subsidy.

The light land in this area makes excellent pig and poultry runs; and as one might expect this is outstandingly the one district in Yorkshire in which during the recent period of agricultural depression the largest modifications have been made in the method of stocking and cropping the holdings.

To quote one example, an arable farm of 480 acres, 24 per cent only under grass, has increased the value of its output from £2,822 in 1921–22 to £5,493 in 1928–29 and to £7,742 in 1934–35, in spite of the fact that during that period the level of agricultural prices in general fell from 163 per cent above pre-war to 14 per cent above pre-war. Between 1921–22 and 1934–35, the value of stock products on this farm was increased nearly 2½ times, while the value of crop products was increased nearly 3 times. This result has been brought about by supplementing feeding cattle and folded sheep with 30 breeding sows and 1,000 head

of poultry, and by replacing some of the low-priced cereal crops and the non-sale root crops by intensive sale crops like potatoes, carrots, sugar beet, green peas, red beet, and parsnips, which together brought in an income of nearly £5,000 in 1934–35. Last year the land under the plough consisted of 31·2 per cent low-priced cereals, 17·2 per cent seeds, and 51·6 per cent cleaning crops. With more than half of the arable land under cleaning crops one would naturally expect high yields. The cleaning crops, again, are interesting, for they show that of this 51·6 per cent, 88 per cent was under potatoes, sugar beet, carrots, peas, red beet, and parsnips, all comparatively high-priced sale crops. This man, though outstanding, is by no means an exception.

This light land of the Plain of York is very widely spread, though its texture varies considerably. At the one end we find types like that at Strensall so poor and hungry that it is still left uncultivated as it was in the old days of the Forest of Galtres; passing through that to the blow-away sands of Sutton, where the three-course rotation of potatoes, rye, and oats is still largely practised, as the high acidity of the soil makes it difficult to get a good take of seeds, to grow barley which is not patchy, or roots which do not "finger and toe." The wide variations in the texture of this drift soil are outstanding. In many cases, particularly in the neighbourhood of Easingwold, Pocklington, and Market Weighton, we find the light sand overlying the marl, and on many of the farms in this area marl pits practically in every field testify to the method adopted to make the soil productive in the old days when labour was cheap and cereal prices high. On two such farms to-day the process is still going on, and their financial results prove it to be still a paying proposition. Here the light drift soil overlies a chalky boulder clay, laid down by glaciers coming down from the Wolds, and contains roughly 12 per cent of calcium carbonate. Dressings of from 80 to 90 tons per acre of the

marl are being given at a cost of roughly £5 10s. per acre, and the land responds to the treatment in a manner almost miraculous.

Very little milk is produced in this area, though on many of the holdings store stock are reared and butter made; on many of the farms there is scarcely sufficient grass to summer the working horses and all the cattle must be stall or yard fed. Shortage of grass is being made good by the extended use of long leys, and the heavy expense of the production of the necessary farmyard manure by means of expensively winter fed bullocks, is being reduced by the greater use of the pig. It is in this area that the largest developments have been made in the growing of sugar beet, which has not only provided the growers with an additional sales crop, but added to the general fertility of the holding and at the same time provided by means of the tops a much needed winter food for the cattle and sheep.

(*c*) *Natural and Artificial Warp*

Farther west where the rivers are tidal, the waters of the Ouse and Derwent have either naturally left a deposit of rich alluvial silt or been made to produce an artificial warp which has not only raised the soil level well above the flood area but left on it a deposit of the highest fertility. To-day the operation can still be seen, and owners are finding that it still pays to expend as much as £15 an acre on the improvement of land in this way.

Yorkshire possesses an area with ideal conditions for warping, where the waters of the Ouse, flowing through the fertile plain of York, and those of the Trent, flowing through the rich Red Keuper marl, meet the incoming tide of the Humber laden with the detritus of chalk from the east coast of Yorkshire. Warp farms rented at from 40s. to 50s. an acre are essentially crop farms, with stock looked upon mainly as a medium for the conversion of straw into farmyard manure; the pig to consume the sur-

plus potatoes and the feeding bullock to tread the straw, being as a rule the most important.

After warping, the land is left so fertile that it is possible and even customary to grow as many as six or eight successive field crops without the application of any artificial or farmyard manure, and land which was warped a hundred years ago is still maintaining much of the fertility it then possessed. No warp land has a fixed rotation, cleaning crops forming as much as 40, 50 or even 60 per cent of the total arable acreage. The cereal crops are mainly wheat or oats (barley will usually be found to lay). The sale crops apart from wheat consist of potatoes, sugar beet (frequently sent down to the factory by barge), mustard, peas for picking green, flax, celery, savoys, cabbage, and other market crops. The monetary value of the output should be as much as £16 or £18 an acre.

VII. The Holderness

East of the Wolds, and stretching practically to the sea, lies a vast expanse of boulder clay which overlies the chalk. Like the boulder clay in the Northallerton area it is wheat and bullock-feeding land, but it has not to any large extent switched over to milk production. Its stock consists chiefly of three-year-old bullocks as it is felt that the grass is too strong for young cattle, and Baumshire ewes which are run mainly as a flying flock, lambs and ewes being got off fat on seeds in preparation for the wheat crop. There are very few poultry in the area, possibly because it is so low lying and damp, while the pigs after being fed largely on seconds wheat go off as large and somewhat fat pork.

The main energies of the holdings are and always have been concentrated on the production of wheat which is grown half after bare fallow and half after seeds. The seeds are always 100 per cent clover, with no rye grass as there

is a very strong feeling that rye grass is detrimental to the wheat crop which would follow. Great importance is still attached to bare fallow in this area.

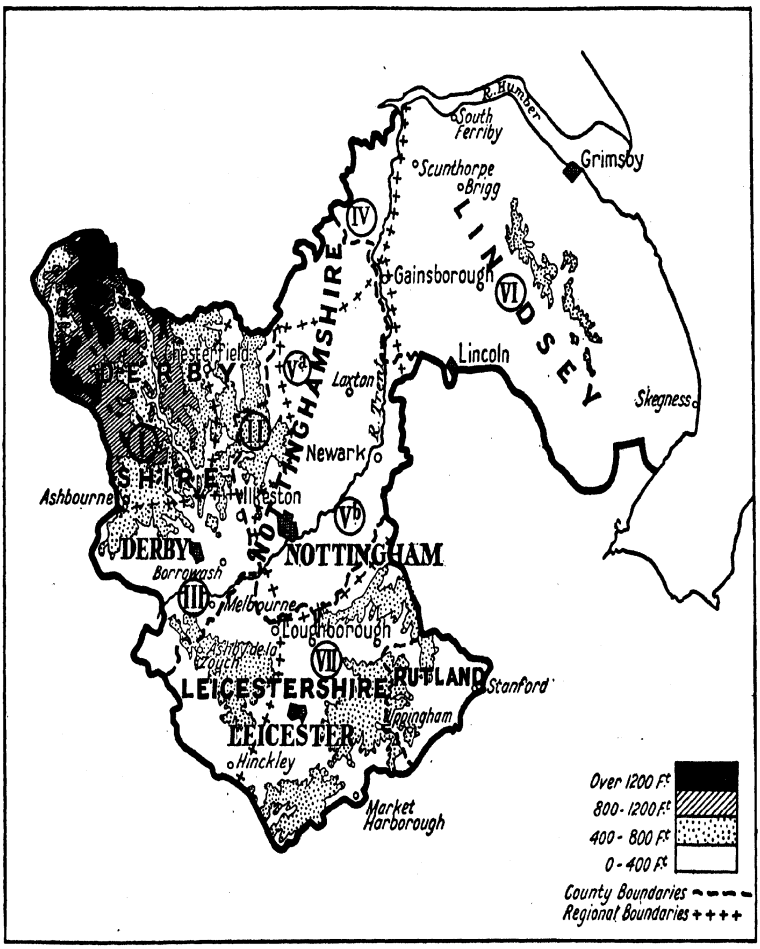
This area has felt the depression almost as much as the Wolds, and has appreciated possibly more than any other the working of the Wheat Act.

Chapter V

The East Midland Counties

THE COUNTIES OF
DERBY, NOTTINGHAM, RUTLAND, LEICESTER,
AND THE LINDSEY DIVISION OF LINCOLN

By ALLAN KNOX
Midland Agricultural College, Sutton Bonington, Loughborough



MAP OF EAST MIDLAND COUNTIES

CHAPTER V

The East Midland Counties[1]

THE East Midlands Province covers the counties of Derby, Nottingham, Leicester, and Rutland, and that northerly part of Lincolnshire known as the Lindsey division. It runs eastwards therefore from the borders of the province of Lancashire and Cheshire and the province of the West Midlands to the North Sea. In the north it adjoins the Yorkshire Province, and in the south and south-east those of the eastern counties and of the southern counties.

The total land area is 2,771,000 acres, of which 2,234,000 acres are under crops and grass, and 105,000 acres are in rough grazings (mostly in Derbyshire), leaving 432,000 acres in non-agricultural use.

The total population of the province is just under 2½ millions, an average of rather less than one person per acre, but the distribution of population throughout the province varies from almost unpopulated areas in the Derbyshire hills and very sparse areas in Lincolnshire to the dense city populations of Nottingham, Derby, and Leicester.

The province has a thickly populated belt about 10–15 miles wide running due north and south from the Yorkshire border round Sheffield to Derby and Nottingham, and continuing less densely to Leicester, practically the whole distance from the northern to the southern boundary of the province. Most of this area has a density of over 2½ persons per acre. The area in and around the cities of Nottingham (269,000) and Derby (142,000) and the coalfields is the most densely populated of the whole province. Towards the

[1] The author wishes to acknowledge his indebtedness for much of the information in this essay to reports prepared from time to time by his colleagues, S. M. Makings and R. O. Wood.

north of the industrial belt, near the Yorkshire border, is Chesterfield (64,000), and in the south near the border of Northamptonshire is the city of Leicester (239,000). In addition to having this large industrial population within its boundaries, this westerly belt of the province comes in the north within a few miles of Sheffield, and on the north-west within a few miles of Manchester and Lancashire's industrial millions. In the middle-west the Potteries are not more than 10–15 miles from the Derbyshire border, and in the south-west the Black Country with Birmingham as its centre is only about 10 miles distant from the Leicester borders.

By contrast the 50–60 miles from the city of Nottingham to the North Sea is thinly populated. Small market towns and rural villages are scattered over the area, but the only towns of any size are Lincoln (66,246), Grimsby (92,463), the Scunthorpe district (33,761), all in the Lindsey division of Lincolnshire.

The main physical features of the province are comparatively simple. The only really high land is confined to the north-east corner in Derbyshire, where patches of the country are over 1,200 feet in height and most of it over 800 feet. The foothills of this country stretch east over the border of Nottinghamshire and south almost to Derby and Nottingham. This is mostly coalfield and an industrial area. South and east of these north-eastern uplands runs the valley of the Trent which, entering the province in south-east Derbyshire, flows east through that county, bears slightly to north of east in the south of Nottinghamshire, and then flows almost due north through Nottinghamshire to the north-east corner of Lincolnshire, where it joins the Humber.

Although its vale is not much more than 2 miles in width, this River Trent is an important physical feature. Amongst English rivers it is second only to the Severn in point of length and has a drainage basin of over 4,000 square miles. Throughout its course in Nottinghamshire it

drops only 75 feet; it is affected by the tides very far up its course and is subject to considerable flooding. No reference to it would be complete without mention of its Aegir, which at the spring tides raises the level of the lower reaches by as much as 5 or 6 feet in a few minutes.

South of the valley of the Trent bunches of high land appear in Leicestershire, broken by the valleys of the Soar and the Wreak, and in the extreme south by the agriculturally important Welland valley. East of the Trent lie the wide stretches of Lincolnshire, all lowland country broken only by the very moderate slope of the Limestone Heights running due north of the city of Lincoln, and further east by the ridge of chalk, which constitutes the Lincolnshire Wolds, rising above 400 feet.

Geologically the province is very varied. Although it is not necessary perhaps to attempt any general description, it is interesting to note the "marls." It seems necessary to use the term marl with reference to the Upper Keuper marl and the marls of the Lias with care. Only occasionally are there calcareous marls—"the bulk of the Lower Lias consists of a cold aluminous clay with limestone bands at intervals."

The Keuper marl in Nottingham is in general found under a good proportion of arable; in Leicestershire it provides the poorer grassland of that county, partly because also of drainage difficulties and an overlay in places of boulder clay. In general, pastures on the Keuper marl are made to produce cheese (or milk); on the Liassic, as in the eastern side of Leicestershire, they are made to produce beef. The Lower Lias of the Vale of Belvoir is, however, the home of the famous Stilton cheese.

Lying as it does to the east of the Pennines, by far the greater part of the province has the lower rainfall associated with the eastern parts of England. With the exception of Derbyshire, which in the north-west has an average annual fall of over 40 inches and of between 30 and 40 in the

middle, the rest of the province shows an average of under 30 inches, and in fact is under 25 inches for the eastern boundary of Nottingham and the greater part of Lindsey.

In general the rainfall is adequate, however, except for quite a considerable area almost in the centre of Nottinghamshire commonly known as the Sherwood "Forest." As poor sand land, this is more than usually dependent on its rainfall particularly during the vital two months April and May. "In only twenty-two years out of the last sixty was there sufficient rainfall to eliminate the possibility of crop failures: . . . in the fifteen years since 1920 there have been seven "danger years," two drought years, and only six safe years."

There are no special general conditions of tenure or labour to note. There is, however, a very interesting relic in the open field husbandry of Laxton, where the huge open three-field system is worked—and well worked—to this day.

The employment of wage-paid labour is general, and wages rates range around 32s. and 33s. per week for ordinary labour over twenty-one years of age.

As for the countryside itself, a more than usual variety of conditions are covered: from peak to marsh, from grouse moor to famed grazing, from industrial areas to truly rural hamlets, from poverty bottom to land so rich that it can be farmed under staple arable crops in holdings of 30 acres. With such a varied countryside as our visitor will find in the province it is well-nigh impossible to paint any general picture of its agriculture. It might be said broadly that horned live stock in one form or another will be the "note" struck for most of the province with the exception of Lindsey.

The smoke of industry blows over the west, and even the industry of the Romans has left its mark in Derbyshire fields so harried for lead that for ever it will be impossible to harrow them or to graze horses in safety. The industrial population draws its supplies of milk and eggs from the surrounding farms, and the farming throughout the western

part of the province cannot escape being influenced by the industrial conditions, but soil and climate conditions are the basic factors.

Of the farming as a whole, dairying is the foremost general enterprise and is met with in one form or another throughout the province, even in the commonly arable area of Lindsey or pressing up against the strong bullock feeding lands of South Leicestershire. An outline of its distribution and the varying practices in the different regions is given here instead of in the later description of the regions.

At first glance it might appear that there were only two systems of dairying in practice; namely that from grassland in Derbyshire, Leicestershire, and South Nottinghamshire, and that from arable land in Nottinghamshire, Lindsey, and Rutland, but it soon becomes evident that there has taken place something of a revolution in the use of the horned stock. The practice which existed in some districts of using mainly a beef bull with a dairy herd and occasionally changing to a more dairy type is now very often reversed, the emphasis being more on herd maintenance from home-bred dairy stock. This feature, however, is probably not confined to, although of perhaps more significance in, this province, and is no doubt linked both to the decline in the demand for stores in certain winter feeding districts and to the difficulty in getting suitable stores in others.

Derbyshire has been devoted to dairying and stock raising for a very long time. On the lower levels wholesale milk production has been the chief objective, but on the high ground in the middle and north rearing and milk selling, with a certain amount of butter making, have been practised until quite recently. Circumstances have caused many of these farmers to do less rearing and to sell more milk, but it is still a very important rearing district. It is healthy land, much of it overlying limestone, and is noted for the general good quality of Shorthorn found. There is a ready market for milk from the industrial districts around Manchester,

Sheffield, and the Nottinghamshire–Derbyshire borders, whilst the south-eastern corner is the outlet for dairy stock and milk to the London milk market and Home Counties.

Crossing the border into Leicester, dairying becomes a recent introduction, and few farms have been originally equipped for whole milk selling. On the western side of the county the dual-purpose Shorthorn is used and the dairying is largely patterned upon Derbyshire. The tendency to rearing, however, is not so evident and the main energy is towards milk and more milk from bought-in stock.

Taking the county in a broad sweep southwards and to the west of the main road from Derby to Market Harborough and using Leicester as the pivot, the dairying changes as one crosses the Leicester–Hinckley road: at the outer edge of the sweep, fattening pastures, and on the middle and inside, "hunting country." Again whole milk selling has replaced on the one hand the fattening cattle, though the best feeding pastures are still retained for feeding cattle, and the dairy herd and young stock kept on what in this district are considered second-rate pasture. In the hunting country, the home of Stilton and Leicester cheese, rearing and store grazing have given way to whole milk selling. Buildings are generally inadequate, since horned stock was formerly wintered out and the cows calved down in spring. A change in the type of dairy cow is also apparent, tending towards the Lincoln Red Shorthorn often of an originally beef strain. With a capacity to convert bulky foods cheaply, although not producing great quantities of milk, they allow of a definite and satisfactory system of milk production.

Grassland now becomes of less importance, and the arable districts of Rutland, Nottinghamshire, and Lindsey are not predominatingly devoted to dairying. Until quite recently such dairying as there was supplied local demand, but the tendency to convert feeding byres into cowsheds has been spreading, and the herd of beef-type Lincoln Red fed in yards in winter and on grass in summer is now being converted

to milk production mainly through the use of a milking strain of sires and in other cases by the introduction of a specifically milk-producing breed. The root break released is devoted to cash crops such as potatoes, sugar beet, and carrots.

Taking the province as a whole, dairy herds are not large and consist of up to twenty or thirty cows, a unit which can be run by the farmer with a little hired help. On the arable farms the units are either small (and capable of expansion) or have been pushed to their full capacity to the complete eclipse of cattle intended for beef.

The province has upwards of a quarter of a million head of pigs, which are more common in Lindsey than in the other counties. Poultry keeping is ubiquitous, approximately 9 per cent of the fowls on holdings over 1 acre in England being located within the province.

There are four beet sugar factories within the province: Colwick near Nottingham, Kelham near Newark (Notts), Brigg in Lindsey, and another (Bardney) on the boundary of the Kesteven and Lindsey divisions of Lincolnshire.

Briefly, then, we have dairying and dairy stock raising in Derbyshire, East Nottingham, and East Leicestershire; sheep and arable in the centre of Nottinghamshire; arable and a little beef fattening along the Trent valley; sheep folding and arable in Lincolnshire; and grassland bullock feeding in East Leicestershire.

A rapid tour of the agricultural regions of the province involves a shuttlelike movement from north to south and south to north again several times, each time edging from the western boundary towards the coast and sweeping back again along the south of the province. In this tour we can divide the province roughly into seven main regions, with two sub-regions in one case. The regions are not of course homogeneous within themselves, but they can be fairly well defined and can quite fairly be related to the county boundaries so that they can be easily located.

The regions are as follows:

I. North-west Derbyshire
II. North-east Derbyshire and North-west Nottinghamshire
III. South Derbyshire and West Leicestershire
IV. The Carr and the Isle of Axholme (North Nottinghamshire and Lindsey)
V. (*a*) Sherwood Forest
(*b*) South Nottinghamshire
VI. Lindsey
VII. East and South Leicestershire and Rutland

I. North-west Derbyshire

In this section we include the area which would be bounded by a line drawn north and south through Chesterfield till it cut a line drawn practically east and west from Ashbourne.

Our visitor will find this north-west third stormy, barren, and unproductive. It is a hill county, and he will find himself under the shadow of "The Peak." On his map he will notice strange names: Higgar Tor, High Low, Mam Tor, and the like. The promise of stone circles on the moorlands, the meaning of "High Low," the very name "Tor" itself will to many express the nature of the country they would overlook.

The farms are mainly family units, and often barely more than subsistence holdings whatever their size. Many have a moorland run, and on the hills the grass is late and poor, quickly burnt up in summer. Buildings are substantial, but not often well adapted for milk production, upon which the Derbyshire farmer must largely rely.

This milk production, from herds home-bred and reared, is largely for export—from the northern end to Stockport, Manchester, and Sheffield—or for factory cheese. Although the milk produced is produced efficiently in so far as cost and land utilization is concerned, the immediate problem

is perhaps more one of quantity than of price. So far as land utilization and competitive cost of production is concerned milk from such an area can perhaps be regarded as no more on the margin of the market than milk produced on town dairy lines. (It is necessary to interpolate this, lest from our description we should be taken as describing a land better abandoned from a Planned Agriculture!)

The cattle are mainly Dairy Shorthorn crosses. Often small through poor keep and wintering, a two-year-old heifer might reasonably pass for a yearling. Sheep flocks are mainly "Gritstones" and crosses.

II. North-east Derbyshire and North-west Nottinghamshire

This region is less rugged than the moor and mountainland, but most of it is above 400 feet. It stretches from the border of Yorkshire down to the imaginary Ashbourne–Ilkeston line, and includes for descriptive purposes a strip of the westerly border of Nottinghamshire. The northerly part has gravel loams overlying the magnesium limestone which gives land as good as any in the county. On the other hand the sticky, sour clays and thin sands on the coal measures, south of Chesterfield and along the Nottinghamshire border, are almost worthless. Thickly studded with small mining towns and villages the coal industry has governed the development of farming types on this area. There is a large proportion of family farms and holdings in and about the townships. There are milk and egg producers for retail sale, many spending one-third of their time in retailing their produce. Many of the cow-keepers are exminers and are keen, although often these smaller holdings are poorly designed and equipped. The cattle are mainly Dairy Shorthorns, Friesians, and crosses of good milking types. On the bigger, and once "typical" four-course, sheep

and barley farms on the limestone belt dairying has for some time been the main feature. Sheep, however, are considered almost indispensable, and rearing and folding on roots is usual. Wheat is probably the main cash crop, with a few potatoes.

III. South Derbyshire and West Leicestershire

These sections actually provide contrasts, although both have Keuper marl soils. Travelling southwards through Derby itself, which is an engineering and fabric-making centre, this southerly section of Derbyshire contains nearly all the largest and most productive farms in the county. Soil types range fairly widely. Some of the river valley (Trent) pastures are really excellent. The clays and marls produce wheats and clovers second to none, while the light loams of Melbourne and Borrowash are ideal for the market gardener. Once particularly diversified in their agriculture, milk production is and has been now for some time to be noted on almost every farm that has no outstanding advantage of wheat or grass feeding land. Sheep are a recognized feature, but grass fattening is the rule and root folding exceptional.

In North and West Leicestershire we have a rather more diverse agriculture. Included in this area are the coal measures in the vicinity of Ashby-de-la-Zouch, the buried mountain range of Charnwood Forest, and the barren Moira wolds. For the rest there is the Keuper marls already mentioned, mostly under dairying grass but with a little ploughland which occasionally yields wheat very well. Arable cropping, however, is mainly for keep and is subsidiary to the live stock policy. Dairy herds are maintained from home-bred and reared stock.

Near Loughborough is Dishley Grange, the scene of Robert Bakewell's success in improving the strains of English Leicester sheep and Longhorn cattle.

IV. The Carr and the Isle of Axholme

This area, to which we have travelled to the extreme north of the province again, lies partly in Nottinghamshire and partly in Lincolnshire, and here we have the extremely fertile drained land which is the centre of market gardening and celery growing. This area bounded by the Idle, the Torne, the Don, and the Trent is the old marshland drained by Roman and later by Dutch engineers. Belts of blown sand, beds of peat, outcrops of Keuper marl, and stretches of warp form the chief soils. Of these the warp, formed by trapping the flood tide of the Trent behind a system of dykes and allowing the sediment to settle, is the most important.

This warp is a silt of fine texture, sticky when wet, but highly fertile. Cultivated as arable land, it produces fine crops of potatoes, sugar beet, and wheat. Crops of 16 tons of potatoes (Majestic is the favourite) are not uncommon, with perhaps 10–12 tons as an average. Small holdings jostle with larger farms and market gardening, more especially round Haxey in the south, and celery production is of first importance.

V(*a*). Sherwood Forest

Here we come, as has been said, almost in the centre of Nottinghamshire, to a large area of varying phases of the Bunter sand. Forming approximately one-third of the county, this yields light and poor soils. The farming of this area is exceptionally difficult, and has in fact exercised the minds of all connected with it ever since Robin Hood brought trouble to its Sherwood Forest. Giving in 1769 cover to "Four Dukes, two Lords, and three rabbit warrens," it has not readily extended its welcome to farmers since.

The soil is hungry and rainfall, as already stated, is low, and "successful management can only be assured by recog-

nizing the need for humus." The lighter soils are "blowing sands," and it is not impossible for a farmer to find his quite large turnip plants blown right out of the ground and decorating the windward side of the hedges.

It is difficult for an observer to deal with this district without reference to the conditions, economic and climatic, of the last two or three years. Mr. Makings reported in the summer of 1935 "on the seeds, foraging sheep raised a faint cloud of dust"; and more recently, "swedes rotten and rotting, sheep sold off three-quarters finished because there is no more winter keep."

Nor have recent economic conditions tended to help this land. These sand land farms are essentially live stock and arable farms. The stocking has, in the face of the prices obtainable, been reduced below that necessary to keep the land in good heart, the co-essential liming is being neglected, and nothing substantial is available to take the place of live stock either as the final product or as means of keeping up crop yields. It is not possible, or here necessary, to go into a full examination of the position. It is perhaps enough to say that the traditional Norfolk four-course rotation, combined with sheep breeding for winter folding and yard feeding of cattle, whether or not it could have been made to withstand the economic blizzard, has in fact not been made to do so. Where it is still held to it is often but a feeble caricature of its old self. It is, however, being more and more abandoned. Not a few are attempting to prove that milk production *can* find a place on such land, but in general, even although the necessity of "sheep treading" is perhaps too much of a tradition, this land remains an arable-cum-sheep-cum-cattle proposition.

V(*b*). South Nottinghamshire

A word on this sub-region will complete the rough outline of that county in which, apart from that devoted to milk

production in the industrial districts, we might say that half the agricultural land is farmed as "mixed" farms, one-quarter as "arable" farms, and one-quarter as "grass" farms.

The river gravel and alluvial soils of the Trent, which cuts across the south of the county and turning north forms the boundary between Nottinghamshire and Leicestershire, are handled under arable or mixed farming, with the alluvium occasionally providing excellent feeding pastures.

The south-west corner of Nottinghamshire has rich red fertile soils which make excellent wheat and bean land. The Barton in Fabis of Nottinghamshire, like the Barton-in-the-beans of West Leicestershire, is a hamlet the name of which keeps alive this record.

The south-easterly corner of Nottinghamshire is dominated by a northerly spur of the Belvoir (pronounced Beever) escarpment, forming the Nottinghamshire Wolds. Part of the vale of Belvoir itself is in Nottinghamshire, and has been noted under grass as the home of the famous Stilton cheese —now largely factory-made.

VI. Lindsey

In Lindsey we come into a county division which has 59 per cent of its agricultural land under arable crops or rotational grazing. It is a farming county pure and simple. Mutton and wool, beef and cattle, wheat, barley, potatoes, and sugar beet are all important not only to the division itself but the division is an important centre of their production in the country as a whole.

Stretching throughout the length of the Lindsey division from the Humber (in the north) south to the Kesteven border is a vale of blue lias clay. River erosion has made it undulating, and much of it is fair quality grassland. Milk production is found near Lincoln, Gainsborough, and Scunthorpe. It has little value as arable owing to its cold tenacious clay, but fair crops of wheat are produced.

Next comes the "Limestone Heights" (not really heights since the land does not anywhere rise much above 200 feet, but the term arises from the fact that they stand up in the midst of the very flat country adjoining them), which again run almost due north and south. This belt is comparatively narrow in the north, but it broadens out near Kirton and continues as an unbroken ridge south to Lincoln. It is here broken by the Witham gap, but continues into the Kesteven division as a rapidly broadening plateau. Forming a sharp escarpment to the west, and falling more gently away to the Mid Clay Vale on the east, it served the Romans well, and Ermine Street for a considerable distance remains the modern road. Forming a somewhat sticky loam, farmed on the four-course system, fertility is maintained by arable sheep folding and yard cattle feeding. The practice is met with here, as elsewhere in Lindsey, for "yards" to be rented out to cattle feeders, whose beasts receive fodder and attention in return for so much cash and the dung. Fine crops of grain, potatoes, and sugar beet are raised, and "Limestone Edwards" hold a high position in the English potato market. Farms mostly range between 250 and 500 acres, but small holdings are found about the villages. "Thus it is that the innkeeper, the blacksmith, and the haulage contractor may farm their bit of land and contribute their quota of sugar beet to the factory at Brigg." This area has felt the pinches of the depression, but the maintaining of soil fertility is not unduly arduous and the land is generally suited to the production of cash crops such as beet and potatoes.

Eastwards of this ridge, and up to 10 miles or so in width, lies the Mid Clay Vale, which is composed of Oxford and Kimeridge clays with a bed of greensand and in part covered with chalk breccia. Mixed farming is general; there are comparatively few large farms and many small holdings of less than 50 acres. The greensand is of little agricultural value.

Still going eastwards the land rises sharply to the chalk uplands of the Lincolnshire Wolds, some of it over 400 feet, which again stretch right from the Humber almost to the southernmost boundary. This area forms one of the most interesting features of Lincolnshire and is of about 230,000 acres. It is an area of large holdings; few are less than 300 acres, and there are many over 1,000 acres. Most of it has been brought into cultivation since the middle of the eighteenth century, and this was largely made possible by turnips. The four-course rotation, founded on the turnip crop, has been the basic cropping system ever since. As may be guessed, therefore, it shares an uneasy economic bed with the Nottinghamshire sand land already referred to in that much of it also is almost completely lacking in natural fertility. The "four-course" is in the process of modification, and although in the central wolds with poorer soil the position remains exceedingly difficult, in the north and south where the deeper soils are to be found the depression is now being at least weathered. Where possible wheat has become a main cereal crop, barley almost invariably follows the wheat in the rotation—and some grand malting qualities are obtained—and the turnip crop has been reduced in favour of successful sugar beet culture. The tops are folded off by sheep. Although sheep are decreasing in numbers and cattle feeding is less popular than formerly, the economic utilization of the wolds still is rounded off by the invaluable supplement of the summer grazing found on the marsh to the east. Much of the marsh is rented by farmers whose main holdings on the wold are many miles distant.

This "Marsh" is the strip of alluvial land along the low coast line, and gives, as indicated, valuable grazing land. South of Skegness bracing or warming influences of the Wash currents have led to some of this land being brought under the plough as well suited to early potato production and market gardening.

Between the marsh and the wolds is a band of rising ground, mainly boulder clay with patches of glacial gravel, on which good wheats are grown and on which milk for the coastal holiday towns is produced.

To the extreme south of Lindsey lies a small area of that extraordinarily rich fenland, a description of which will be found in the Eastern Counties Province.

VII. East and South Leicestershire and Rutland

Rutland is a trim little county, rolling and uneven, through which it is a particular pleasure to run, and farmed with a considerable proportion of arable to the east and south-east, but largely under grass to the west and south-west. The arable land varies in quality, but the best is excellent. Root folding with sheep is met with on the hungrier soils—as round Luffenham. The grassland is mainly dairying and store raising, with some fattening pastures in the south near Uppingham.

The supreme pasture-fattening area, however, is in this south-easterly corner of Leicestershire. Up and down throughout the province, as in many others probably, one comes across individual fields which are noted locally for the steers they can fatten. Here, however, we have a district which is famed far more than locally.

Leicestershire, as no commentator will allow us to forget, is in the centre of the hunting-the-fox country. It is 84 per cent under grass and is a land of alternating ridges and valleys, gently undulating or marked by bold escarpments. Generally speaking, the soil varies from a light sandy or gravelly to a stiff, marly loam. Some of the famous grassland of Leicestershire will be seen around the Market Harborough district (Welland Valley), and here we have the summer fattening of strong mature bullocks upwards of three years old. The nature of this grassland does not seem to be such as to allow of younger and smaller animals being successfully

fattened in the ordinary way. They have been tried, but seemingly with no great success. On all but the very richest pastures, however, cattle to be fattened by two years old might perhaps be introduced, but they must have been "carried on" well right from calves and especial care taken when putting them out on to the grass for the final fattening. Prices have not been such as to encourage the general fattening of younger beasts on this land, and although two-year-olds are certainly more met with than formerly, this rich pasturage remains pre-eminently the source of our finest heavyweights.

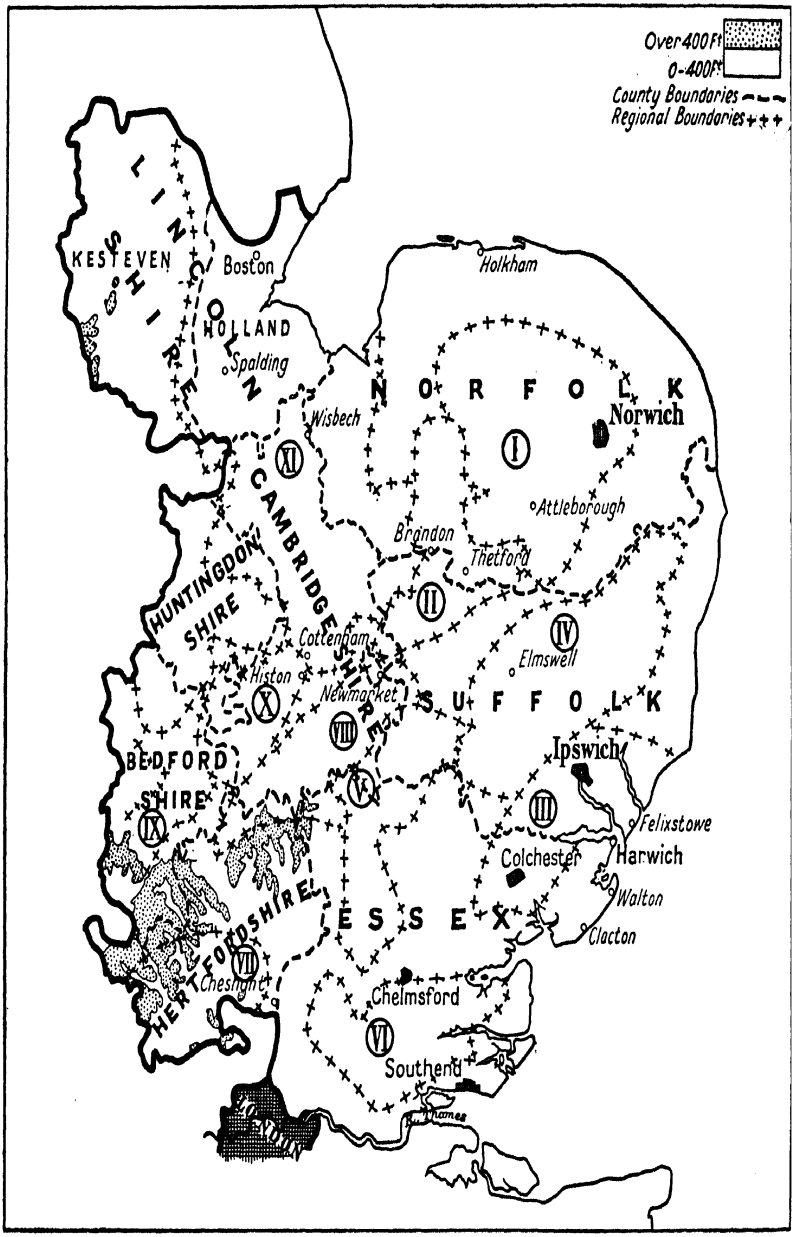
The question of the raising of stores themselves on these farms is one which has pressed itself forward both in connection with the quality of the finished steer and with this matter of finishing off at a younger age. In general, however, stores (Lincoln Reds, Herefords, Devons, and Welsh Runts) are imported. The management of such fattening grazing is a specialist's job. The number and changing of beasts in a field has to be studied almost literally from day to day, for the herbage of a field can be entirely altered for the season according to the handling of a week's grazing in the spring of the year. Dung droppings are collected and carted off—a piece of information offered merely as an indication of the precautions which have to be taken to maintain the nature of these age-old grasslands.

Chapter VI

The Eastern Counties

THE COUNTIES OF
NORFOLK, SUFFOLK, ESSEX, HERTS,
BEDFORD, HUNTINGDON, CAMBRIDGE,
and
THE HOLLAND AND KESTEVEN DIVISIONS
OF LINCOLN

By R. McG. CARSLAW
University of Cambridge



MAP OF EASTERN COUNTIES

CHAPTER VI

The Eastern Counties

THIS province comprises the block of counties roughly lying east of a line drawn between London in the south and Lincoln in the north, and covers an area of $5\frac{1}{2}$ million acres. Of this area approximately $2\frac{3}{4}$ million acres are returned as arable land, and $1\frac{1}{2}$ million acres as permanent grass, while rough grazings account for a further $\frac{1}{4}$ million acres.

The three largest counties in the province are Norfolk, Suffolk, and Essex, which collectively form a broad promontory jutting into the North Sea between the Wash and the Thames estuary. The other administrative counties included are (from north to south) the Kesteven and Holland divisions of Lincoln, the Soke of Peterborough, the Isle of Ely, Huntingdonshire, Cambridgeshire, Bedfordshire, and Hertfordshire.

The whole province forms a low plain, of which nearly one-third is less than 50 feet above sea level, approximately two-thirds is less than 200 feet, while the 400-foot contour is passed in only a few small portions. All the rivers run north, east, or south, and most of them are comparatively small and slow moving. In the north of the province, in what is generally described as the Fenlands, the "fall" is so slight that a system of pumping engines and artificial dykes is necessary to remove the surface water.

The main geological formations are Norwich and Coralline Crags, London Clay, Chalk, Gault, Lower Greensand, Kimeridge Clay, Oxford Clay, Oolite, and Lias. But recent drift deposits (mainly Boulder Clay, Sand, and Glacial Gravel) and alluvium cover the major portion of the province, and the surface soils provide a wide variety of

characters.[1] Of the cultivated land there is approximately ¾ million acres of alluvial soils, ¾ million acres of heavy clays, ¾ million acres of chalks, sands and gravels, and 2 million acres of loams of one sort or another. The geographical distribution of these surface soils very largely determines the boundaries of the different "type of farming" areas within the province.

The rainfall throughout the province averages about 24 inches a year, and is thus considerably below that of England as a whole. The monthly precipitation (averaged for the decade 1920–30) ranges from 1¼ inches to 2½ inches, the driest period being during spring and early summer.

Throughout the last nine hundred years many changes have taken place in the social and economic organization of the province. At the time of the Domesday Survey (A.D. 1086) the eastern counties formed the most densely populated district in England. The possession of navigable rivers, and the proximity of the Netherlands, accelerated the development of the area. Its ports became centres for the export of grain and wool to the Continent. In the latter half of the Middle Ages the textile industry was established, and from the fourteenth to the eighteenth century East Anglia was the primary industrial area of England. The enclosure of the land and consolidation of holdings proceeded throughout five and a half centuries, first with a view to wool production, but latterly to increase food production.

The modern phase in agricultural development began in the latter half of the eighteenth century. Then the introduction of turnip and clover crops provided an alternative to bare fallow, and a source of winter food for live stock. The value of manuring and draining became recognized. Chalking and marling were undertaken; heavy clay soils were "mended" with sand; sheep folding was practised to

[1] "Soil Conditions in East Anglia," Nicholson & Hanley, *Empire Journal of Experimental Agriculture*, iii. 9.

consolidate and improve light soils. The drainage of the Fens was completed. Tull invented the corn drill, live stock breeding became a science, and Coke of Holkham popularized the "four-course" rotation. These and many other improvements were widely adopted during the nineteenth century. The decline in corn prices after 1875, together with the rising standard of living in the towns, stimulated the development of live stock husbandry. From that time the relative importance of cereals in the economy of the district greatly declined, and live stock have become the basis of the agriculture of the province. Since 1920 two Acts of Parliament have been of special significance to farmers in the eastern counties, viz. the Sugar Beet (Subsidy) Act of 1924, and the Wheat Act of 1932. As a result of the former a profitable cash crop has been introduced into the fallow shift of the rotation without reducing the live stock-carrying capacity of the farms. By the latter the wheat acreage of the province was increased 50 per cent in two years from the low record touched in 1931. Both these measures have done much to ameliorate the financial position of farmers during the post-war depression.

During the eighteenth and nineteenth centuries industry and commerce moved away from the eastern counties to the coalfields of the midlands and the north, and although innumerable fine churches and guildhalls bear evidence of the wealth derived from the early wool and textile trade, the province must in the twentieth century be considered as one of the essentially agricultural districts of England. The total population in 1931 was $3\frac{3}{4}$ million persons, but nearly half of these are living in the county of Essex adjacent to London, and for the rest of the area the density of population is only 0·45 person per acre, as compared with 1·08 for England and Wales as a whole. Further, the proportion of the local population engaged in agriculture is more than twice as great as that for the whole country. Within the province there are forty-one towns or cities of

more than 10,000 inhabitants, but half of these centres lie in the south within a short distance of London. The Metropolis forms the principal external market for the produce raised in the province, but much also goes to midland and northern manufacturing towns.

There are approximately 58,000 agricultural holdings, of which nearly half are less than 20 acres in size. There is reason to believe that an appreciable proportion of these small units are not genuine agricultural undertakings, or only provide part-time employment to their occupiers. Only about 6 per cent of the total holdings are more than 300 acres, although this percentage is double the comparable figure for England and Wales as a whole. For the holdings above 20 acres the "average" size is 140 acres.

Perhaps the most characteristic agricultural feature of the province is the relatively large proportion of arable land, which represents about two-thirds of the total area under crops and grass. This is the principal wheat- and barley-growing part of the kingdom, while three-quarters of the total sugar beet area is concentrated here. But the prevailing systems of husbandry show great diversity of organization,[1] and few farms *produce* less than ten different commodities, or *sell* less than five. As a source of cash income live stock take precedence over crops, and of the former milk, beef, pigs, and poultry are all important enterprises.

Before describing the different types of farming found in the province it may interest the reader to get a glimpse of that convenient abstraction, a "typical" farm. This imaginary organization (built up partly from arithmetic averages, partly from modes, and partly from mere impressions) would be about 140 acres, situated on a medium loam soil, and rented by the occupier from a landlord for an annual payment of about £1 per acre. In addition to the occupier there would be three hired workers and one family worker,

[1] "In defence of Mixed Husbandry," Carslaw, *Journal Royal Agricultural Society, England*, vol. 96.

while four or five work horses would be kept. The cropping and live stock would take the following form:

CROPS

	Acres
Permanent grass not for hay ..	33
Permanent grass for hay	11
Temporary grass and clover ..	16
Wheat	20
Barley	15
Oats	10
Beans or peas	5
Sugar beet	8
Potatoes, sprouts, or cabbage ..	2
Mangolds, turnips, and swedes ..	6
Bare fallow	8
Roads, buildings, and waste ..	6
Total acres	140

LIVE STOCK

Michaelmas valuation:	*Number*
Work horses	4
Other horses	1
Dairy cattle	10
Other cattle	10
Breeding pigs	3
Other pigs	15
Poultry	250

Annual production, say:	
Milk	5,500 galls.
Beef	2½ tons
Pig meat	3½ tons
Eggs	2,000 doz.
Table birds	150

The capital value of the farm live stock, crops, and dead stock would amount to about £10 per acre, while the annual gross sales may be estimated at about £8–£9 per acre. Live stock would account for more than half the total sales,

dairy produce being the main individual item.[1] On the expenditure side labour would be the principal item, with purchased feeding stuffs second in importance. In addition to the purchased feeding stuffs, the produce from over half the farmed area would be fed to live stock. Large quantities of animal manure are of course made available, and this would be supplemented by the purchase of "artificial" fertilizers. The value of the gross output per worker would be about £250 a year.

Within the province there are great variations in the types of farming, and at least eleven major regions may be distinguished. The approximate outlines of these regions are shown in the map, from which it will be seen that they do not coincide with the boundaries of administrative counties. A quick circular tour of the province is described in the following paragraphs, in which reference will be made mainly to conditions in the major regions, although the characteristics associated with certain of the minor areas will also be mentioned. Starting with the county of Norfolk in the extreme north-east, the tour will be made in a circular direction moving clockwise round the province, and the regions will be visited in the following order:

I. Central Norfolk
II. Norfolk and Suffolk "Breck"
III. Central Suffolk
IV. South-east Suffolk Sand and Gravels
V. North-west Essex Boulder Clays
VI. South Essex London Clay
VII. South Hertfordshire
VIII. South Cambridge Chalks
IX. Bedfordshire Greensands
X. Huntingdon and West Cambridge Clays
XI. Fen Alluvials

[1] For statistical information on the economic organization of farms in the Province, see *Report* 22 of the Farm Economics Branch, Cambridge University Department of Agriculture.

I. Central Norfolk

Norfolk is the largest county in the province and covers over 1¼ million acres, of which about 1 million acres are under crops and grass. It is the home of the classical "four-course" rotation of roots, barley, seeds, and wheat, which has here been widely practised for more than one hundred years. From the north-west corner of the county a belt of light loam runs south, on which large farms and large fields are predominant. In the east of the county, between the city of Norwich and the coast, is an area of reclaimed marshes which provide summer grazings for cattle. Along the north coast is a narrow strip of light soil famous for the quality of its barley.

The central portion of the county, which is outlined as Region 1, covers an area of about 400,000 acres of medium loam soil throughout which the type of farming is comparatively uniform. Except for the city of Norwich on the eastern boundary of the region, there are no local consuming centres of any magnitude, and opportunities for producer retailing are rare. The centre of the region lies approximately 25 miles from each of three sugar-beet factories, while the nearest bacon factory is some 30 miles distant. Farms and fields are small in comparison with the lighter soils in the west and north-west, and the countryside is dotted with farm-houses generally roofed with red pantiles, and built of a warm red brick or white plaster. These frequently nestle in the shelter of a group of ancient trees, and together with the sleepy villages contribute towards the general atmosphere of a placid rural environment. Unlike some other parts of the province there has been practically no immigration of farmers to this region for at least a generation, and nearly every present occupier has been born and brought up in the county.

Approximately two-thirds of the farmed land is under the plough, and sugar beet now competes with barley for first

place as the most important cash crop, with wheat a close third. These three crops together account for something like nine-tenths of the total crop sales, or one-third of total sales. Sugar beet has within the last ten years largely supplanted fodder roots, although even yet mangolds, swedes, and turnips are grown here to a greater extent than in most of the other regions.

Central Norfolk is one of the most heavily stocked areas in the province, and nearly every farm keeps cattle, pigs, and poultry. In recent years there has been a considerable increase in dairying (at the expense of bullock feeding), and this enterprise is now of primary importance. A large proportion of the milk sold whole goes to London by road or rail, but an appreciable amount of the milk produced is made into farm butter. This farm manufacture has, of course, declined since the advent of the Milk Marketing Board. It is difficult to measure the real importance of beef cattle (as distinct from dairy stock), but in this region it is still greater than in any other part of the province. Pigs and poultry are both important enterprises, and comparatively large quantities of ducks and turkeys are fattened. At the village of Attleborough an annual sale of store turkeys is held in October, when many thousands of birds are sold to feeders for preparation for the Christmas market. Compared with the lighter soil area in the north-west of the county, sheep are unimportant in central Norfolk.

II. Norfolk and Suffolk "Breck"

The county of Suffolk lies immediately to the south of Norfolk, and covers nearly 1 million acres. In the north-west corner of the county, and extending over the county boundary into Norfolk, is the very infertile "Breckland" region, well known to archaeologists and naturalists.[1] Here is an area of some 200,000 acres of hungry sand, so lacking

[1] *Norfolk and Suffolk*, Clarke (Black, Ltd., London).

in clay and humus that it is liable to "blow" in strong winds. Much of the district is covered with heather and forest, and there are large tracts (such as Thetford, Roudham, and Brandon Heaths) which are little more than rabbit warrens. The largest group area in England and Wales under the Forestry Commission is in this district, where nearly 50,000 acres of former heathland are being planted mainly with conifers. Pheasant and partridge shooting is amongst the best in the country, and the sporting rents are frequently higher than the agricultural rents. At the village of Brandon, near the centre of the district, the oldest industry in the country—that of flint "knapping"—is still practised on a small scale. Apart from a few minor modifications the present process is identical with that of the first prehistoric inhabitants, who here discovered rich deposits of flints of the finest quality.

On those portions of the region which are farmed the farms and fields are large (the latter being frequently unenclosed) and production per acre low. The May–June rainfall appears to be critical in relation to crop yields. The population is very scanty, averaging over most of the area less than 0·1 per acre. It is well served, however, by three sugar-beet factories situated on its outskirts. Approximately half the farmed land is under the plough, but good pasture is very scarce, and much of the permanent grass would more suitably be classified as "rough grazing." Sugar beet is now the principal cash crop, with barley second in importance. This is the only region in the province in which rye is grown to any extent, and in no other district is the proportion of farmed land under wheat so small. Carrots have here been grown in increasing quantities in recent years, and these are of good quality, keeping (apart from damage by game) in the light soil throughout the winter to be marketed in the spring after the fenland carrots are finished.

The farmed land in the region carries only about half the density of live stock to be found in the neighbouring

central Norfolk area, and is one of the least heavily stocked in the province. As in other regions the numbers of dairy cattle have been increased since the War, but the type of live stock particularly associated with the region is sheep.

III. Central Suffolk

The major central portion of Suffolk comprises about 300,000 acres of medium to heavy loams. In many respects conditions here are somewhat similar to those found in central Norfolk, but the soil is on the whole rather heavier. Farms and fields are relatively small, the latter averaging only about 8 acres, and frequently being of a very irregular shape. The red brick and tiled roofed houses associated with Norfolk here give way to whitewashed plaster-finished structures with thatched roofs. There are no large towns within the region, which is well served, however, by three sugar-beet factories and a bacon factory at Elmswell.

Nearly three-quarters of the farmed land is under the plough, and although there is more wheat and pulse grown here than in central Norfolk, there is less fodder roots and more bare fallow. The principal cash crops are sugar beet, wheat, and barley, but as in Norfolk the greater part of the farmers' cash income is derived from live stock. Pigs are the most important live stock enterprise, and, indeed, the pig population is denser here than in any other part of England and Wales. Large quantities of second-quality barley and of pulse are disposed of as pig meat.

IV. South-east Suffolk Sands and Gravels

Along the east coast of the county a narrow strip of hungry sandy soil widens towards the south, where a less permeable subsoil and a greater clay content render it more fertile. This region extends over the county boundary into the north-east corner of Essex, and covers about 200,000

acres. Although notoriously deficient in lime the soil is responsive and easily worked, and permits considerable diversification of cropping. Further, the river estuaries, which here run far inland, soften the climate and help to prolong the growing period. Ipswich (population 88,000) and Colchester (population 49,000) both lie within the region, while such places as Harwich and the summer holiday resorts of Felixstowe, Walton, and Clacton further add to the local demand for agricultural produce. There is both a bacon and a sugar-beet factory at Ipswich, while a considerable amount of market-garden and other produce is sent to London.

The farms here tend to be larger than in central Suffolk, but although the proportion of arable land is about the same, the cropping is more diversified and more live stock are carried. Sugar beet is the principal individual cash crop, but potatoes and market-garden crops of various sorts (e.g. green peas, white turnips, cabbage, cauliflower, etc.) are much in evidence, and the staple cereals are less important here than in most districts of the eastern counties.

A considerable amount of dairying is done, and probably as much as one-fifth of the milk produced is sold direct to the consumer. The pig population is only about half that found in central Suffolk, but sheep are more in evidence.

V. North-west Essex Boulder Clays

In the north-west corner of Essex, and extending into the south-west corner of Suffolk, is a region of heavy boulder clay. This is a rural area with no large centres of population. Much of the land requires draining, and the fields are generally small and of irregular shape. The nature of the soil limits the choice of cropping, although towards the south end of the district the "Roding" soils give more opportunity for diversification. Three-quarters of the farmed land is under the plough, and cereals are predominant,

with wheat as the principal cash crop. The soil does not grow good malting barley, and its heavy nature adds greatly to the difficulty and cost of harvesting sugar beet. As might be expected, there is a relatively high proportion of bare fallow and a considerable acreage of beans and peas. The region is specially suited to the production of seed of various kinds (e.g. clovers, trefoil, sainfoin, and even roots), and these, although speculative, are amongst the chief "high-value" cash crops.

The region carries comparatively few live stock. A possible explanation of the small numbers of cattle is that fields are frequently inadequately fenced, provision of water is a difficulty, while in many cases the land tends to "poach" in winter. In certain parts of the region it is locally supposed that soil and climate are unsuited to permanent grass, but this supposition is not founded on fact, and can frequently be accounted for by inadequate drainage and understocking. Pigs and poultry are probably the two principal live stock enterprises, while sheep are conspicuous by their absence.

VI. South Essex London Clay

In the south of Essex is another heavy clay region extending to about 200,000 acres, but presenting in farm organization a marked contrast to Region v. This tract is separated from the coast on the east, and the Thames estuary on the south, by a narrow strip of alluvials, gravels, and, in the Southend area, by brick earth. Its proximity to London and the many large towns along the Thames estuary give the district decided marketing advantages. It forms the principal grazing area in the eastern counties, nearly three-quarters of the farmed land being under permanent grass. Wheat, barley, and sugar beet are of little importance; potatoes, market-garden produce, and hay being the main cash crops. Total crop sales amount, however, to less than one-fifth of the gross farm incomes.

This region is more densely stocked than any other in the eastern counties. It is the principal dairying area of the province, receipts from dairy produce alone amounting on the average to more than £4 per acre of farmed land. Most of the milk produced is sold on wholesale contract, and practically none is manufactured on the farm. Although essentially a grassland dairying region, milk production is fairly level throughout the year, and large quantities of concentrated feeding stuffs are purchased to supplement the hay, oats, beans, and roots grown on the farms for winter keep.

Poultry are the second most important live stock enterprise, and some idea of the relatively insignificant position of the staple crops may be obtained from the fact that the total sales of poultry and eggs exceed considerably the combined income from wheat, barley, and sugar beet.

Before leaving Essex it should be mentioned that a considerable amount of fruit and market-garden produce is raised, particularly along the coastline between Chelmsford and Colchester.

VII. South Hertfordshire

Moving west from Essex into Hertfordshire, the intensive glasshouse area round Cheshunt and the Lea Valley is passed. This industry, chiefly growing tomatoes, cucumbers, grapes, carnations, roses, and ferns, has increased rapidly in recent years and now employs many thousands of workers. Once through the centre of this glasshouse industry, South Hertfordshire opens out as an area of essentially suburban farming. Comprising a variety of soils none of which is particularly fertile, this district enjoys unrivalled marketing facilities, for the development of rapid and cheap transport, together with the southerly movement of industry associated with recent years, has led, particularly since the War, to a great increase in the urban and suburban population.

Here approximately half the farmed land is arable, and half the arable land is under wheat and oats. Barley and sugar beet are entirely unimportant features in the farm organization. A certain amount of potatoes and market-garden crops is grown, while sales of hay and straw to town stables also contribute materially to cash incomes. But crop sales account for only about one-quarter of gross incomes in this district, and milk is by far the most important cash product of the farmers. Indeed, this is the second most important milk-producing region in the province. Probably as much as one-third of the milk produced is sold directly from the farm to the consumer, and the possibilities of extending these retail sales are continually increasing. Large numbers of poultry are kept, but compared with many other districts in the province pigs are not an important source of income. Grassland flocks of sheep have increased in recent years. There is a small number of holdings along some of the river valleys in this region on which watercress is the only or principal source of income. In passing it is perhaps of interest to note that both in South Hertfordshire and in South Essex a comparatively large proportion of the farmers (about 40 per cent) are immigrants from the west and north of England, or from Scotland. This influx dates from the agricultural depression associated with the closing years of last century, when vacant farms and low rents, together with the growing urban demand for milk and potatoes, attracted the attention of west and north country farmers.

VIII. South Cambridge Chalks

Towards the north of Hertfordshire a low range of chalk hills runs north-east through Cambridgeshire to join the Breck sands near Newmarket. In this region there are no large centres of population. The farms and fields are large, many of the latter extending to more than 100 acres. Here

as much as 85 per cent of the farmed land is under the plough, and a common rotation is roots, barley, barley, seeds, wheat. Barley is the principal cash crop, and not only is more barley grown here than in any other district, but the quality is uniformly better and the price received higher. The proximity of chalk to the surface appears to favour barley in that it increases the moisture-holding capacity of the soil, and lessens the risk of "burning" in dry summers. Wheat and sugar beet are both important cash crops, while clovers and sainfoin are the principal "short leyer" crops. A relatively large proportion of the land is under green crops for "close folding" by sheep, and it is a common practice to plough in rape or mustard as a green manure on fallows.

Sheep are the type of live stock traditionally associated with this district, and formerly large flocks of the heavier breeds (e.g. Suffolk) were kept for manuring and consolidating the arable land. But the high labour costs entailed by close folding, and the decline in sheep prices, have contributed towards reducing this practice. Indeed, on many farms sheep, as an aid to soil fertility, have been entirely superseded by green manuring and artificial fertilisers. A relatively large number of pigs is kept to consume tail barley. Some cattle are kept, chiefly during the winter months, for making dung, going out fresh or fat during the spring, but in recent years low prices have kept many "yards" empty. Dairying is confined almost entirely to farms situated in or near villages where an opportunity for retailing occurs.

IX. Bedfordshire Greensands

To the west of Hertfordshire and Cambridgeshire lies the county of Bedford, famed as a market-gardening area. The heart of this region lies on a strip of greensand and valley gravels roughly following the River Ouse. The soil is early,

fertile, deep, and easily worked. Here large quantities of early and main crop potatoes, brussels sprouts, cabbage, cauliflower, green peas, green beans, carrots, onions, lettuce, and even parsley are grown for shipment to London, or to midland and northern markets. Measured by acreage the holdings are small, but the value of the output per acre is large. Owing to the intensive nature of the cropping and to the comparatively small number of live stock, vast amounts of town manure, soot, shoddy, and artificial fertilisers are used. In recent years this region has been suffering as a result of competition from mixed arable farmers in other districts who have been turning to vegetable growing as a side line. Further, certain plant pests—in particular the eel worm—have caused considerable loss to producers whose income is almost wholly derived from crops.

X. Huntingdon and West Cambridge Clays

North of Bedfordshire lies a region of heavy clays covering West Cambridgeshire and most of Huntingdonshire. A relatively large portion of this district is in need of drainage, and derelict or semi-derelict land is not uncommon. Approximately 60 per cent of the farmed land is arable, the principal cash crop being wheat. As might be expected from the nature of the soil, barley and sugar beet are unimportant items, while there is a relatively large proportion of bare fallow. Beans are the principal fallow crop, although a limited area of peas is also grown. Clover is the main "short leyer" crop, but trefoil, sainfoin, and lucerne supplement the usual mixtures, and "second cuts" are frequently taken for seed. Where soil conditions permit small areas of fruit and market-garden crops are grown, but the possibilities of diversification are limited. Comparatively few live stock are carried.

Before the introduction of the Wheat Subsidy in 1932 this was probably the most depressed district in the eastern

counties. Its dependence on wheat, beans, and feeding cattle, its heavy intractable soil which limited the possibilities of diversified cropping, the negligible commitments in dairying and sugar beet, its lack of local consuming centres, all contributed towards the exhaustion of capital. The value of the output per acre here is lower than in any other district in the province, while expenditure on labour, feeding stuffs, and fertilisers is proportionately small.

XI. Fen Alluvials

The northern boundary of the backward heavy land area adjoins the fertile fenlands, which present a marked contrast. Comprising either a black peat or silt soil, which frequently lies below sea-level and seldom rises more than a few feet, it extends in a compact block to the Wash and covers about $\frac{3}{4}$ million acres. Near the town of Cambridge lies the village of Histon, where the factory of Messrs. Chivers & Sons, Ltd., does a large business in jam making and fruit canning, drawing its supplies from the fruit-growing areas round Cottenham and further afield. But going further north past this "skirt" land, the typical black fen of the Isle of Ely is encountered. Here four-fifths of the land is arable, and two-fifths of the arable land is under potatoes and sugar beet. Wheat is the main cereal crop, the acreage under this being more than twice the combined area of barley and oats. Crop yields per acre are high, 15 tons of sugar beet, 10 tons of potatoes, and 50 bushels of wheat being not uncommon. No less than five sugar-beet factories are situated within this district or on its outskirts, and the complex system of waterways which drain the area offer in many cases a cheap and convenient method of transport for beet and other bulky produce. In addition to the staple crops, relatively large areas of special crops are grown, such as mustard for seed (generally grown on contract), celery, carrots, and fruit of various sorts.

Live stock are comparatively unimportant. A certain amount of horse breeding is done; pigs utilize low-quality potatoes and grain; some cattle are grazed on the small areas of pasture, or are kept in yards to tread straw into manure. But it is probably safe to estimate that only about one-tenth of gross incomes is derived from live stock. Rental values are of course high, and in addition there are drainage rates to pay towards the maintenance of the immense organization of dykes, pumping stations, and sluices required to prevent the land from being flooded.

Nearer the Wash, in the Holland division of Lincolnshire, the black soil of the Isle of Ely gives way to silt. Round Wisbech and Spalding bulb growing has developed rapidly in recent years, and, in the spring, fields of tulips and hyacinths present multi-coloured hues of brilliance. The production of cantaloup melons and out-of-season vegetables under "Dutch lights" has also become an important enterprise within the last few years. Potatoes are the main cash crop, anything from one-third to a half of the arable area being under this crop. Near Boston, along the Wash estuary, is a small area concentrating largely on "earlies." Comparatively large amounts of green peas and mustard for seed are grown, while both top fruit and soft fruit are important enterprises. Sugar beet is not so extensively grown here as in the black soils of the Isle of Ely.

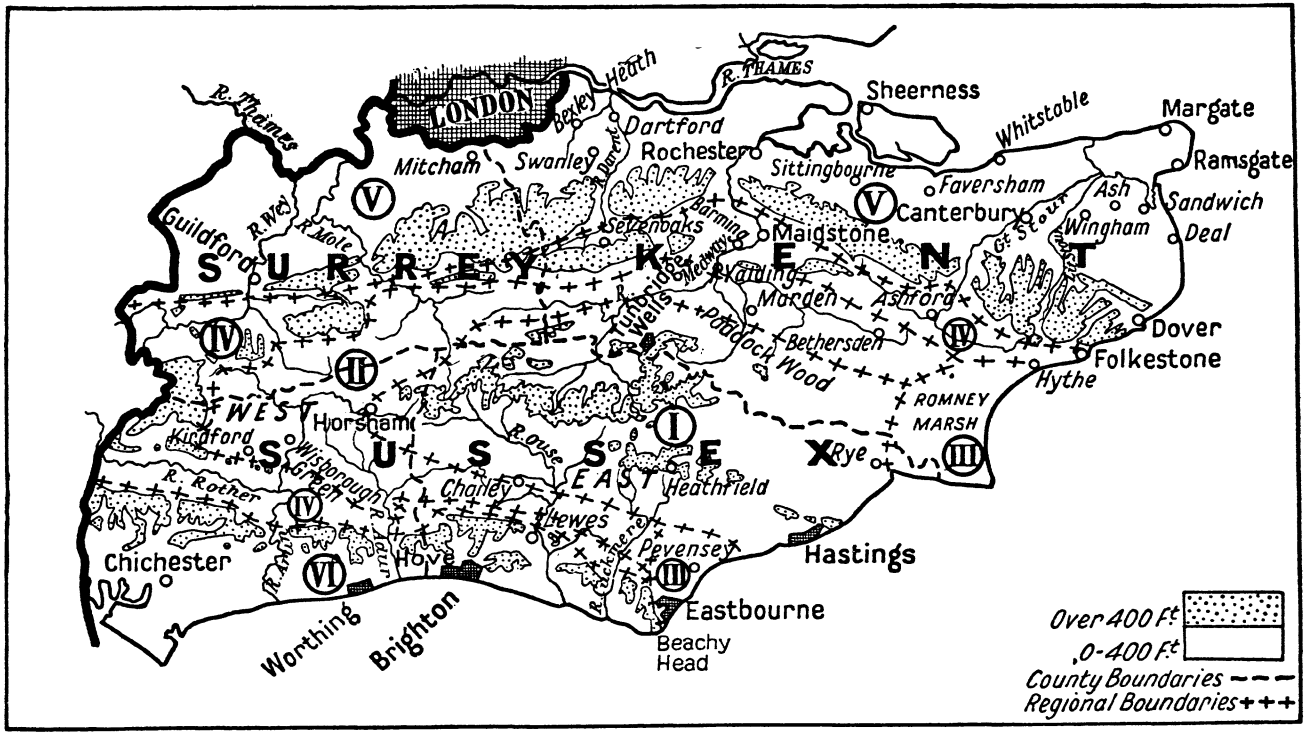
To the west of this fertile district lies the Kesteven division of Lincoln, where the land rises in limestone formations intermingled with Oxford and Lias clays. This change in physical characteristics results in a sudden and marked alteration in type of farming. The proportion of pasture increases; many more cattle and sheep are kept; the importance of sugar beet, potatoes, and garden crops is greatly decreased. In effect, conditions rapidly merge into those associated with the province of the East Midland Counties, a detailed description of which will be found elsewhere in this volume.

Chapter VII

The South-Eastern Counties

THE COUNTIES OF
KENT, SUSSEX, AND SURREY

By JAMES GRANT
Oxford



MAP OF SOUTH EASTERN COUNTIES

CHAPTER VII

The South-Eastern Counties

THE South-eastern Province comprises the counties of Kent, Surrey, and Sussex, bordered on the north by the Thames and its estuary, on the east and south by the sea, and on the west by the southern portion of the southern counties. In extent it is about 100 miles long from east to west and about 50 miles wide, having a total land area of 2,360,000 acres and a population of 3,170,000 (geographical counties) concentrated mainly south of the London area in Surrey and in the coastal belt. The density of population, being 1·3, 2·6, 1·1 and 0·6 persons per acre in Kent, Surrey, East Sussex, and West Sussex respectively, is high in view of the fact that agriculture, strange to say, is the main industry; all the others—brickmaking, cement, paper mills, gravel and sand pits, coal-mining, etc.—are comparatively small. The density of population, however, is dominated by the position of London and the Thames Estuary on the north side of the province. Around London, in the north-west corner of Kent and the north-east of Surrey, the dwellings of London's workers keep spreading out fanwise along the routes of fast transport. On the sea boundaries of the province the population is large, owing to the number of great holiday resorts such as Margate, Hastings, Eastbourne, Brighton, Hove, and Worthing. In spite of the vast population in the north of the province, the fringe of big towns round the coast, and the spread of residential areas in most of the conveniently situated parts of the whole of these south-eastern counties, many parts within this radius of some 50–80 miles from London are as rural as any in England. In addition to the increasing use of land for residential purposes, a large area, especially of heath, woodland, and commons, is used as open spaces for a London playground.

The proximity to London has a large influence on much of the agriculture, but geological formations and soils play a very large part in determining the agriculture of the various parts of the province, creating perhaps more sharp distinctions within a comparatively small area than anywhere else in England. Of the total land area only some 59 per cent is used for agricultural purposes (19 per cent arable, 40 per cent permanent grass), the rest being occupied by woods, heaths and commons, towns, roads, etc. To this may be added 7 per cent rough grazing. Of the agricultural area itself (including rough grazing) only 29 per cent is arable, 61 per cent is permanent grass, and 10 per cent is rough grazing.

The annual rainfall in the area varies considerably from place to place, the range being from about 35 inches to about 20 inches, and may be said to be closely associated with the geological formations and their typical contours, the rainfall decreasing as the altitude drops. The greater part of the area has a fall of 25 inches to 30 inches. A strip along the north-east is the driest part, having a fall of only 20 inches or so.

Although belonging to the eastern and drier part of England the province is now essentially a grassland area, and grassland farming predominates, dairying and sheep being the two leading enterprises. Beef production occupies only a minor place, as also pig feeding, but poultry claim an important place in the farm economy all through the area and especially in Kent and East Sussex. As to crops, the south-eastern counties are much better known for their special crops such as their fruit and hops than for their production of wheat, barley, etc. Wherever soil and other conditions permit market gardening is carried on intensively.

The sizes of farms in the province are distributed in about the same proportions as for England and Wales as a whole, between 60 and 70 per cent of the 22,300 holdings being under 50 acres and about 3 per cent being above 300 acres.

All the counties show roughly the same proportions with the exception of West Sussex, where the proportion of holdings under 50 acres is no more than 60 per cent, and the farms over 300 are over 6 per cent of the total.

The employment of wage-paid labour is much higher than the average for England and Wales. Regular male workers per 1,000 acres number 40 in Kent, 45 in Surrey, 30 in East Sussex, and 35 in West Sussex, compared with an average of just over 20 for the whole country. Employment of women regularly is higher than average in Kent, being 4·4 per 1,000 acres, but is rather below the average in both divisions of Sussex. Employment of casual labour, both men and women, is above the average for the country, and Kent is one of the few counties where the number of women casually employed in agriculture exceeds that of men.

The division of the province into regions for the purpose of more detailed description can best be done mainly by the geological formations. The shape of the main formations as they occur in the province is that of the letter U lying on its side with the open end to the east. In the core of the letter lies the High Weald, a region of hilly country. The Wealden Plain, a low-lying strip of clay, lies all round the High Weald except in the east. The Wealden Plain stops short at the two ends of the letter U, the areas lying on the coast being stretches of alluvial land, the Romney Marsh at the northerly end and the Pevensey Level at the southerly end. Round the Wealden Plain, another U-shaped strip of rather higher land consists of Lower Greensand, and then, lower again, a strip of Upper Greensand and Gault. North and south of this belt lie ridges of chalk downs, the North and South Downs, which do not however complete the U-shape within this province. Between the North Downs and the river Thames, a great variety of soils exist, and between the South Downs and the sea in West Sussex lies a fertile stretch of Brick Earth.

The province can be roughly divided into six regions on the basis of these formations, namely:

I. The High Weald
II. The Wealden Plain
III. Romney Marsh and Pevensey Level
IV. The Lower Greensand, Upper Greensand, and Gault
V. The North Downs and the Thames Estuary
VI. The South Downs and Maritime Sussex

I. The High Weald

The High Weald, forming the core of the area, is an elevated tract of country extending from the neighbourhood of Horsham to near Hastings on the coast, and northwards to beyond Tunbridge Wells. A considerable part of it is over 400 feet in height, and there are occasional patches over 600 feet. The highest point, Crowborough Beacon, is 792 feet. Eastwards the northern part is deeply scarred by the valleys of the Medway and its tributaries, and on the southern side by the head waters of the Rother and the Ouse.

The High Weald consists of Tunbridge Wells Sand on the tops of the hills and Wadhurst Clay in the valleys. There is usually a line of springs where the Sand meets the Clay. Agriculturally it is poorish country, much of it and especially the higher parts, being heath or woodland (chestnut, birch, and conifers on the higher levels, oak and ash below), useless for farming except that there are common rights to run sheep on some of the commons. The lower slopes are mainly under grass and dairying predominates wherever roads or railways give easy access to markets. Sheep are very general, and many of the smaller farmers take sheep off the marshes for the winter months. Cattle grazing is carried on to a smaller extent. It is only in the valleys, and more particularly in the eastern part, that arable farming is carried on and, with one or two

exceptions, is usually general mixed farming. In the valleys of the Medway and its tributaries there are a few small patches of intensively cultivated bush fruit farms, and also a few orchards and hop plantations.

Poultry occur in fairly large numbers in the High Weald and there is one specialized poultry area—around Heathfield—where the industry of cramming table birds has become firmly established. It is only seldom that the crammers rear the birds they sell, the chickens usually being purchased either direct from the breeders through the Heathfield market or through the medium of higglers. The crammed birds (cleaned and packed) are sent to London by road, and usually fetch from 7s. to 10s. each. In recent years there has been a tendency for crammers to break away from this system of sending to market and to pack under the National Mark Scheme for table poultry, but this has not affected many, and the old-established system prevails.

II. The Wealden Plain

The High Weald is surrounded on all sides except the sea by a strip of gently-undulating country all under 200 feet —the Wealden Plain. In extent it is about 15 miles from east to west in its turn around the western end of the High Weald, and about 20 miles from north to south at its widest part. The northern arm tapers off to about 2 miles wide in Kent, and the southern one to about 4 miles in Sussex.

Excepting patches of sand here and there, e.g. around Wisborough Green and Kirdford in the turn of the Weald, and of brick earth in East Kent, the whole of the Wealden Plain is heavy clay land, the wetness and heaviness of which is aggravated by its flatness and low elevation. It is practically all under grass and woodland. In appearance, looking down on it from the heights above, it appears to be more heavily wooded than it actually is, this being due

to the prevalence of hedgerow timber round the small enclosures.

The Weald has never been highly farmed, and has always been regarded as poor, backward country, though much of the southern arm was under cultivation and used for the production of wheat and beans and for stock-rearing (Sussex cattle) right up to and during the War. It is now almost wholly under grass. The northern arm is likewise under grass, and has been so for generations. All the farms in this region are small, 50 to 100 acres mostly, and on practically all of them milk production from Dairy Shorthorns is the main enterprise. Except for the small patches of sand and brick earth already mentioned the Wealden Plain is essentially a dairying area. In the summer months some of the milk goes to the seaside holiday resorts, but at all seasons the bulk of it goes to the London market. There is no farm manufacture of butter or cheese for sale.

Sheep are a common feature throughout the whole area of the Weald in the winter months when sheep are taken in from the marshland farms, but except in Kent sheep-grazing may be regarded as a sideline. There is also a certain amount of cattle feeding (Sussex cattle and Devons), but it is quite negligible in comparison with dairying.

What may be regarded as a sideline also, though at one time it was far more remunerative than the farming proper, is the wild white clover seed industry which originated at Bethersden, six miles south of Ashford in Kent. Nowadays the seed is grown in various places throughout the Wealden Plain, and even on Romney Marsh, but the main concentration is still around Bethersden. The practice is to graze the permanent pasture very hard with sheep until the end of May and then allow it to go to seed. Kentish wild white seed still fetches the highest price in the market, but the very lucrative prices of 20s. to 25s. per lb. are a thing of the past, and not very much profit can now be made from it.

There are three fruit-growing areas in the Wealden Plain. Around Yalding, Hunton, Paddock Wood, and Marden in Kent there is an important fruit and hops area, the plantations for the most part being on the patches of brick earth and alluvial deposits which overlie the clay in this district. For all practical purposes this area may be regarded as an extension of the Medway Valley hops and fruit area which is described later.

In the turn of the Weald, around Kirdford and Wisborough Green in West Sussex, the clay is lightened by sand, and here there is a highly organized group of apple-growing farms equipped with packing, grading, and gas storage facilities. Their total acreage is, however, small—only about 300 acres.

Further east—in East Sussex—there is a wide but somewhat scattered area covering the fringe of the Wealden Plain and the foot of the High Weald in the neighbourhood of Chailey, which has become unique in the country for dessert fruit. The soil is poor, but the combination of a suitable climate and an excellent technique gives results which yield good financial returns. Gooseberries are the outstanding crop, and raspberries take second place. Strawberries are also grown. Some of the output is marketed locally (Brighton and Eastbourne), but it is mainly sent to the larger towns throughout the country.

All the larger rivers in the South-eastern Province have their source either in the High Weald or in the Wealden Plain below, and a peculiar feature is that they do not flow along this valley, but north and south instead, cutting right through the Downs in narrow gorges to reach either the Thames or the sea. The main ones are the Wey, the Mole, the Darent, the Medway, and the Stour on the north side, and the Arun, the Adur, the Ouse, and the Cuckmere on the south.

III. Romney Marsh and Pevensey Level

At the eastern ends of the two arms of the Wealden Plain are two fairly large areas of alluvial land—Romney Marsh at the end of the northern arm, and Pevensey Level on the Sussex coast at the other side of the High Weald. Their greatest part is below the level of the highest tides and have been reclaimed from the sea from which they are now protected by a sea wall. Both areas are designated "marshes," but the name is misleading, for the greater part of them is well drained by an intricate system of dykes and ditches, and only rare patches are permanently wet and boggy. In the main they are treeless expanses of excellent grassland. There is some little arable land, but stock-grazing comprises practically the whole of the farming. Pevensey Level is grazed mainly by big strong bullocks (young stock do not do well), while Romney Marsh is grazed almost exclusively by sheep. Why the one should be the better for cattle-grazing and the other for sheep-feeding is a problem that remains unsolved. Some cattle are grazed on Romney Marsh in summer, but their number is insignificant compared with that of the sheep. It is essentially a sheep area and probably the most intensively stocked pasture in the world.

Generally the lambs stay on the Marsh till about the end of August, when they are sent inland for wintering, the Marsh itself being too bleak for them in the winter months. Most of them go to the upland farms in Kent, Surrey, and Sussex, but some are sent as far as the Midlands. At the end of March or the beginning of April they are taken back to the Marsh and fattened off the same year. The ewes remain on the Marsh throughout the year, but some of the farmers have inland as well as marshland farms and prefer to have the lambing on the higher ground. The predominant breed is the Kent or Romney Marsh, but there is an increasing tendency to cross with Southdown

rams, as the pure Kent is rather too large to meet the modern demand for small joints. The Kents are not prolific breeders, and there is also a tendency to introduce half-breds which are crossed with Southdown, Suffolk, or Hampshire rams. The Kent breed, however, is still the most popular on the Marsh.

IV. The Lower Greensand Ridge, Upper Greensand and Gault

Forming a rim round the Wealden Plain is a range of sandy hills of Lower Greensand, presenting a steep scarp to the Weald and having a longer and gentler slope on the other side. The northern arm forms a series of hills as far as Folkestone and Hythe and contains the highest point in the south-east of England—Leith Hill, 965 feet. In Kent, in the neighbourhood of Maidstone, it is about 6 miles broad and narrows to both east and west. At its western end in Surrey and Sussex it is much more extensive—about 10 miles from east to west and 12 miles from north to south, most of this area being hill and heath. The southern ridge in Sussex is less pronounced, and tapers off to about a mile in width east of the Adur.

Geologically the Lower Greensand is of four formations: Atherfield Clay, Hythe Beds (the main division), Sandgate Clay, and Folkestone Sand. Agriculturally the Atherfield Clay can be taken with the Weald Clay, and the Folkestone Sands may be omitted altogether as the soil is very light and infertile, and mostly covered by heath and woodland. In many places it is pure building sand and is worked as such. In Sussex the Hythe and Sandgate beds give rise to fertile and easy-working soils on which general mixed farming is practised with dairying as the main enterprise, and corn growing and sheep folding after it. In Kent, on the other hand, the Sandgate beds are for the most part under grass with sheep predominating and dairying sub-

sidiary. The whole Lower Greensand series in its area of greatest development west of Sevenoaks and on to the Hampshire border (Leith Hill–Farnham area) has little agricultural value, only the valleys where the rain-wash and the streams have accumulated a little soil being cultivated; the rest is open heath covered with heather and gorse or woodland of Scotch fir, larch, and birch.

East of Sevenoaks, and more particularly in the Medway Valley, the Hythe Beds give a sandy but extremely fertile soil—Kentish rag—and on it there is intensive farming of hops and fruit. The steep-scarped face of the Greensand ridge as it faces the Weald, with its southern exposure, is particularly valuable for fruit growing, and even the Weald Clay which encroaches on the face of the escarpment, is sufficiently overlaid by a down wash of sand to form a valuable soil at the foot of the hill. The Medway valley from Maidstone to Yalding forms the heart of this area which extends roughly from 4 to 5 miles east of Sevenoaks in the east to Broomfield in the west, and from just north of Maidstone in the north to Yalding and over the Weald Clay on the brick earth and alluvial deposits at Hunton, Paddock Wood, and Marden in the south. Here fruit and hops dominate the farming and the landscape, and except for plantations of chestnut, from which the hop poles used are drawn, the whole of this undulating country is intensively farmed. Along the lower slopes of the Medway valley are the finest of the Mid-Kent hop gardens. Higher up fruit is more abundant and has been replacing hops, especially on the crest and on the southern face of the Greensand escarpment. The principal fruit crop is apples, interspersed with pears, plums, and all kinds of soft fruit. Most of the orchards are under grass, though some are underplanted with bush fruit—gooseberries, raspberries, currants, etc. The rest of the farming in this area is entirely secondary to fruit and hops. No regular rotation is followed, and sheep are hardly seen except on the grass orchards.

In the last fifty years the hop acreage in Kent has decreased by nearly 75 per cent and there has been, and still is, a tendency to concentrate the crop on the most suitable soils. Evidence that the crop was once far more widespread than it is now is readily found in the number of disused oast houses (drying kilns), especially in the Weald. Production has not decreased in the same proportion as the acreage, however, this being due to the concentration in the best suited areas, improved methods of cultivation, and applying the results of biological research. The decrease in the acreage of hops has been offset by an increase in that of fruit.

Lying between the Lower Greensand ridge and the Chalk Downs is a narrow valley of Gault Clay, Upper Greensand, and Chalk Marl, but nowhere in the province is it extensive. Its largest area is in West Sussex. Agriculturally it is one area, all the farms in it being narrow rectangles lying across it and up the face of the Downs and all sharing the several types of soil. Fifteen years or so ago the farming here was based on arable cultivation and dairying, but since then more and more land has gone down to grass, and dairying is now by far the most important enterprise. What arable cultivation there is now is based on the four-course rotation and is for maintaining the dairy herds, and to a large extent for sheep folding.

V. The North Downs and the Thames Estuary

North of the narrow Gault–Upper Greensand valley is the ridge of the North Downs which on their northern side slope somewhat gently down to the river Thames and its estuary. The region is extremely varied in its agriculture, since it includes downland proper rising above 400 feet on the one side and a series of river flats and sands on the other. The North Downs themselves are not all typical downland, a large part being occupied by formations resting on the gentle slope of the chalk. Next to the summit is an area of

Clay-with-Flints (largely wooded) which, with the exception of certain stretches of bare chalk like the Epsom Downs and the bottoms of the many valleys at right angles to the line of the plateau, stretches continuously from near Guildford in the west to between Folkestone and Dover in the east. Further down the slope from Sandwich to London there is a strip of Woolwich and Thanet beds interspersed with patches of chalk, London clay, brick earth, and alluvium. Practically all of this strip is cultivated. Further west is a strip of London clay, nearly all under grass, in the valley through which runs the railway line to Guildford, and beyond that the heathy wastes of the Bagshot beds in the north-west of Surrey. Bare chalk occurs in patches—on the summit of the Downs, in the strip from Guildford to Rochester, and in the north-east and the south-east of Thanet. The region will be described by its various districts travelling from the Isle of Thanet in the east to Surrey in the west.

The Isle of Thanet, the north-east corner of Kent east of the Whitstable–Canterbury–Dover road, is a flat, dry, arable district famous for the quality of its barley, its broccoli, and its ability to grow lucerne. No fixed rotation is followed. Lucerne is the principal hay crop and the plant can be relied upon to "stand" for a number of years, after which the land will often grow two or three good corn crops in succession without help. Broccoli growing has an important place in the farm economy, Kent producing more broccoli than Cornwall. The Sittingbourne fruit area (below) extends into Thanet. Within this north-east corner there is also a market-gardening area with its approximate centre at Ash. Eastwards it extends to Sandwich, westwards to Wingham, and north and south for about the same distances, with an arm projecting to Deal. This market-gardening area is occupied mainly by small holders, and about 70 per cent of the output is marketed locally.

The Thanet Sands and the Brick Earth form almost ideal

soils, and on them is the second great hops and fruit area, noted more for its fruit perhaps than for its hops. The concentration is mainly on the land bordering the Rochester–Sandwich road from about midway between Rochester and Sittingbourne to within two or three miles of Sandwich, embracing a strip of country about three miles wide, roughly one mile to the north of the road and two miles to the south. Within this area the greatest concentration is in the neighbourhood of Sittingbourne, which is known particularly for its cherry orchards. The main fruit is the apple, but all kinds are grown, including practically all kinds of bush and soft fruits. Most of the orchards in this area are under grass which is closely grazed by sheep.

The Isle of Sheppey has a small market-gardening area in its north-west corner—round Sheerness—but otherwise it is a wet low-rented area. It is mostly stiff London clay and was at one time used for seed growing (swedes, etc.), but lucerne is the main crop now. The southern half of the island is marshy grazing land.

The Hundred of Hoo is another market-gardening area, noted principally for its early potatoes and "collards" (spring greens). The whole of the farming is subservient to these two crops which are protected from damage by spring frosts by the proximity of the estuary of the Thames.

Moving westwards nearer London we reach the largest market-gardening area in the south-eastern counties—that centred around Swanley, Bexley Heath, and Dartford, but stretching right across to Rochester and the south-west border of the Hundred of Hoo. All kinds of market-gardening produce are extensively grown in this area, and in it also are some 150 acres of glasshouses where large quantities of tomatoes, cucumbers, carnations, etc., are grown for the London market.

South of the Swanley area and all round the southern edge of London's suburbs market gardening is carried on wherever suitable conditions permit, but except for patches

such as those at Mitcham and Hackbridge there are no specific market-gardening areas; and, as urbanization progresses along the roads leading from London, it is being forced further out and becoming more scattered on account of lack of suitable soil and other conditions.

Little can be said of the general farming in the northern halves of Kent and Surrey except that in the areas already mentioned it is subservient to the enterprises which make the areas distinctive. Outside these special areas the general farming in Kent has a bit of everything—sheep grazing, dairying, poultry-keeping, cattle-feeding—with no specialization at all. In Surrey it is grassland farming for milk production with very little arable (and that little liable to be used for market gardening) but with large numbers of poultry. Egg production is often very successfully combined with market gardening. Owing to the large and widely distributed residential population there are a large number of producer-retailers of milk, and for the same reason much of the market-gardening produce is consumed locally. The military stations and camps in the Aldershot district have a similar effect on the farming in the west of the county.

VI. The South Downs and Maritime Sussex

This region divides itself into the two distinct parts of the title, namely, the ridge of downland called the South Downs and the Brick Earth area between the South Downs and the sea in the south-west part of Sussex.

The South Downs are about 6 miles broad where they enter Sussex on its western boundary, rising so steeply from the Upper Greensand terrace that some fields on the northern slope do not see the sun for four months of the year. The southern slope is deeply cut into coombes and valleys by two small rivers (the Ems and the Havant), but eastwards this stretch continues for some 20 miles with no other break to the valley of the Arun. Up to this point it differs from

all the rest of the South Downs in being heavily wooded on the higher levels along its whole length (beech largely). East of the Arun the ridge is open downland, reaching a height of over 700 feet in parts, and terminating at Beachy Head which itself is nearly 600 feet high.

Generally the South Downs are bare and thin on top, but have a surprising amount of soil on the lower slopes. Before the War the western parts were under traditional downland farming, based on barley and sheep, but since then the land has very largely gone out of cultivation and in most parts, and near the towns especially, dairying occupies a more important place than anything else. The same is true of the eastern reaches except that sheep farming was formerly the only enterprise. Just after the War there was a tendency to let large stretches of the Downs go derelict, but the development of dairying has checked this. With the development of dairying has come a general move towards more intensive farming of the Downs in West Sussex, and where a water supply can be provided for, bush and gorse clearing and extension of the farming area generally follow. Apart from the farming there has been an increasing tendency in recent years to regard the South Downs as recreation ground, particularly their eastern reaches.

On the cultivated land some wheat and oats are grown, but the arable area is for the most part subservient to dairying and sheep folding. There are still large numbers of sheep on the Downs but not in the large flocks that were common some years ago. They are mostly of the Southdown breed, though there are quite a lot of Kerry Hill, Cheviot, and Border Leicester–Cheviot flocks. There is an increasing tendency to bring in Scottish sheep and Kerry Hills to cross with Southdown rams for the production of early lamb.

The gentle southern slope of the South Downs is overlaid by deposits of more recent geological formation (Thanet) obscured by overlying Brick Earth which gives the most

generally fertile area in the whole of Sussex. Maritime Sussex richly deserves its name "the Garden of Sussex." The soil is a finely-tempered loam in which sand and silt predominate, but with enough fine silt and clay to give it "body" as well as water-holding capacity. Agriculturally it is not a homogeneous area, but generally speaking arable farming combined with dairying and folding sheep embraces the whole of the farming in the greater part of the area (the west).

Before the War Maritime Sussex was devoted to corn-growing and bullock-fattening combined with sheep-folding, but now beef production, and to a certain extent corn-growing, has given way to dairying, and dairying may be regarded as the main enterprise in the present farming practice. There is no manufacture of milk in the area, the whole production going into the liquid market, that produced west of Chichester going westwards to Portsmouth and the rest going east to the seaside towns. Beef has not been ousted completely, but what little there is is confined to the western part of the area. The flying flock system is generally followed with sheep, though breeding stocks of Southdowns are maintained here. Pigs and poultry are comparatively unimportant.

Arable cultivation revolves round wheat, sugar beet, folding crops, and short leys, a common rotation being wheat, sugar beet or folding crops, oats and seeds. The wheat acreage has increased somewhat at the expense of other arable crops since the introduction of the subsidy. Barley is not a typical crop though at one time it was common on the Coombe Rock area, a thin strip of valley gravel immediately to the north of the Brick Earth. There are numerous gravel pits in this strip which are worked for building materials.

East of Chichester the farming gradually gives way to market gardening in the Worthing–Brighton area. There is no distinct line of demarcation between the farming

proper and market gardening, and what line one may draw would hold good for only a short time as, owing to the pressure of building and the expansion of the seaside towns, the market-gardening and glasshouse industries are being pushed further and further west. They cannot extend to any great extent in other directions because of the proximity of the Downs and lack of suitable soils. This increasing urbanization and market gardening being forced to shift further out is evident throughout the whole of the south-eastern province.

All kinds of market-gardening produce are grown in this area, but it is perhaps best known for its forced beans, early lettuce, and mushrooms. The glasshouse industry has not developed to the same extent here as in the Lea Valley, but considerable quantities of grapes, tomatoes, and cucumbers are produced. Figs are also grown, both in the open and under glass, and some of the best strawberries are grown in this area. There is comparatively little orchard or bush fruit, though there are a few commercial orchards in West Sussex. Early in the season the London market is the main outlet for the products of the glasshouse industry, and then later the coastal towns from Hastings to Southampton.

Markets

There are numerous live stock markets throughout the south-eastern counties, the main ones being Guildford in Surrey, which serves the northern part of West Sussex as well as Surrey itself, Ashford in Kent, Lewes in East Sussex, and Chichester in West Sussex. These are general markets handling fat stock, cows, sheep, pigs, and poultry, and most of the markets in the area are of this type. There are, however, several special markets, e.g. poultry at Heathfield, and sheep at Rye, and in addition to these there are periodical fairs, especially for sheep at such places as Ashford, Maidstone and Rochester in Kent, Chichester and

Findon in West Sussex, and Lewes in East Sussex. There are several egg-packing stations in the area.

There are no special fruit markets and very little fruit is retailed by the producers though there are some wayside stallholders. The bulk of the fruit is sold through agents in London who advise as to the best outlets throughout the country. Quite a large proportion of the orchard fruit is sold on the trees by auction (Maidstone and Sittingbourne). Canning has been on the increase and there are now canning factories at Maidstone, Faversham, Carrotwood, and Barming in Kent. Hops are now sold through the Hops Marketing Board.

Nearly all the market-gardening and glasshouse produce from the northern halves of Kent and Surrey goes to London, most of the big growers having their own lorries for transport. The produce from the Worthing market-gardening area is mostly consumed in the towns along the south coast.

Pigs are not a special feature of the farming in any of the counties in the province. Most are for the pork market, but in Kent there has been some development of baconer production since the introduction of the Pigs Marketing Scheme.

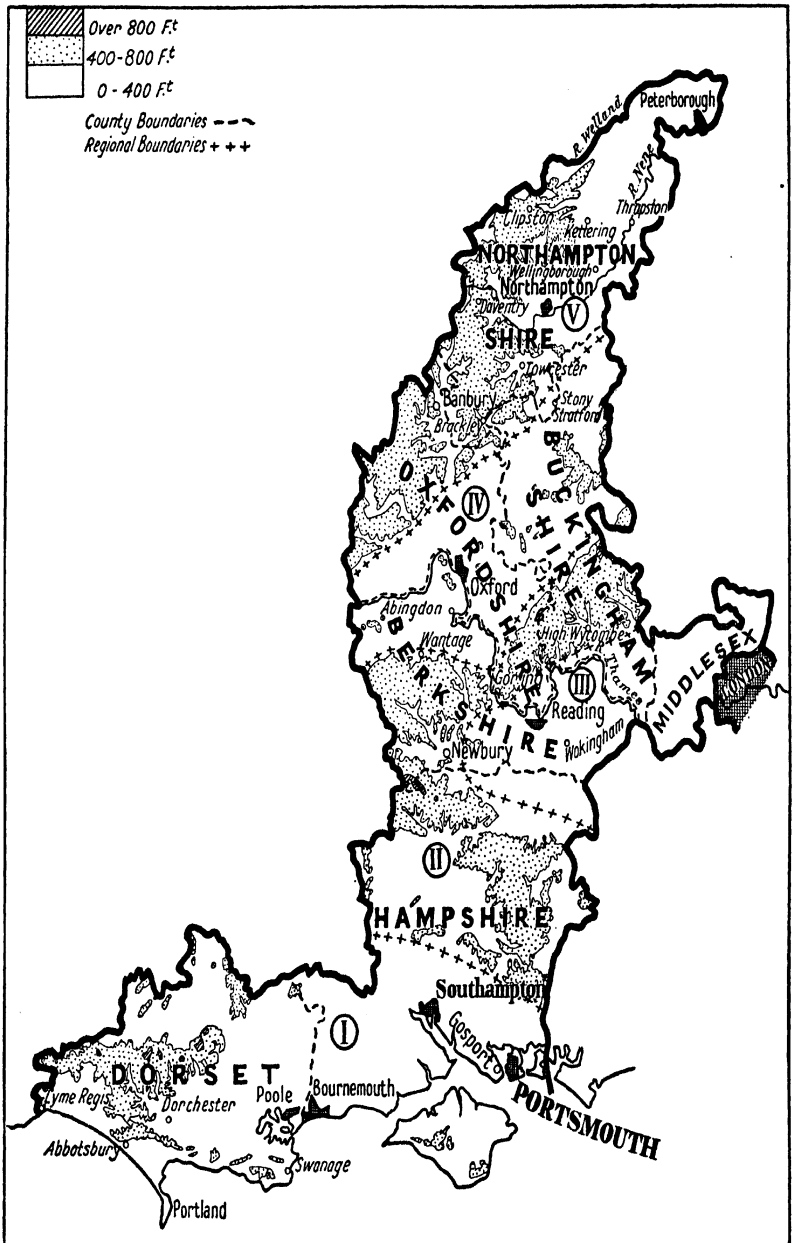
The main milk market is naturally London, though the coastal towns, especially in summer, provide a big liquid outlet.

Chapter VIII

The South and South Midland Counties

THE COUNTIES OF
DORSET, HANTS, BERKS, BUCKS, OXFORD,
and
NORTHAMPTON

By EDGAR THOMAS
University of Reading



MAP OF SOUTH AND SOUTH MIDLAND COUNTIES

CHAPTER VIII

The South and South Midland Counties

THE Southern Province comprises Dorsetshire, Hampshire, Isle of Wight, Berkshire, Buckinghamshire, Middlesex, Oxfordshire, and Northamptonshire. The province resembles in shape a wedge driven in at the centre of the south coast right up through the middle of England to a point some thirty miles short of the Wash on the east coast.

The total land area of the province is 3,943,799 acres, of which 2,675,910 acres are under crops and grass, and 268,539 acres are classed as rough grazings used for agriculture, leaving 999,000 acres in non-agricultural use.

The proportion of land not used for agricultural purposes is high compared with other parts of this country, but this is largely due to the fact that London occupies a large proportion of Middlesex and its population overflows into all of the other adjacent parts of the province.

The location of London with its 8 million people partly in and partly on the edge of the province is a dominating factor in the agriculture of the surrounding country, though perhaps less so than one would expect. The most noticeable relationship between London and the surrounding land is the rapid encroachment of houses and factories on land which until comparatively recently was farm or market-garden land. The land around London had formerly a marked advantage in the production of perishable products, milk and vegetables particularly, but rapid transport has reduced the advantage and the demand for building is pushing the fringe of agriculture further and further back from the metropolis.

The total population of the province is just over 4 million, 40 per cent of which is in Middlesex and is virtually a part of London. In addition to London, several very large towns

spaced widely apart throughout furnish big local markets. On the south coast, the port of Southampton with 176,000 inhabitants, the naval dockyard of Portsmouth (249,000) and Gosport (38,000), the great holiday resort of Bournemouth (117,000), and the port of Poole (57,000), together in this strip of the south coast hold one-quarter of the population of the province (excluding Middlesex). Reading, roughly the centre of the province, has a population of 97,000. Oxford further north has 81,000, and still further north, the leather industry towns of Northampton, Kettering, and Wellingborough together have about 145,000 inhabitants. Peterborough in the extreme northern border of the province is a town of 44,000 inhabitants.

The position of London and the location of these other large centres of population provide the province with excellent main lines of communication both by road and rail, but many parts of the country are comparatively remote from good railway transport.

The main physical features of the province are fairly simple. Except for a few small patches, none of the land is over 800 feet above sea-level. Two main ridges of high land, however, rising above 400 feet, divide the province. A belt of limestone uplands run along the north-west border in the counties of Oxford and Northampton. To the east of this ridge the country slopes down to the wide plain of the Eastern counties stretching almost unbroken to the Norfolk coast. To the south of the ridge lies the wide valley drained by the Thames and its upper tributaries round Oxford and the Vale of Aylesbury. On the south of this valley the ridge of chalk hills rises sharply. The Thames cuts through this ridge in a narrow gorge just above Reading, dividing the range into two parts, the Berkshire Downs to the west and the Chiltern Hills to the east. The ridge of the latter is comparatively narrow and slopes down on the south into the lower valley of the Thames. The chalk, however, rises again on the south of the Thames and forms

another broad range in Hampshire, stretching southwards almost to the coast, as well as westwards to the south-west corner of Dorset.

The rainfall of the province exhibits a range from moderate to rather dry conditions as one moves northwards. The greater part of Dorset and Hampshire has over 30 inches per annum, while in the Thames Valley and in parts of Northamptonshire there is less than 25 inches.

The system of land tenure throughout the province is still mainly a tenancy system, though since the War there has been, as in the rest of the country, a big increase in the number of farmers who are their own landlords. Farms vary in size from small part-time holdings, mostly near the towns, to holdings of over a thousand acres, particularly on the Chalk Downs. In Middlesex, for example, according to the official statistics, 74 per cent of the holdings are under 50 acres and only 9 per cent are over 150 acres. In the county of Northampton, on the other hand, 55 per cent of the holdings are over 50 acres and 28 per cent over 150 acres. The average size of farms in Northamptonshire is 115 acres as compared with 68 acres for the whole of England.

The regular employment of labour per 1,000 acres is on the whole higher than the average for the country. The average number of males regularly employed in England is 21·8 per 1,000 acres. The counties of Northampton and Oxford, with 14·4 and 17·0 respectively per 1,000 acres, have a lower average due in the main to the prevalence of larger arable and grass farms. Buckinghamshire with 21·6, Dorset with 22·1, Berkshire with 23·8, and Hants with 26·2 are about average. Middlesex, on the other hand, with its large proportion of market gardening, has a regular employment of 102·3 men per 1,000 acres. The regular employment of women in the various counties is small, being about 1 per 1,000 acres, except in Middlesex where as many as 24 per 1,000 acres are employed. The employment of casual

male labour is between 2 and 3 per 1,000 acres in the various counties, with the exception of Hampshire, where it is almost 4 per 1,000 acres, and Middlesex where it is as high as 10 per 1,000 acres. The employment of women casuals is also average in all counties except in Hampshire, where it is nearly 2 per 1,000 acres, and Middlesex where it is 10 per 1,000 acres. Minimum wage-rates are for all counties round about 31s. per week for adult male workers, but in Middlesex and the vicinity of London they are about 3s. per week higher.

The agriculture of the province is naturally very varied. Certain areas are traditionally and ideally pasture land, while others are equally clearly defined as arable districts. During recent years, however, there has been a substantial growth of dairy farming for milk production throughout most of the area. Certain districts such as the Vale of Aylesbury and the lower Thames Valley are old-established milk-producing regions, but milk production has been steadily encroaching in other parts, which formerly were not considered particularly suitable. Arable farming, on the other hand, belongs mainly to the higher land in Oxford and Northampton and to the Chalk Downs in Bucks, Berks, Hants, and a portion of Dorset.

The general configuration of the province enables us to divide it roughly into five main regions for the purpose of more detailed description, but it need hardly be emphasized that these regions are not homogeneous agriculturally, all of them having two or three main types of farming within their roughly-defined boundaries.

The regions which will be taken for the purpose of further description are:

I. The South Coast Region
II. The Chalk Downs
III. The Lower Thames Valley
IV. The Upper Thames Valley and the Vale of Aylesbury
V. The Oxfordshire Uplands and Northamptonshire

I. The South-Coast Region

This region stretches for about 90 miles along the south coast from Hayling Island in the east to Lyme Regis in the west. It includes the whole of Dorset and part of Hampshire lying between the chalk downs and the sea.

There is little or no uniformity about the farming in the region. In the extreme south of Dorset, there is a jumble of strata occurring in narrow outcrops and giving very rapid soil changes. Within eight miles of Portland, for example, no fewer than eleven different geological strata may be distinguished. This area, which stretches along the coast from Abbotsbury to Swanage, is very hilly. On the soils of the Middle and Upper Lias in the west, medium clays and loams of a fertile nature are found. Mixed farming is practised, but grass predominates and the production of milk for liquid sale is the chief interest. Good arable land is found on many of the farms and this is worked on the four-course system. Usually, however, arable land forms only a relatively small proportion of the holdings and the tendency is to reduce even this acreage. The farms on the whole are small, though in the Dorchester district and in the valley of the Frome large dairy farms are found. In this district the old west-country custom of hiring the dairy to a dairyman still obtains. Under this custom, similar to the Scottish "bowing" system, the farmer supplies the cows and the food and the dairyman is responsible for the management and the labour of the dairy. This countryside is also the home of the famous Dorset "Blue Vinny" cheese, the supply of which is now said to be hardly sufficient to meet the demands of Dorset dinners in London. On the east side of this area, the proximity of Bournemouth has tended to quicken the intensity of the farming toward milk, poultry, market gardening, and fruit-growing.

The central part of Dorset belongs to the chalk formation, and the type of farming and its problems are very similar

to that found in other parts of the province and will be described later in Region II.

In the north-west part of Dorset lies a grassland belt where dairying is well established as the primary interest of the farmers. The centre of this farming is in the Blackmore Vale and the Vale of Shaftesbury, where the heavy soils of the Kimmeridge Clay give rise to excellent pastures. A writer of 1855 describes this district as "a fine grazing country, which will rear oxen as bulky as the red sandstone vales and alluvial marshes of Somerset and grow oaks of 120 cubic feet." Now, the grazier of beef oxen has given way to the dairy farmer, and in more recent years the system of dairying has changed from butter and cheese making on the farm, with pig-feeding as a subsidiary enterprise, to the selling of milk. At present, the big majority of the farms can be described as grassland dairy holdings depending in the main on the sale of milk, but with pigs and especially poultry as increasingly important sidelines. Small and medium-sized farms of under 150 acres predominate, and although a number of large farms may be found, it is the family farm which is typical of this "vale of little dairies."

Much of the division of Hampshire which lies within this South-Coast Region contains tracts of heavy clay land largely under permanent pasture. Proximity to the highly populated centres of Bournemouth, Southampton, and Portsmouth accounts for the development of milk production, a development which has extended rapidly since the advent of motor transport. Proximity to the large towns also accounts for the growth of market gardening and fruit-growing. In the vicinity of Bournemouth, for example, several large colonies of smallholders are engaged in the production of fruit and vegetables.

One special area is worthy of mention. Inland from Southampton Water is to be found one of the chief centres in the country for the growing of early strawberries. The

industry was established in the district some fifty years ago, and development has been rapid. Several factors combine to give the district its favourable position. The climate enables ripening to take place a few days earlier than most other districts, and with the well-established localized production and the excellent railroad facilities provided by the proximity of Southampton, the fruit can be transported quickly and efficiently to literally every important town in the country. The industry is in the hands of small producers, many of whom have 3 acres or less and are dependent on these for their livelihood. Since 1925 the acreage has been contracting, and the industry has been passing through difficult times, partly due to the level of prices and partly to "degeneration" of strains to which the strawberry plant appears to be prone.

Extensive tracts of this part of Hampshire are covered with barren sandy soils occupied by the New Forest and the heaths, and are of little agricultural value.

Farming in the Isle of Wight, which lies within this Region, does not differ essentially from that of the adjacent mainland. The majority of the farms are small, and mixed farming is prevalent. Milk production has developed here as elsewhere, and is the main concern of the farmers, though poultry, fruit, and vegetables have also developed as a result of the island's importance as a holiday resort.

II. The Chalk Downs

The geological formation of the chalk with its characteristic appearance and farming, covers a large area of the province —in Hampshire, where it covers half the county, in Berkshire, and in Buckinghamshire. As already mentioned, the central part of Dorset is also a part of the Downs. Apart from the portion in Dorset, the chalk belt in the province divides itself into three sections, the broad belt covering

the northern half of Hampshire, the Berkshire section which enters the province from Wiltshire and runs eastward to where the Thames cuts its way through near Goring, and the steep narrow ridge of Buckinghamshire which runs north-east from the Thames at Goring until it passes out of the province into Hertfordshire.

Each of these sections of the chalk has one or two features of its own, but the general configuration and the farming conditions are the same in all sections, as they are for all other areas in the country where chalk land farming exists. The land lies for the most part between 400 and 500 feet in a series of undulating rounded hills or "downs." The higher tops of the downs are covered in their natural state with characteristic short grass mainly left as "open down" or "sheep walk." Rougher pasture is found on large tracts (where there is a gravel coating), and much of this is covered by gorse and bush. Until recently, however, the greater part of the Downs was under the plough with the exception of the narrow valley pastures, the steeper hillsides, and the highest peaks. Many of the valleys, particularly in Dorset, are narrow and steep. The typical farm is large with open fields devoid of hedges. Many of the farms are rectangular in shape running up from the farmstead in the valley or "bottom land" to the top of the down behind.

The traditional farming system of the Downs in this region, as elsewhere in the country, is "corn and sheep," the corn crop, mainly barley, preceded by roots and followed by clovers folded off to the sheep, whose treading was considered essential to maintaining fertility in the not naturally fertile soil. The system was at its heyday some sixty or seventy years ago, but the fall in the demand for barley, and the expensive system of feeding sheep in folds as well as a change in the public demand away from the type of heavy Down sheep on which this system of farming relied, has created difficult times for the chalk-land farmer. Both the arable

acreage and the numbers of sheep have declined rapidly in recent years.

Farming on the Downs, especially in Dorset and Hampshire, still retains for the most part its traditional appearance, but transition and experiment are going on almost everywhere. The efforts to solve a difficult problem are so various that only the main trends can be outlined. A number of farmers adhere to the conventional corn and sheep system, with slight modifications, such as in the direction of earlier maturing sheep for the production of fat lambs and young mutton. Hampshire was one of the first counties to lead the way in this direction as far back as the end of last century. In the management of the arable land variations are being made in the orthodox four-course towards increased acreage of catch crops such as rye, vetches, trifolium, and winter greens.

The major trend, however, has been to reduce the arable acreage by laying down land to grass. The grass is utilized in one of two ways, either by the introduction of cross-bred sheep capable of running on both grass and folded crops, or by introducing a dairy herd. The chief obstacle to the latter is the inadequate water supply and the need for subdividing the large fields into smaller grazing units as well as the provision of dairy buildings. Nevertheless, all over the chalk country, and especially in those districts which have the advantage of easy access to the market, many farmers have overcome these difficulties. Existing buildings have been adapted and new cowsheds erected, water has been laid on, and dairying on more or less normal lines is being practised. In addition poultry have been accepted as a serious branch of the farm. By these means, chalk-land farmers have diversified their systems and reduced their dependence on the old corn and sheep combination.

In two directions, however, more radical change has been made. A number of farmers, by adopting the "open-air

bail" system have been able to practise a system of grassland farming entirely, even on the more exposed sections of their holdings. There is an economy of buildings and labour and an improvement in the pasture land by the rotation of grazing and by the direct application of all dung to the land, and careful spreading with harrows. Poultry are also being run on the same lines. At the other extreme a number of men, some of them "new" farmers, have abandoned live stock and grass entirely and by mechanical equipment of tractors and combine harvesters cultivate the land entirely for cereal crops, using only artificial manures and a periodic fallow or fallow crop.

One of the main obstacles to readjustment is the lack of capital, which radical change, either in laying down of grass or fencing or buildings, requires in this region. Large tracts, particularly in North Hampshire, are in a low state of productivity, and in places are fast reverting to their natural state of scrub and bush.

Within the rough boundaries drawn round this Chalk Farming Region there are several valleys which do not come within the general description, but these can best be dealt with as spurs of the adjacent regions.

III. The Lower Thames Valley

This region lies like a blunt wedge between the ridges of chalk in Buckinghamshire on the one side and of Hampshire and Berkshire on the other side. The Thames from Goring and Reading to London flows sluggishly through it. The agriculture of the region varies, but milk production on grassland is the most typical feature of the general farming.

On the north side of the river, lying entirely in Buckinghamshire, a narrow strip of fertile land between the river and the Chilterns has long been noted for its dairy farms. On the south side of the river, lying in Berkshire, conditions

are more variable. At the western extremity of this region the valleys of the Kennet and the Loddon pierce the chalk. The tracts of common land in the Kennet valley extending to Newbury are practically useless agriculturally. The once important industry of osier growing in this district is rapidly disappearing. Water conditions have a deciding influence on the agricultural practice, for much of the valley is subject to seasonal flooding and there is little alternative to grassland farming. Again in the south-eastern corner of the region round Wokingham, the most infertile district in the whole of Berkshire is found, covered by deposits of coarse sand and gravel. With these exceptions, and one or two special areas to be mentioned later, dairying, mostly on grass, is the chief occupation of the farmers on the south side of the Thames. The neighbourhood of Reading is specially noteworthy for the progress made in the direction of producing the higher grades of milk from tuberculin-tested herds, a condition of affairs in keeping with the location of the National Institute for Research in Dairying at Reading University.

The whole of this region has also seen an increasing attention to poultry, both on general farms and on specialized holdings. On the southern slopes of the Chilterns, that is, on the north side of this region, the well-known cherry orchards are found, some of them attached to farms and some conducted as distinct businesses. Mention should also be made of the quasi-agricultural industry of the Chiltern beechwoods which supply the raw material for the important chair and small furniture factories of High Wycombe and the neighbouring villages.

As this region approaches London, practically the whole of Middlesex and the adjacent corners of Berkshire and Buckinghamshire are devoted to nurseries, market gardens, and glass houses. Writing in 1815, John Middleton emphasized the many points of difference then existing between Middlesex farming and farming in other parts of the country,

especially the absence of live stock farming, the production of hay for London, and the progressive position of market gardening and fruit-growing. The difference to-day is even more marked in those parts of the county which are still left to agriculture from the unparalleled spread during the last half-century of the metropolis, Cobbett's "great wen."

According to official statistics, Middlesex has at present approximately 1,000 "farmers," but it is probable that fully half of these are interested in "farming" to only a small extent. The remainder are roughly divided equally between dairy farms and fruit and market garden holdings, together with a number of specialized pig and poultry holdings. The dairy farms, which are small in size, are mostly in the north-west of the county on the borders of Hertfordshire. Market gardening and fruit are most concentrated in the level plain of the Thames in the south-west of Middlesex and adjacent corners of Buckinghamshire and Berkshire, and in the famous Lea Valley, in the north-east of Middlesex, where many acres are under glass, producing high-cost products such as tomatoes, cucumbers, grapes, and early vegetables.

IV. The Upper Thames Valley and the Vale of Aylesbury

This region is a stretch of level plain, covering the north-west corner of Berkshire, south Oxfordshire, and the whole of Buckinghamshire, which lies north of the downs. With one or two exceptions dairy farming is general throughout this region at the present time, but one or two areas deserve special mention. In the valley of the Upper Thames itself dairying is well established, the flooded meadows making good dairying land. Mixed farming with milk selling as the chief business predominates. The farms are larger than in the more typical grassland area and carry a proportion of arable. This dairying area follows the Thames upwards

across the Berkshire border into the Vale of the White Horse, as well as northward into the belt of Oxford Clay, which stretches from Bampton in the south-west of Oxfordshire to Bicester in the east of that county. Here milk selling is almost universal, and accounts for probably half the total farming income. The typical farm is from 150 to 200 acres in size and may have about a quarter of its land under the plough. Wheat is usually sold from the small acreage of arable, but nearly nine-tenths of the farm receipts come from live stock and live stock products. In addition to the dairy herds, the farms carry small flocks of sheep and a poultry unit.

In the east of the region, i.e. west of Oxford, the land is even more typically dairy country. The Vale of Aylesbury and particularly the tenacious clay soils to the north have for long been regarded as essentially grassland districts. Dairying was early established, and the change over from farmhouse processing to liquid sale was accomplished at an early date when this area became one of the chief sources of London's fresh milk supply. As early as 1888 the British Dairy Farmers' Association selected the town of Aylesbury as the site for the first British Dairy Institute.

The once celebrated industry of duck rearing in the Aylesbury neighbourhood failed to survive the setback it obtained in the years 1914 to 1917, and is fast disappearing.

In the north-west boundary of this region, where Buckinghamshire borders on Northamptonshire, stock raising and cattle feeding are of some importance and sheep, of the grassland breeds, are more numerous.

One district within this region is celebrated for its fruit, particularly cherries and apples. It lies in the north-west of Berkshire and stretches northwards from the downland above Moulsford and Wantage to Abingdon in the east and Hinton Waldrist in the north-west. It coincides roughly with the Upper Greensand on which most of the orchards

are found. Orchards are usually attached to the large farms, cottages, and private houses, and the number of specialized fruit-growers is small. In recent years, many of the orchards (most of them over fifty years old) have been allowed to deteriorate, but, in others, where modernized methods of management are in use, the productivity has been greatly increased.

V. The Oxfordshire Uplands and Northamptonshire

This region includes the remainder of the province and covers the north-west of Oxfordshire and the whole of Northamptonshire. Most of it is high land, lying above 400 feet, the exception being the western half of Northamptonshire which lies in the valley of the river Nene.

The south-west part of this region belongs to the Cotswold country, described also in the West of England Counties. The great Oolite and corn-brash formations give rise to a system of arable farming which is perhaps the most typical of Oxfordshire farming. This stretch of rolling hills and valleys with its brown ploughland, its characteristic stone-built villages and stone walls instead of hedges, is farmed in large holdings averaging about 300 acres. From 60 to 80 per cent of the land is arable and the soil may be described as typical "sheep and barley land." It is a light stony (brashy) soil, never of any great depth. The farming problems of the area have, therefore, much in common with the chalk country. Barley was formerly the chief grain crop but the superiority of other districts in growing good malting barley has led to wheat being the more important grain crop at present. The folding of sheep on roots and the feeding of bullocks in yards used to be the chief live stock enterprises. As in other districts, however, milk production is taking their place. Oxford Down sheep have been replaced by the grass breeds and their crosses. Pig-keeping, always relatively important in the area, has been on the increase,

and poultry have now become an important item on many farms.

To the north of the Cotswold country, around Banbury, there are red iron-stone soils on the Lias formation where mixed farming is carried on, often with a high proportion of arable land. This is the home of the Oxford Down breed of sheep. Much of the land is undulating, and in the valleys is often under grass. The arable farms are more diversified than in the Cotswolds. Milk is the chief product, good malting barley is obtained and potatoes, sugar beet, and peas are found in the rotation. Compared with the Cotswolds, the land is more productive, farms are smaller, and more labour is employed.

Passing into Northamptonshire to the west of Banbury, we encounter another arable farming area round Brackley and extending to Towcester and Stony Stratford. These are limestone soils forming part of the Oolite. From Towcester these soils diverge to the east, linking nearly the whole of that side of the county south of the river Nene, from Northampton to Thrapston. The same soils are found also in the extreme north of the county, south of Stamford and meeting the red soils at Finedon. This country is similar to the Cotswolds in its natural features and in its farming systems. The farms are generally large, corn (especially wheat) and sheep are important products, but the farming is very varied, dairying being important, pigs and poultry becoming increasingly popular in recent years. In the northern parts sugar beet is now an important sale crop and occupies from 10 to 15 per cent of the arable acreage.

The other main arable area of Northamptonshire consists of a strip of red soils running through the middle of the county in a north-easterly direction and branching out from Northampton to Market Harborough, Kettering, and Wellingborough. This is described generally as "turnip and sheep" land and many sheep flocks are still maintained,

though dairying is making considerable inroads as the main live stock enterprise.

Taking the county of Northampton as a whole, however, practically three-quarters of the farmed area is under grass. Nearly the whole of the western half is grassland. The production of milk for sale in the neighbouring towns and for export to London is predominant and is found all over the county. Dairy farming is, however, of first importance in the river valleys, particularly of the Nene and the Welland. These contain stretches of natural meadow land, often flooded in winter, which provide ample hay and summer grazing. On all the second-class pasture which constitutes the bulk of the grassland of the county, milk production is the characteristic feature.

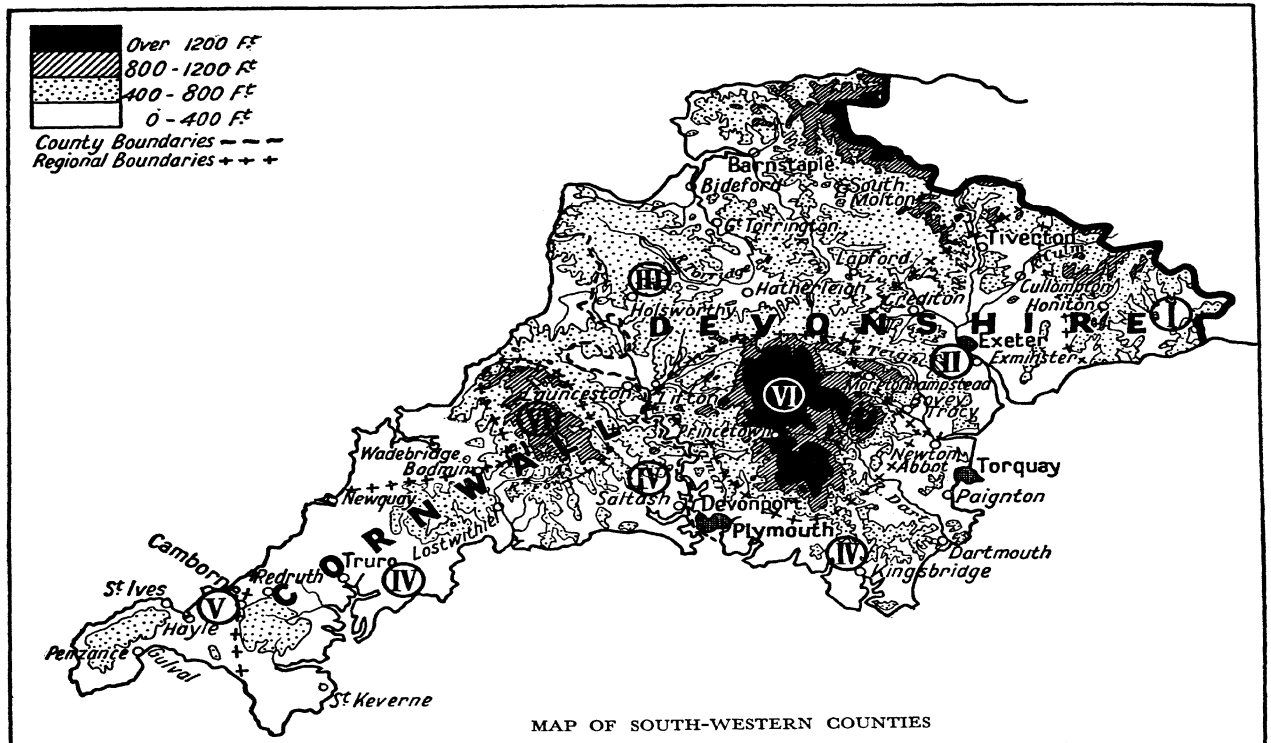
The description of Northamptonshire, however, would not be complete without reference to the celebrated rich feeding pastures which are found in the west of the county from Daventry to Northampton and thence towards Clipston and Market Harborough. Bullock fattening on grass is the characteristic of this exceptional area. The greater part of this Midland grazing industry is carried on in the neighbouring county of Leicestershire and a description of the system is given in the account of the East Midland Counties.

Chapter IX

The South-Western Counties

THE COUNTIES OF
DEVON *and* CORNWALL

By W. HARWOOD LONG
Seale-Hayne Agricultural College, Devon



MAP OF SOUTH-WESTERN COUNTIES

CHAPTER IX

The South-Western Counties

THIS province comprises the two counties of Cornwall and Devon, and forms the south-west peninsula of England. Its boundaries are the coast except where in the north-east and east it adjoins the provinces of the West of England Counties and of the South and South Midland Counties. The total land area of the province is about 2,533,000 acres, of which 1,739,000 acres are in crops and grass and a further 417,000 acres are classed as rough grazings, leaving 376,000 acres in non-agricultural land, either in timber, in urban and recreational use, or as completely waste land. Compared with many parts of the country the population of the area is very sparse. What is perhaps of equal importance is the absence of any large consuming centre in the adjacent counties. In fact, west of Bournemouth and Bristol, the only towns of any size are Plymouth, with a population of 208,000, Exeter with 66,000, and Torquay with 46,000. Camborne is the largest town in Cornwall, but the population is only 14,000, and Truro, the capital of the Duchy, has no more than 11,000 inhabitants. Thus it is not difficult to realize that many parts of the South-west must look to markets far afield for the disposal of much of their produce, and large quantities of produce, live and dead, are exported to other parts of England.

But to stress unduly the absence of large towns in and near the province tends to underrate the importance of the local demand. Cornwall particularly has an industrial population, though the mining industry that once put the Duchy in the forefront of industrial England is now a shadow of its former self. The importance of mining and fishing, and the relative insignificance of agriculture, is implied in the county toast "Fish, tin, and copper," and

it is only in the last one hundred and fifty years (when in other parts of England agriculture has been forced to make way for industry) that Cornwall has come to be considered an agricultural county. The density of the permanently resident population of both Devon and Cornwall is 0·4 person per acre, compared with 1·9 in a comparatively industrial area like the West Riding of Yorkshire.

The amenities of the climate and the beauty of the scenery, however, draw an ever increasing number of summer visitors to the coast, and this influx creates a by no means insignificant demand for certain farm products, besides, in the way of board, lodging, and camping sites, affording the more enterprising or less affluent farm families a very acceptable addition to what has only too often become a dwindling income from farming.

Possibly for its size no area yields such a variety of farming systems as the South-west. It is true that few parts of it have a large proportion of the land under the plough, and that stock farming predominates in most districts. But there is very little uniformity in the system followed in any area of size, and sometimes a few miles' journey will take one into very different types of farming.

An outline of the main features of the topography of the province is given in the map.

Rainfall in most parts of the South-west is well above the average of the country, and the high precipitation affects both the lime and the humus content of the soil in many parts. There is no doubt that one reason for the lime deficiency and general poverty of the higher lying parts of Devon and Cornwall is the leaching of fertilizing ingredients that is brought about by the abnormally high rainfall. The relationship between rainfall and humus content depends on the high nitrification that is a feature of soil life in this part of the world. This depends on, and is closely related to, the amount of rainfall, and it is partly to the high humus content which results from this nitrification

that Devon and Cornwall owe their early grass, their out-of-season vegetables, and the possibility of developing the flower trade. On the other hand, certain diseases of fruit-trees, such as canker, and of strawberries, must also be attributed to the phenomenon of winter activity of the soil.

A third natural factor that is capable of exercising a considerable effect on the farming of the district is the soil. There is more connection between soil and geological formation in the South-west than in most parts of Great Britain, as there has been no glacial drift to superimpose an alien soil on to the original geological formation in these parts. A consideration of the geology of the area gives, therefore, a fairly correct impression of its agricultural soils.

The map showing the topography of the South-west indicates igneous outcrops that occur, like the vertebrae of a backbone, at more or less regular intervals from the middle of Devon to farthest Cornwall. These are granite outcrops, and the fertility of the soil to which they give rise depends partly on their altitude, partly on the mineral structure of the rock. Where the granite consists predominantly of felspar, the overlying soil will usually be very fertile and productive. But if quartz predominates there will be little agricultural value in the soil.

The first granite outcrop as one moves west, and the largest, is Dartmoor. Much of the moor is more than 1,500 feet above sea-level, and comparatively little of it is enclosed or cultivated at all. Dartmoor extends from within ten miles of Exeter almost to the Cornish border. Almost directly beyond the Tamar the second outcrop appears. This is known as the Cornish (or Bodmin) moors. It is very similar to Dartmoor and is, in fact, a continuation of it. The Bodmin moors cover most of the country between Launceston and Bodmin.

West of Bodmin there is a further granite outcrop, but this is not so wild nor so rugged as Dartmoor and the Bodmin moors. It is the centre of the Cornish china clay

industry, but does not sustain much agriculture. The fourth outcrop appears between Truro and Redruth, and the fifth is in the extreme west, between and around St. Ives and Penzance. These two outcrops are mainly under cultivation, and the soil is known locally as "growan." They produce heavy crops and carry a very large number of stock, mainly dairy cattle and pigs, per acre.

Most of the moorland of the South-west is on the infertile granite that has already been described. Other moorland regions in the two counties are that part of Exmoor that is in Devon, and various regions of rough (often undrained) grassland scattered throughout the province.

But the South-west is noted for its fertile soils rather than for its infertile spaces, and it is fair to say that the vast majority of the soils of the area still to be described are fertile loams, well drained and easily worked. In East Devon there are some light gravelly soils, but heavy clays such as are found in some parts of Britain are practically unknown.

Most of the outstandingly fertile soils in the South-west are associated wholly or in part with *basic* igneous rocks (outcrops of which are found almost in every point from Exeter to Kingsbridge). In Cornwall this type of rock is not found to the same extent as in Devon, but gives rise to a few exceptionally rich soils on so-called elvan and dunstone as round Penzance (Gulval), St. Keverne, and Truro. The calcareous deposits in South Devon undoubtedly account in large measure for the richness of the South Ham soils and the absence of such deposits in North-west Devon and Cornwall is responsible for the relative poorness of the soils of these areas.

Another geological formation that also gives rise to a very fertile soil is the marl and sandstone area that stretches along the coast from Paignton to Exeter and then forks northward to Tiverton and Cullompton and westward to Crediton and Hatherleigh.

The soil in East Devon hardly attains the same level of fertility as in Mid Devon and South Devon. The marly deposits in the valleys are used mainly for permanent grass, but much of the soil is gravel and greensand. This remains woodland or heath.

The large part of the county that comprises North-west Devon, i.e. from Exeter to Cornwall and from Dartmoor to South Molton, is situated on two types of rock with two different types of soil. Both are culm measures, but the soil in the north-west of the county is derived from shale and is a clay loam in character, very wet and cold in the valleys, whereas at the eastern end of the culm measures the predominating rock gives rise to a reddish sandy loam. Both these soils are deficient in lime and phosphates, but they respond readily to treatment.

Most of Cornwall, except for the granite outcrops, is on a freeworking loam soil. In parts of it the rocks are of igneous origin and these give rise to the most fertile soils. The North-east of Cornwall, however, lies on the culm measures and is similar to much of North Devon, while the Lizard peninsula is composed mainly of a serpentine formation that is almost unique. The soil derived from the serpentine is particularly unproductive, owing to the large proportion of magnesia contained in it. The serpentine gives way to a more fertile formation in the extreme south of the Lizard peninsula, but parts of this peninsula are as unproductive as any in Cornwall.

To sum up, South Devon depends for its high level of fertility on basic igneous rocks and limestone. In Cornwall there are no limestone deposits, and the only soils that are not seriously deficient in calcium are those on the shales in East Cornwall and on the *basic* igneous rocks round Penzance, Truro, St. Keverne, etc. The cultivation of the granite areas is possible only by reason of the calcareous sand from Hayle and other places round the coast.

Devon and Cornwall *could* be divided into an almost

countless number of agricultural regions, but for the purpose of this survey it will be sufficient to indicate six main regions within most of which some marked variations occur. The regions are as follows:

I. East Devon
II. Mid Devon
III. North Devon and North Cornwall
IV. South Devon and South Cornwall
V. West Cornwall
VI. Moorland

To these is added a brief reference to the Scilly Isles.

I. East Devon

Mixed farms, worked largely by family labour and mainly devoted to dairying, are typical of East Devon. The area to the east of Honiton is more densely stocked with dairy cows than any other part of Devon. More than one hundred years ago this area was a noted dairying district, and butter was produced in the Honiton district to be sold in London. Dairying has persisted since those days, but the advent of milk factories in the area or just over the border in Somerset has diminished the farmhouse butter-making industry considerably. Most of the milk is now sold direct off the farm to the factory. The predominant breed is the Devon, but a rather "milkier" strain of Devon than the "Red Rubies" of the Barnstaple district.

More pigs are kept in East Devon than in any other part of the county. Apart from the fact that the farms are small, it is probable that the traditional system of farm butter-making was largely responsible for the importance of this class of stock. Latest statistics show that with the decrease in farm butter-making, the relative importance of pigs in East Devon is tending to diminish, compared with the rest of the county. The favourite breed of pig is the Saddleback.

A small district in this area, around Cullompton and along the road to Honiton, has a large number of specialized poultry farms and other farms where poultry contribute a large proportion of the farm income. Many eggs are sold on the London market and in other large cities. Cider-apple orchards are a noticeable feature and cover about 3 per cent of the farm land. The proportion of land under the plough is small, and there are no outstanding arable crops. The cropping is based on the four-course rotation, and in this East Devon differs from all other parts of the South-west except the Mid Devon plain. The system of long leys is almost entirely absent.

II. Mid Devon

This term is used to define the area of comparatively level and low-lying land which extends from the Somerset border to the Haldon Hills some four or five miles west of Exeter. The soil is very red, fertile, and easy working. The proportion of land under the plough is 30 per cent of the total farm area, which is well above the average of the county. Whether it is due to the fertility of the land, the comparative levelness of the countryside, or to some other cause, the farms in this area tend to be larger than in other parts of the South-west. One gets the impression that farming is being carried on more as a business and less as a living, though it would be unwise to push this distinction too far.

Mixed farming is the rule, with malting barley on the lighter soils and wheat on the heavier soils. The quality of the barley grown in this neighbourhood is very high, and the Exeter brewers can usually afford to give a very satisfactory price for it. The arable rotation is based on the four-course, as in East Devon. The cider orchards are chiefly in the valleys and hollows, and they afford no inconsiderable part of the income on many farms. Farm cider-making,

however, has been almost completely superseded by factory production.

Sheep are essential on the barley-growing farms. Many produce fat lambs for Easter and the early summer months, and buy in hoggs later to fold on turnips. The Longwool breed, once supreme, is being displaced to a considerable extent by Dorset Downs and other Down breeds. The Longwool ewe maintains her popularity fairly well, but the ram is being replaced on nearly all farms except the small one-ram flocks where the ewe hoggs are retained for breeding. A few farmers go in for pig farming on a large scale, but not many pigs are kept on most farms.

The Devon is the most popular breed of cattle, both for dairy purposes and for feeding, though on the famous Exminster marshes South Devons are preferred. Some of the grassland is particularly good—on a particular field of 20 acres between Exeter and Cullompton as many as 28 steers are finished regularly every year.

One district of special interest in Mid Devon is an area situated between Exeter and Dartmoor which is noted for its production of maincrop potatoes. In a recent year as much as 1,309 acres of potatoes were grown from a district which has a total of 23,353 acres of crops and grass. This represents an intensity of 56 acres per 1,000 acres, compared with the average of about 8 per 1,000 acres throughout the province. Elsewhere in the province main crop potatoes are not an important crop, few farms growing more than sufficient to provide for the farm family and for the labourers.

The soil of this Mid Devon potato-growing area is light and easy working. Most of it is a light granite, but some of the lower lying parishes on the eastern side nearer Exeter are situated on soils locally known as woodstone and dunstone. The rainfall of the area varies from less than 40 inches per year on the eastern side to 60 inches on the west, near Dartmoor. Much of the east side and the valley from

Moretonhampstead to Bovey Tracey is not more than 300 feet above sea-level, but most of the land is more than 750 feet.

There is no large consuming centre in the area itself, but means of transport are good, both by road and rail, and the area provides most of South Devon from Exeter to Plymouth with potatoes, at any rate through the earlier part of the winter.

Potatoes constitute the main feature of the farming of the district. The land does not grow good permanent grass. Rough grazings abound; there are between 7 and 7½ acres of rough grazing for every 10 acres of crops and grass. The arable land is divided between corn, roots, and temporary grass in the proportions approximately of 1 : 1 : 1½. Potatoes account for more than one-third of the root break. The only live stock of any importance in the district are sheep. Tanner, writing in 1848, states that the district was famed for the quality of its potatoes in his day, and he attributes this to the fine nature of the soil and to its supply of alkali potash. Another important reason for the popularity of potatoes in many parts of the area to-day is that since much of the land is owned by the Torquay Waterworks, stock farming is discouraged anywhere near the reservoirs, and the many derelict farm buildings give an indication of the changes in farming that have been taking place. Four-fifths of the potatoes grown are either Kerr's Pink or Great Scot. These two varieties are grown in nearly equal proportions.

III. North Devon and North Cornwall

This is a large area, and the type of farming differs somewhat as one goes from east to west. The area is, however, homogeneous to this extent, that it relies for its living on the production of cattle and sheep. In some parts a good deal of corn farming is carried on, notably near Bideford

in Devon and between Wadebridge and Newquay in Cornwall, but most of the corn produced on the farms in these districts is fed to stock.

This area is an importing area for calves and an exporting area for fat and store cattle. Cows are (or were until recently) judged more by beef standards and their ability to produce a good calf than by the amount of milk they give. Calves are reared by suckling, and the cows' own offspring are supplemented by calves bought from East Devon. These "wagoners," as they are called, derive their name from the wagon in which they used to be carried from farm to farm until they were sold. The best cows will rear 5 calves in this way before they are dried off. But the erection of milk factories at Lifton, Torrington, Lapford, and Lostwithiel, and the establishment of the Milk Marketing Board, coupled with the fall in the price of store cattle, has led many farmers to transfer their energies to milk production.

The majority of the cattle are sold as stores at 18 months old, and are transferred to feeding farms in the southern counties, particularly in the neighbourhood of Chichester. Others are bought by feeders in Mid Devon, and many Cornish stores are bought to feed on the better grassland near Truro. Yet others are fattened in their own region.

North Devon is particularly important for its sheep. Exmoors predominate in the hills in the north-east, Closewools round Barnstaple, and Longwools in the remaining parts and in Cornwall. Many Longwool ewes are crossed with Hampshire Down, Dorset Down, or Southdown rams. Mutton and lamb from North Devon is sold on the Smithfield market through "dealer slaughtermen" who have a slaughter-house at most of the stations on the railway lines from Exeter to Holsworthy. This trade is being extended to pork pigs during certain months of the year, but pigs are of much less importance than sheep in the area.

IV. South Devon and South Cornwall

The farming of this area is most diversified. The typical holding is about 130 acres in size, with one-fifth or one-quarter of the land under the plough, a similar acreage to long leys in Devon, but considerably more in Cornwall, and the remainder permanent pasture, orchards, and water meadows.

The dairy herd has usually 8 to 12 cows, the milk from which, until recently, was made into butter in winter and much of it into the more profitable clotted cream in summer. Before the Milk Marketing Board was established the liquid milk trade was confined to those farmers within convenient distance of the towns, but of late this side of the dairy business has been expanded at the expense of farm butter-making. The wider recognition of the virtues of Devonshire cream has led to an increase in this trade in the summer, again mainly at the expense of butter-making. On butter-making farms the cows are usually kept only to the second or third calf, and are then sold to dairymen. The heifer calves are reared, but bull calves may be sold for veal, or as stores at the local fairs, or they may be fattened at home for local consumption.

Sheep are for the most part confined to farms of 100 acres or more. An average flock consists of some 40 South Devon or Dartmoor ewes which are crossed with rams of the same breeds, or with a Down ram when fat lambs are required. There are seldom more than two or three sows to a farm. Lop-ears or Large Blacks are the most popular breeds, and, of boars, Lop-ears and Large Whites. Poultry-keeping is a side line on the ordinary farm; on only a very few has it been developed on specialized lines.

The old cider orchards of two or three acres, which adjoin almost every farmhouse, have been improved of late by thinning and replanting, but, as in other parts, nearly all the cider-making is now carried on in factories.

The arable land is farmed on the extended rotation already described. The seeds leys are kept down for several years and are often followed by two, sometimes even three, corn crops. Of these oats is easily the most popular, except round Dartmouth and Kingsbridge, where excellent barley is grown. Heavy crops of mangolds are grown, and some farms in the extreme south have a reputation for growing mangolds of exceptional feeding qualities.

As the Tamar, which forms the boundary of Cornwall and Devon, approaches Plymouth and the sea its banks on both sides become very steep, and in many parts they provide an aspect that is particularly well suited to fruit and flower growing. This is the well-known Tamar Valley fruit-growing area. The soil of this area is an easy working loam, and its position, near the sea and protected from rough weather, gives it a particularly equable climate.

The fruit and flower-growing area extends from the outskirts of Plymouth, Devonport, and Saltash, on both sides of the river for some 10 miles, nearly to Tavistock. Most of the holdings are very small indeed. They may be part-time holdings, or holdings just large enough to maintain the occupier and his family by intensive cultivation. Some larger farms have a small part of their acreage devoted to fruit farming and market gardening, but none of the market garden plots can be found far from the river banks.

The area is best known for its strawberries, being almost the first strawberries of the season to be put on the market by reason of the extremely favourable conditions under which they are produced. Royal Sovereign is the most popular variety, and it is this variety that has done most to establish the district in the market. The tendency to desert Royal Sovereigns for higher yielding varieties of less high quality almost immediately had its repercussions on the trade in the shape of a diminished demand. Other fruits that are grown are raspberries and blackcurrants.

The Tamar Valley is also renowned for its flower industry.

The most important flower is Narcissus Double White, which flowers in May. This narcissus grows here better than anywhere else in Britain. The area is less important for vegetables than it is for fruit, but early potatoes are grown to some extent, and are usually introduced as a cleaning crop after strawberries. The Plymouth market creates a demand for lettuce, radishes, and other vegetables, but the quantities grown in this area are relatively unimportant compared with fruit culture.

V. West Cornwall

This area is exceptional in the small size of the farms and their high production per acre. Few farms exceed 100 acres in size, many are less than 50 acres, and there are also part-time holdings, smaller still. The part-time holdings are connected with tin mining. To the casual observer the district is distinguished by its apparent poverty. Remains of mine workings, chimney stacks, the cold granite of all the buildings, might comfort a homesick north countryman, but in conjunction with the spare frames of the Guernsey cattle (the predominant breed) they give an impression of neglect and starvation. Actually, however, this district produces about 2½ times as much per acre as most other parts of the South-west. Intensive application of man power, large expenditure on fertilisers and feeding stuffs, and a soil that responds particularly readily to liberal treatment, are the main causes of this phenomenon.

The agriculture of the district is very mixed. Sale products are dairy produce, pigs, cattle, and poultry and eggs, generally in that order. The dairy produce is manufactured into butter, usually in factories, many of which are farmer owned. During the last two years farm butter-making has virtually disappeared in this area. Many of the cattle, especially in the far west, are predominantly Guernseys. Nearer Truro, and again in the Lizard peninsula, there are

many Shorthorns. The low price of butter made the position of these farmers very precarious before the Milk Scheme eased matters to some extent. Guernsey breeders, however, obtained some respite in the form of a very flourishing trade that grew up in young Guernsey cows and heifers in certain up-country markets. Farmers were able to sell to dealers, who later offered the animals at Reading, Bristol, and elsewhere.

The pig industry in West Cornwall has grown up side by side with the dairy industry. At many factories farmers wait while their own milk is being separated, so that they may take the skim home with them for pigs. Local bacon factories absorb some of the production, and some is taken by dealer-slaughtermen. Poultry farming in this area, as in other parts of Cornwall, is notable for the large number of packing stations through which the eggs pass *en route* to markets further afield.

There is practically no permanent grass in West Cornwall. The only distinction is between rough grazing and arable. This is because all the farm land comes under a course of cropping in rotation. The usual crops grown are oats and dredge corn (a mixture of oats and barley), with a root break, containing besides mangolds and kale perhaps a few potatoes, broccoli, and flowers.

The land around Mount's Bay is devoted to a special form of market gardening which has given a good deal of prominence to the agriculture of this part of the province. Cornwall shares with Kent the honour of growing a larger acreage of broccoli than any other part of the country. It is in the Mount's Bay area that most of the Cornish broccoli crop is grown, and it is to this part of the country that Cornwall owes her fame for market gardening in general and broccoli-growing in particular.

The conditions that have led to the establishment of this intensive form of farming in a small area are natural rather than economic. The climate of West Cornwall is the balmiest

of any in the South-west, and the aspect of the market gardening area, south, south-west, and south-east, with the land gently rising from Mount's Bay, the bay half encircled by the land, could not be improved upon. But the natural advantages do not end with climate and aspect. The soil, too, is as fertile as any in the whole of this province. It is formed from a mixture of trappean rocks, chiefly greenstones with argillaceous slates. This forms an extremely rich and friable loam soil, often deep, and as nearly perfect as is possible. The soil is, in fact, so fertile that it is often possible to grow two crops a year on it. Broccoli fits well into the rotation with early potatoes, and until quite recently a lot of early potatoes were grown in West Cornwall, and were straight away followed by broccoli, usually planted out in June and July. Foreign competition at one time resulted in a considerable reduction in early potato growing in West Cornwall, and flowers were substituted for potatoes to a considerable extent. The Horticultural Import Duties have done something to restore potato growing to its former position. Unlike the Tamar Valley area, very little fruit is grown in West Cornwall.

Most of the crop is sold either in Covent Garden or in the industrial towns of the North. That this is possible without incurring phenomenal transport costs is due to the fact that the Great Western Railway has its main line running along the foot of the market-gardening area. Trucks in the sidings take the produce as it is brought from the fields in farm carts and lorries, and it is thus got to its destination with the minimum of expense.

VI. Moorland

The greatest area of moorland in Devon and Cornwall is Dartmoor and the Cornish Moors between Launceston and Bodmin. Ordinary farming on these moors is confined to the valleys and coombs, and the farming followed exhibits

much that is typical of the agriculture of South Devon and South Cornwall. The farms are small as measured by their enclosed acreage, but most of the farmers have rights of grazing on the unenclosed moor. The buildings are solid granite, built to withstand the gales of the moor. Natural conditions ordain that sheep farming is the most important branch of the system, but a good deal of stock-rearing takes place. Moorland cows sold in Newton Abbot market at their second or third calf often command very favourable prices. Oats and turnips are the principal arable crops, though potatoes are more important than in most parts of the South-west.

Cattle and sheep from the lowlands are grazed on the unenclosed wilder portions of the moor in the summer under the supervision of a "moor man." Dartmoor is mainly stocked with South Devon cattle, though the Duchy of Cornwall Estate near Princetown has many Aberdeen-Angus. More Devons are to be found on the Cornish moors. The Dartmoor sheep, with white or grey faces, are a local breed, but flocks of Scotch Blackface are found here and there. A peculiar type of anaemia, which often proves fatal, is a serious disease and necessitates regular movement of sheep to the richer pastures of the lower districts.

The Scilly Isles

No account of the agriculture of Devon and Cornwall is complete that does not refer to the Scilly Isles. Geographically these islands are nearly thirty miles west of Land's End, and of agriculture in the usually accepted sense of the term there is none, but what they lack in agriculture they certainly make up in a very intensive form of horticulture.

It is impossible to say how many islands comprise the Scillies without defining the difference between an island and a rock. Less than half a dozen of them are inhabited

and none of these is of any magnitude. The others may boast a lighthouse or a colony of sea-birds, or have nothing at all. No two are alike. The sub-tropical plants of Tresco give place to the gaunt bleakness of St. Martin's, with St. Mary's, the only island to boast a town, somewhere between the two. St. Mary's, the largest island, measures 2½ miles long and 1½ miles wide, with a circumference of 9 miles. The total population of the islands is about 2,000. The Scillies are rich in romance. They are supposed to have been connected at one time to the mainland by the land of Lyonesse, but according to legend this land was submerged on the day King Arthur died.

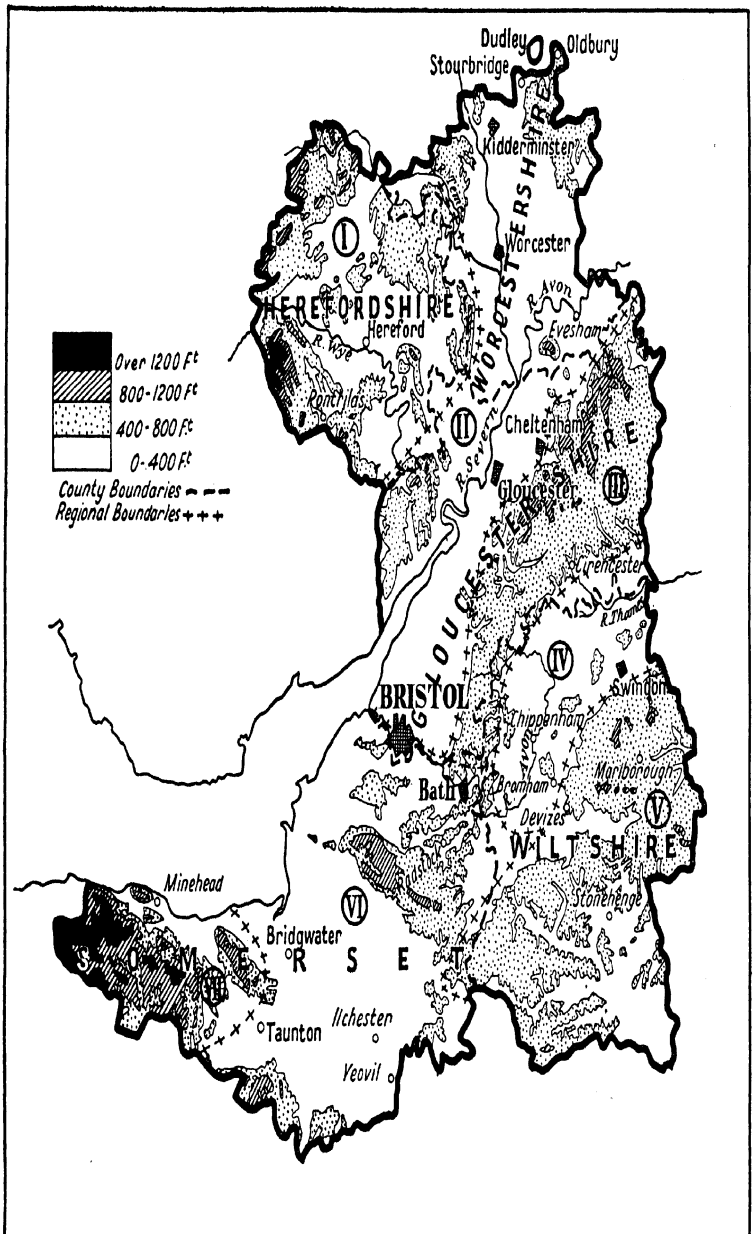
Formerly the isles depended for material riches on kelp until this industry failed. A fishing company and a ship-building industry both collapsed, but necessity once more proving the mother of invention, the more enterprising inhabitants began to send narcissi to Covent Garden. To-day flower growing is the only important occupation on the islands, and some 700 tons of flowers—narcissi, daffodils, arum lilies, stocks, and anemones—are exported to the mainland. The temperate climate enables growers to market their outdoor flowers at a time of the year when no one else can compete except with hot-house plants. The size of each business is very small, and the method of growing bears no comparison with the bulb-growing industry in Holland. Wherever there is shelter, natural or artificial, the land is cultivated for flowers, but without shelter the Atlantic gales would soon play havoc with any form of production. Besides flower growing the islands provide a few very early potatoes. Of other crops or of live stock farming there is virtually none.

Chapter X

The West of England Counties

THE COUNTIES OF
HEREFORD, WORCESTER, GLOUCESTER, WILTS,
and
SOMERSET

By C. V. DAWE
University of Bristol



MAP OF WEST OF ENGLAND COUNTIES

CHAPTER X

The West of England Counties

THE province comprises the five counties of Hereford, Worcester, Gloucester, Wilts, and Somerset. In the west its boundaries are Wales, the Bristol Channel with the mouth of the Severn, and in the south-west corner Devon. In the east it adjoins the West Midland and Southern Provinces. From north to south it stretches about 180 miles from Birmingham to the famous Porlock Hill, some few miles west of the seaside resort of Minehead, and onwards over Exmoor, where it adjoins the county of Devon in the South-Western Province.

The total land area of the province is 3,675,000 acres, of which 2,822,000 acres are under crops and grass, and 307,000 acres are classed as rough grazings in agricultural use, leaving 546,000 acres in non-agricultural use.

The province carries 810,000 head of cattle, of which 300,000 consist of cows in milk. In addition it has nearly 1½ million head of sheep and lambs, 400,000 pigs of all ages, 92,000 horses, and approximately 6 million poultry.

The total population of the province is 2,096,000, thus giving a density of 0·6 persons per acre. There is no vast industrial area within its borders, but the north-east corner of Worcestershire, with the towns of Dudley (59,579), Stourbridge (33,225), and Oldbury (35,918), comes within the environs of Birmingham and the Black Country, the former noted for light metallurgical industries, the latter for coal and iron mining and heavy engineering. The manufacture of glass and the mining of salt are carried on in the north-east corner.

The largest urban centre wholly within the province is the City and Port of Bristol (379,000), noted as the centre

of tobacco import and manufacture. It is also a centre of many light industries, and because of this great variety has weathered the post-war industrial depression fairly successfully. With the residential city of Bath (68,800), the ancient Roman town only 12 miles away, this small area holds nearly one-quarter of the population of the whole province. It is incidentally within 120 miles of London, and communications are very good. Other important towns in the province are Hereford (24,000), Worcester (50,000), Kidderminster (29,000), Bridgwater (17,000), Taunton (25,000), and Yeovil (19,000).

Apart from Bristol, the corner of the Black Country, the small coalfields of the Forest of Dean (Glos.), and Radstock (Somerset), together with numerous small industries located in the larger towns, the whole of the province is mainly agricultural, and the farms produce for export outside the province. Formerly one of the largest markets for exports of perishable and semi-perishable products was in the South Wales iron- and coal-field, but the severe depression in that area since the War has brought about a number of changes in the agriculture which formerly found its market there.

The physical features of the province are comparatively simple in outline. In the north-west the high land and valleys of Herefordshire border on the mountainous parts of Wales. These Hereford uplands belong geologically to the Old Red Sandstone formation. They slope down to the west into the valley of the Severn, which provides a wide stretch of plain in the counties of Worcester and Gloucester. Across the Severn Valley, which is Lias clay, the Cotswold hills, composed of the great and inferior Oolite, form a high ridge running in a north-easterly direction from Gloucester, though at a somewhat lower level they extend also south of Gloucester. The extreme north-east corner of the province also rises above 400 feet in a different formation from the Cotswolds, but this corner is dominated by the industrial

area of Birmingham. Across the Cotswolds from the Severn Valley lie the upper Thames Valley and the upper reaches of the Gloucester Avon, resting for the greater part on Forest Marble and Bradford Clay. This is a valley of fine grassland. South of this rises the Chalk Downs, divided into two parts by the small Vale of Pewsey, into the Marlborough Downs to the north and the Salisbury Plain to the south. West of the chalk and just south of Bristol the small bunch of Mendip Hills, composed of mountain limestone, divide the Severn Valley country from the alluvial lands of central Somerset. This latter stretch of flat country runs almost to the southern border of the province and drains into the Bristol Channel in Bridgwater Bay. The most westerly corner of Somerset holds the steep hills of the Quantocks and Exmoor Forest, on the Old Red Sandstone formation.

While some indication of the geological formations and soil types has been given above, it should be pointed out that few geological formations are absent from this province, and while formations do not as a rule give reliable indication as to soil, it may be said that the province exhibits a great variety of soil types. Indeed, it is claimed that within Somerset alone are to be found samples of all the soil types of England.

Because of its geographical position and topography, the province has a moderately wet climate when compared with the remainder of England and Wales; it has a heavier rainfall than the midlands and the east, but on the other hand is drier than the north-west, the extreme south-west, and Wales. Over the greater part of the province there is a mean annual rainfall of between 30 and 40 inches, although the whole of Worcester and the greater (eastern) portion of Hereford have less than 30 inches.

There are 41,582 holdings in the province, almost two-thirds of which are of not more than 50 acres, while only 3 per cent of all the holdings exceed 300 acres. Some of these larger holdings exceed 2,000 acres in extent, and are

chiefly to be found upon the Cotswold Hills, the Marlborough Downs, and Salisbury Plain. The total number of workers employed amounts to 67,869, of whom 6,335 are females. About one-sixth of the total workers are casuals, although obviously this proportion varies at different seasons and in different parts of the province.

The chief activities are devoted to milk production. Approximately one-third of the total milk produced is manufactured into milk products, and the bulk of the remainder is exported to London. There are, however, one or two areas specializing in horticulture, as for example in the Vale of Evesham in south-east Worcester and in the south of Somerset. On account of its mild and moist climate and its general topography the province is ideally situated for grass production for dairy farming. More than three-fourths of the total farmland is under permanent grass. To this, however, must be added the clovers and rotational grasses, which, although strictly classified as arable land, form in fact a permanent source of grazing amounting to 147,790 acres. Apart from this there remain only 50,000 acres of arable land. Of this, one half is under cereals, and of the cereal acreage wheat occupies one half.

The physical features already outlined permit of a division of the province into seven main regions. The farming within these regions is not of course uniform, and distinctive districts within each region will receive special mention, but in the main the province can be divided as follows:

I. Hereford Uplands
II. Severn Valley
III. The Cotswolds
IV. The Upper Thames and Avon Valley
V. The Wiltshire Downs
VI. Somerset (except the extreme west)
VII. West Somerset (i.e. the Quantocks and Exmoor)

I. Hereford Uplands

This region, almost identical in boundaries with the county of Hereford, consists of uplands with valleys between. At its centre lies the cathedral and market town of Hereford. The soil is generally a mixture of marl with clay, overlying Old Red Sandstone formation. In the east of the region are areas of stiff clay land interspersed with patches of sand.

Three-quarters of the farm area is under permanent grass, and the chief activities of the farmers are devoted to the production of beef cattle and sheep, the county being the home of the famous Hereford beef breed. In the last ten years the numbers of cattle have increased by nearly 20 per cent. Dairy cattle are numerous in the region, but as there are no large urban markets within the county and the area is distant and generally inaccessible, milk production is of minor importance. In the past ten years the number of sheep has increased by 50 per cent.

Although mainly a grass county, one-quarter of the farm area is under arable cultivation, fully half of which is devoted to stock-feeding crops. Wheat occupies only about one-sixth of the arable acreage. The area devoted to orchards is as great as the wheat acreage. Although the orchard acreage has shown little change during the past ten years, a great deal more attention is being paid to the orchards and a considerable amount of replacement of old by young trees is taking place. At various centres cider and perry are produced. In the east of the region there is a well-known hop-growing area of about 4,000 acres, which adjoins a similar though smaller area in Worcestershire.

The region is one of very small farms. Out of approximately 6,500 holdings in the county only two hundred are over 300 acres, while nearly one-half are not more than 20 acres. Many of them are situated in the isolated and inaccessible places.

II. Severn Valley

This extensive tract of valley land or plain on either side of the River Severn divides the Uplands of Hereford from the Cotswold range. If one includes for the sake of convenience the small area of uplands adjoining Birmingham, the Severn Valley may be said to extend the whole way from Bristol to Birmingham, a distance of 90 miles, almost due north. Besides these two cities this region contains the twin cities of Gloucester and Cheltenham, and further north the city of Worcester, and between that and Birmingham the town of Kidderminster.

In the lower and narrower part of this valley, known as the Berkeley Vale, which lies between Bristol and Gloucester, cheesemaking has been carried on from time immemorial. The district is known as the home of the Gloucester cheese. This art has almost died out since improvements in road and rail transport have made the area more accessible to urban markets so that the milk can be sold liquid. It contains rich grazing lands and a certain amount of beef production is carried on in addition to the dairying. Generally speaking, the farms are small, largely a legacy of the old cheesemaking days. The total arable land has diminished considerably since the war, but sheep have increased. In the area immediately north of Bristol market gardening is prominent.

For convenience reference must be made at this juncture to the adjoining yet distinct region known as the Forest of Dean. This is a coal-mining area in which the agriculture, mainly on account of the poor soil, is relatively backward. In the past this region was noted for the Ryeland breed of sheep.

As one proceeds northwards of Gloucester City the Vale of the Severn widens until it becomes in effect a plain, covering the whole of the county of Worcester except for the small northerly upland area adjoining Birmingham. This county is usually regarded as the fruit area of the

province. Of a total agricultural area of 368,000 acres it has 23,000 under orchards and 4,000 under other fruit. In the south-east is the well-known Vale of Evesham, mainly devoted to market gardening.

In addition Worcester is noted, with Hereford, for the production of hops, the two counties together having 5,600 acres under this crop. This figure is 500 acres less than ten years ago, but on account of the Hops Marketing Scheme the average will probably be stabilized at about the present figure.

The grazing lands are of good quality, and both milk and beef production are carried on. Indeed, it is common for farmers in Worcestershire to run the dual-purpose type of cow, usually the Hereford–Shorthorn cross. Two-thirds of all the holdings are not greater than 20 acres. This predominance of small farms is due to at least three causes. In the first place the fruit-cum-dairy farm tends by its very nature to be small; secondly, the average size is brought down by the large numbers of small market gardens in the Evesham area; and thirdly, the vicinity of the midlands industrial area means that a considerable number of small holdings are bought for amenity purposes.

Undoubtedly the most interesting area in Worcester is the intensive market gardening area of Evesham Vale. The average size of holding ranges from 3 to 5 acres, with rents varying up to £6 per acre. For various reasons the area is particularly suited to this intensive type of production, although there is a danger that the lack of capital on the part of the small holders may result in soil exhaustion. This district has of recent years been seriously affected by the depression in the coal-mining industry of South Wales, and by the fact that access to other urban markets has been hindered by the development of similar market garden areas in the immediate locality of such markets. A further cause of depression is the tendency of large-scale farmers to grow certain market garden crops on the "agricultural"

rather than on the "horticultural" method. The canning industry has made rapid strides in this area, more especially during the last five years, when it has been encouraged by the import duties.

III. The Cotswolds

The Cotswold Hills are more in the nature of a plateau than a mere range of hills, and consist almost entirely of Oolitic limestone. The total area is about 300,000 acres, and at the widest part is about 30 miles across. It is sometimes known as the playground of England. In some ways this area is similar to Salisbury Plain in Wiltshire, which will be described later. It rises to its highest point by means of a sheer western escarpment out of the Gloucester (Berkeley) Vale until it attains a maximum of 1,070 feet near Cheltenham. In the main the region consists of fairly level tracts of country lying between 600 and 700 feet above sea-level, with shallow valleys between. A thin soil known as "stone-brash" overlies the oolite. Because of the stony nature of the soil, ploughing must not be carried out either too often or too deep, and there is constant need for consolidation by means of rolling or treading. The soil is not very fertile naturally, but will repay careful manurial treatment. Rents vary from £1 to £2 per acre.

In pre-war days, and especially before 1870, the Cotswolds were almost entirely devoted to the production of cereals and arable sheep; in fact they have given their name to the Cotswold breed. With the relative unprofitableness of corn and sheep production in the face of large imported supplies this region has rapidly turned to milk production, but one of the chief defects which has to be contended in the matter of live stock farming is that of water supply. In spite of its movement towards milk production it is still regarded, like similar parts of Wiltshire, as the arable part of the province. The effects of the Wheat Act are already

seen in an increase of wheat acreage in these areas. Although wool production is not now nearly so prominent as it has been in the past, one may still see, in a number of the valleys in the Cotswolds, cloth mills, some in ruins and others still in operation.

The farms of this region are, generally speaking, large. Quite a number of holdings both large and small are occupied for amenity purposes by people who have either retired from urban life or who are still actively engaged in the City of London.

The Cotswolds play a useful part in the general live-stock farming of the province, for there is a fair amount of transfer of sheep and cattle at different seasons of the year between these hills and the lower-lying areas on both sides. The chief market town is Cirencester (the Roman Corinium), which stands at the junction of three Roman roads, Akerman Street, Fosseway, and Ermin Street. Approximately 2 miles south of the town is situated the Royal Agricultural College, founded in 1843.

IV. The Upper Thames and Avon Valley

Between the Cotswolds and the Wiltshire Downs (described in the following section) lies a broad valley or plain through which run the upper reaches of the Rivers Thames and Avon. This is a very productive dairying region, almost entirely devoted to milk production for the London market. It is easily accessible, for the main railway line between Bristol and London runs through its whole length. Apart from London, this area has the important local markets of Bath, Chippenham, and Swindon. The average size of farm is not so large as in either of the adjoining regions of the Cotswolds and the Downs, but on the other hand they are more intensively worked and the output per acre is considerably higher. This region was one of the earliest to change over from cereals to milk production because of its

natural advantages, and to-day the tendency is still towards a greater output of milk by more intensive management. Rents vary from 30s. to 60s. per acre. Some of the farms on the borders of the Downs possess both types of land. The farms run down from the hills to the valleys, so that such farms produce milk on the more productive and lower-lying grass, with sheep and cereals on the hillsides. Beef production is not at all important.

In the southern extremity of this vale area is a small "early" district known as the Bromham area. The possibilities of this district for the early production of vegetables, bush fruits, strawberries, and flowers are only now being realized, but it is considered that it will soon rival the well-known Vale of Evesham in Worcestershire. In this Bromham area the holdings are of only a few acres in extent, and a fair number of glass-houses are being erected. The chief market for the produce is the neighbouring city of Bath.

V. The Downs

The downlands of the province are found in Wiltshire, where they occupy about two-thirds of the county. The bulk of this region lies between 500 and 700 feet above sea-level. It is almost divided into two parts by the small but well-known dairying area known as the Vale of Pewsey, which runs eastwards from the town of Devizes and contains a considerable area of greensand with some gault clay.

The northern half of the Downs, the Marlborough Downs, has always been associated with arable sheep farming, and the Marlborough Sheep Fair is still one of the most important fairs in the country. Since the end of the War this region has been rapidly turning towards milk production in order to avoid the depression in prices for cereals and sheep; but as in the Cotswolds, the effect of the Wheat Act is beginning to check this movement towards milk, and incidentally to

check the tendency to substitute the arable breeds of sheep, notably the Hampshire Down (pure or crossbred), for the grass breeds, usually the Dorset Horn (pure or crossbred).

This statement also applies to the southern half of the Downs, more usually known as the Salisbury Plain. Broadly speaking, both areas consist of chalk covered by a medium or a light soil. Caird, in 1850, spoke of the soil being thin and dry, "well adapted for the system of folding sheep and hitherto kept in cultivation by a diligent prosecution of that system." This system has been followed right up to recent times, and consists of the trinity of sheep, turnips, and barley.

Caird also pointed out that "The greater proportion of this extensive tract has been brought under tillage since the passing of the Act (1836) for the commutation of tithes. The fertility of most of it is artificial, the result of capital and labour skilfully applied, and as the country is not fenced, requires no draining, and the sheepfolding involves no expenditure in buildings, it appears that the increased produce derived from the land is almost wholly the result of the tenants' exertions. The commutation of tithes was, therefore, a great boon to the landlords, as their tenants then became desirous of ploughing up the downlands, and obtained permission to do so on the condition that they should pay an increased rent. In this way the downlands, not worth more in their natural state than 3s. 6d. or 5s. an acre, were at once raised to 15s. or more, and that without any outlay on the part of the landlord. The land was held in very large farms by men of capital, whose chief dependence was on their sheep stock, and who, occupying wide tracts as sheep walks, became gradually very extensive tillage farmers, willing to pay an increased rent for the right of converting down into arable, so long as they were encouraged to do so by a high price of corn. This change of system involved a greatly increased outlay of capital, for it is obvious that a man with sufficient means to stock and carry on a sheepwalk of 2,000 acres would find that very

inadequate for an arable farm of the same extent." Present-day rents vary from 5s. per acre for land over which the army has the right of manœuvre up to 15s. per acre. The average Wiltshire down farm is large in extent, but whereas in the latter half of the nineteenth century such a farm would be mainly sheep, with some cereals and no milk, to-day such farms are often "mixed," in the sense that milk production, and sometimes pig production, is carried on in addition to sheep and cereals. In fact, taking the whole of the Wiltshire Downs, it would be true to say that milk production is to-day the chief activity.

An innovation in management for milk production on a few of these downland farms is the "open-air bail" system. The essentials of this method are the milking of cows by machines installed in a four- or six-stall movable "bail" or shed open on one side. It is claimed that by this method a great reduction in labour costs can be effected, and there is no loss of manurial residues, since the herds never leave their pastures winter or summer. On some farms, where the soil and elevation are suitable, this system has proved highly successful, the herbage has been considerably improved, and subsequent cereal crops have benefited. The system is still in its infancy, having been introduced some ten years ago, so that opinions cannot be expressed too definitely.

Before leaving the Wiltshire Downs reference must be made to the cathedral city of Salisbury (26,456), and within a few miles the site of the ancient city of Old Sarum, and the monolithic ruins of the druidical temple of Stonehenge. Incidentally it may be noted that near Marlborough is to be seen the monolithic circle of another druidical temple.

VI. Somerset (except the extreme west)

"Smiling Somerset," as it is often called, has the reputation of being the most beautiful county in England. It possesses an equable climate and is very fertile. Excluding the western

extremity, the greater part of the remainder consists of large tracts of alluvial land—the Somerset Flats.

In the south of the county the flat region merges into the Taunton Vale, in which are situated the Roman town of Ilchester and the county and market town of Taunton. In some parts of this vale the soil is of unknown depth, and generally speaking it is regarded as possessing some of the richest soil in the whole of England, with rents ranging from £2 to £4 per acre. In the past this area was devoted firstly to cereals and then to milk production, but it is now being partly utilized for market garden crops on a large scale, for it is capable of producing three crops in two years.

Almost in the heart of Somerset County, to the north of the district just described, lies the well-known basket willow-growing area of approximately 1,500 acres—the largest willow area in England. This area is also historically famous for legends of King Arthur and his Knights of the Round Table and possesses the village of Athelney, where King Alfred is believed to have burned the cakes! This willow area is very fertile, but is annually flooded owing to the fact that it is almost at sea-level and is nearly surrounded with low-lying "moors" which drain off into the willow area. The problem of draining this district has existed since 1600, and in spite of numerous cuts, drains, and "rhines" the problem is still not completely solved. The chief difficulty is that in a run of 18 miles the fall to sea-level is only a few feet. Because of the annual flooding, willows are the only possible crop. In the days when pit ponies were used in the South Wales coal mines to a much greater extent than they are to-day this area produced a rough type of grass which was shipped to South Wales in the form of hay; but this industry and the willow industry are dying out, and there is danger that the area may become derelict.

Around and intermixed with this area are some fairly large patches of land, having less agricultural value than

they should, due to the "scouring" in live stock which the grass causes. These areas comprise the "teart" lands, and up to the present no remedy has been found to prevent this scouring. Sheep are unaffected, but cattle will die if left on these grasslands; on the other hand they will recover completely if removed early enough to good pastures.

There are two more interesting districts lying between this area and Bristol. The first of these is the flat coastal area lying around the market town of Bridgwater. This district comprises the Bridgwater Flats, consisting of alluvial deposits. The bulk of this land lies practically at sea-level, and indeed is contiguous to the more inland willow area just described. These flats possess rich grazings, which in the past made them famous for beef production, the grass having such a high feeding value that bullocks can be fattened for market on them. This activity, however, has of recent years been largely supplanted by milk and cheese production, the whey being used to feed pigs for pork and bacon. The rents in this district may be put at £2–£3 per acre.

The second area lies just inland from the Bridgwater Flats and somewhat more to the north. Its northern part contains the range of the Mendip Hills composed of carboniferous limestone. These hills rise to a height of 1,000 feet and possess a considerable number of ancient lead mines, most of which are now disused and merely form a source of danger to the few sheep and cattle which may be found there. Agriculturally the land is of so little value that it rents at about 5s. per acre. Although little to-day is heard of the Mendip breed of sheep, it was a very well-known type in the early part of the nineteenth century. Some milk production is maintained on these hills, but the general type of farming is poor, owing to the poor thin soil and the exposed position. Some coal is mined on the northern edge, especially around the small mining town of Radstock.

Still keeping inland, but immediately south of the Mendips

and to the east of the Bridgwater Flats, is the well-known cheesemaking area of Somerset, which gives its name to the famous Cheddar cheese. A part of this area is an "early" district for strawberries, which are exported to various places throughout England. The farms are nearly all of a small size, but very intensively worked. Another type of cheese made in this district is the Caerphilly, which is exported almost entirely to South Wales. Owing, however, to the depression in coal-mining the demand for this cheese is not so great as formerly. Some encouragement to the farm-house cheesemakers of Somerset has recently been given by the Milk Marketing Board, so that the tendency to abandon cheesemaking for milk production has been checked, and cheese prices have, by the action of the Board, become so much more attractive that the custom of farmers hiring cheesemakers for the season has again become firmly established.

VII. West Somerset (the Quantock Hills and Exmoor)

This extremity of Somerset is distinct from the rest, and indeed really forms part of the northern area of Devon. The bulk of the region lies between 1,000 and 1,200 feet above sea-level. Generally speaking, the farming is of the moorland type, and the chief activity is the raising of the Exmoor breed of sheep, either as a pure-bred type, but mostly as some kind of crossbred. Between the Quantock Hills and Exmoor itself is a valley in which some fine malting barley is produced.

In many ways this district may be regarded as an isolated region, and it has always been connected with butter production. The average size of holding is large, like those of the Wilts Downs and the Cotswold Hills, but the region is not so productive as the Downs or the Cotswolds. The rearing of ponies for use in the coal mines of South Wales forms another activity, but owing to the replacement of pit

ponies with mechanical haulage the demand is not as great as formerly.

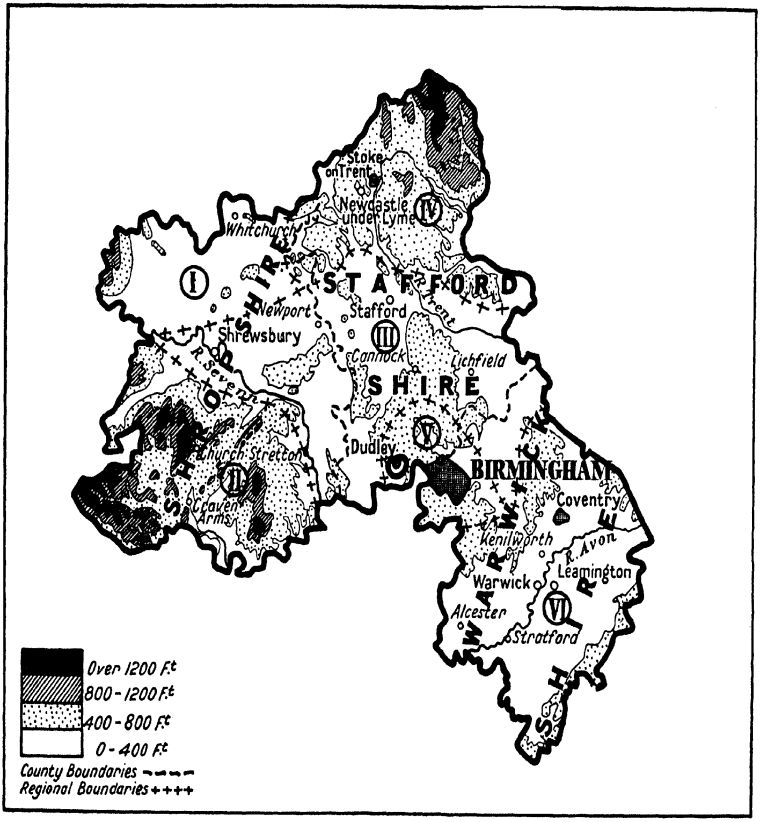
The geological formation is Old Red Sandstone, similar to that of Herefordshire. Store cattle are reared and exported to the "flats" for finishing as fat beef cattle.

Chapter XI

The West Midland Countie.

THE COUNTIES OF
STAFFORD, SALOP, *and* WARWICK

By F. S. DENNIS
Harper Adams Agricultural College, Salop



MAP OF WEST MIDLAND COUNTIES

CHAPTER XI

The West Midland Counties

THIS province comprises the three counties of Shropshire (Salop), Stafford, and Warwick. It adjoins on the north the province of Lancashire and Cheshire; on the north-east and east the province of the East Midlands; on the south the provinces of the South and South-west counties and of the West of England counties; and on the west, Wales.

The total land area of the province is 2,208,253 acres, of which 1,708,095 acres are "farmed" land (in crops and grass) and a further 92,282 acres are rough grazings used for agriculture, leaving just over 400,000 acres in non-agricultural use as urban and residential land, for recreational use, or as waste land.

The province provides a sharp contrast between dense industrial development in certain parts with markedly rural conditions in other parts. Within its boundaries are two of the notable industrial areas in the country: the Black Country, with Birmingham as its centre, in the south of Staffordshire and the north-west of Warwickshire, and the Potteries, round Stoke-on-Trent, in the north of Staffordshire. The total population of the three counties is 3,210,000, an average density of 153 per 100 acres, but the variation between the counties shows Shropshire to have less than one-twelfth of the population on between one-third and one-half of the area. The density of population in Shropshire is only 28 per 100 acres as compared with 208 in Staffordshire and 274 in Warwick.

Of the total population of the province, 55 per cent live within the large industrial towns in the area around Birmingham, from Coventry to Wolverhampton. Birmingham itself, with a population of over 1,000,000, houses nearly one-third. A further 10 per cent live in the two main towns

of the Potteries, Stoke-on-Trent and Newcastle-under-Lyme. A large proportion of the remaining 35 per cent probably live within the radius of these industrial areas, though outside the boundaries of the large towns. The urban population outside of these areas is less than 10 per cent of the total, the chief towns being: in Staffordshire, Burton-on-Trent (49,000), Stafford (29,000), Cannock (35,000), Lichfield (9,000), and Tamworth (12,000); in Warwickshire, Leamington Spa (30,000), Rugby (24,000), Warwick (13,000), and Stratford-on-Avon (12,000). The only town of any size in Shropshire is Shrewsbury (32,000).

The province has therefore a large industrial market within its borders, a factor which cannot but influence much of the agriculture. All three counties have claims to historical interest, Warwickshire for Stratford-on-Avon and Shakespeare and the historical associations of Warwick itself. Shropshire, negligible for its industrial development, probably takes first place in scenic interest and in its association particularly with the early history of Britain, when its western border held the strategic position between conquered England and the wild unconquered Wales.

The physical features of the province are extremely varied. In the north-east corner bleak hill country rising in parts above 1,200 feet on the millstone grit provide the same kind of features as are to be found in North-West Derbyshire, East Lancashire, and West Yorkshire. The lower hills of this north-east corner of Stafford are in the industrial region of the Potteries. Another region of high hill country is found in the diagonally opposite corner of the province in the south-west of Shropshire. The hills of this region have the character found in Hereford and in the Welsh mountain region, and belong to the older geological formation of the Silurian, with parts on the Old Red Sandstone. The two regions of the north-east and the south-west are the only real hilly parts of the province, but one or two outcrops, usually associated geologically with the coal measures, rise

to an altitude of over 400 feet. The largest and most important of these is around Birmingham on the south border of Staffordshire and the north-west corner of Warwickshire. This region stretches up into the middle of Staffordshire and covers the northern part of Warwickshire, broken by the valley of the upper branches of the Tame.

The main lowland area of the province forms an almost unbroken stretch across all North Shropshire and Mid Stafford, comprising in the west the broad valley of the Severn and in the east the narrower valley of the Trent. The other main lowland area lies in the south and south-east of Warwickshire. The main geological formations of the lowland are Keuper Marl, Bunter Sandstone and Lias, with occasional parts of Red Sandstone.

The rainfall of most of the province is low for an area situated in the western half of England. The average annual precipitation is between 25 and 30 inches, with higher averages in the hilly parts.

If we exclude the hill country in North-east Staffordshire and South-west Shropshire and the land in the vicinity of the industrial towns, the agriculture of the rest of the province presents no very marked contrasts. In the north-west permanent grass predominates, with dairying as the main if not the sole enterprise. On a broad stretch on the borders of Shropshire and Staffordshire there is a large proportion of arable land, but dairying is for the most part now the main enterprise. In the south of Warwick permanent grass again predominates, and fattening cattle on summer grazing was the traditional system on the better pastures, but again milk now takes precedence.

The emphasis on milk is the most significant feature of the farming over the large part of the province, a fact which is amply brought out by the official statistics for the three counties. The dairy stock in Staffordshire number 217 per 1,000 acres, in Shropshire 157 per 1,000 acres, and in Warwickshire 118 per 1,000 acres. Breeding and rearing

of stores and young dairy stock together with sheep figure largely in the farming of the hill parts. Poultry and pigs are common throughout the province, but poultry is more important round the industrial areas.

The sale crops are of much less importance than live stock and live-stock products. Wheat and sugar beet are the principal sale crops from the mixed arable farming in the middle portion of the province. Potatoes on a large commercial scale are unimportant, except in one prominent area in the east of Staffordshire. Market gardening is found round the industrial belt, but fruit growing is confined to a small area in the south where the Worcestershire fruit area overlaps somewhat into this province.

The system of tenure is mainly that of landlord and tenant, though the province shared in the post-war increase in the number of owner-occupiers. Farms vary considerably in size. The proportion of farms over 300 acres in Shropshire is 3 per cent of the total, and farms under 50 acres are 67 per cent of the total, these proportions being almost identical with the country as a whole. In Staffordshire, with less than 2 per cent of the farms over 300 acres and 67 per cent under 50 acres, there is a higher proportion of the medium-sized farm than in the country generally, while Warwickshire with 4 per cent of the farms over 300 acres and only 58 per cent under 50 acres tends towards rather larger farms. The areas mostly devoted to small farms are to be found in the hill regions and in the industrial belts, and to large farms in grassland and mixed arable areas.

The employment of wage-paid labour is common throughout the province, but the number employed in proportion to the cultivated area is lower than the average for the country as a whole. Regular male workers of all ages number 16 per 1,000 acres in Shropshire, 19 in Staffordshire, and 17 in Warwickshire, as compared with 21 for England and Wales generally. The regular employment of women in Shropshire and Stafford is about 2 per 1,000 acres, and in

Warwickshire is less than 1 per 1,000 acres. The employment of casual labour is not high, and in certain parts a supply is easily obtainable from the adjacent industrial districts. Except, however, in the mixed arable farming where sugar beet is grown, the system of farming does not make great demands on casual labour.

For the purpose of more detailed description of the farming the province can be roughly divided into six regions. The boundary lines marked on the map cannot be taken as a clear line of demarcation between one type of farming and another, nor can it be assumed, needless to say, that the farming within each region is uniformly of one main type.

The regions are as follows:

I. North-west Shropshire
II. South-west Shropshire
III. East Shropshire, Mid-Staffordshire, and North Warwickshire
IV. North-east Staffordshire
V. The Black Country
VI. South Warwickshire

I. North-west Shropshire

North-west Shropshire is a continuation of the Cheshire plain lying to the north, and the predominant feature in it is dairy farming. The land is mainly of a heavy type, floored chiefly by Keuper marls or rocks of the lias age, and most of it in permanent grass. There is little arable farming, but where it does occur wheat and sugar beet are the sale crops. The farms vary considerably in size, but most are fairly large and employ hired labour, though not many exceed 250 acres. This North-west Shropshire region was formerly almost as well known for its farm cheesemaking as the neighbouring and similar area of Cheshire, but in recent years there has been a steady decline in cheesemaking, and the bulk of the milk produced is now sold wholesale for

shipment to Manchester and the Potteries, and farm cheese-making is now only a minor interest. There is very little milk sold retail by the farmers except around the small towns and villages.

The common breed of cow is the Shorthorn, but Friesians, Friesian–Shorthorn crosses, Ayrshires, Red Polls, and Guernseys are also found. Generally speaking, the calves are not reared but sold at from a week to ten days old, and the herds replenished by buying in heifers from the breeding areas near at hand, including a fair number from Wales. Irish Shorthorn heifers are also bought in. There are cases, however, where the farmers rear their own heifers.

There is a fair number of pigs in the region, most of them Large Whites, Middle Whites, and their crosses. All are used for bacon production. Most of the breeding is done by small holders. Since the decrease in farm cheesemaking and the consequent falling off in the amount of whey available for pig feeding, the feeding practices have changed over to ordinary mash and dry feeding. Sheep are not numerous in the region, and all are of the grass type, most of them Cluns and Shropshires and crosses of these and other breeds. Poultry keeping for egg production is fairly widespread throughout the region, but there are few specialist poultry farms.

II. South-west Shropshire

This region, extending from the Severn valley to the south and west borders of the county, contains a high proportion of high land. Practically all of it lies above the 400-foot contour, and there are areas over 800 feet and a few patches over 1,200 feet. For the tourist it is an attractive area, being rich in both beauty and historical interest.

Agriculturally, as one might expect from its altitude, the region is almost entirely grassland devoted to the raising of store stock, mainly sheep but also cattle. The hills are open

and run in common in some areas, while in others they are enclosed and form parts of individual farms. Large numbers of sheep are raised on the hills themselves. They are almost exclusively of the Kerry Hill and Clun Forest breeds, the latter predominating. The sheep are drafted in the autumn and sent to the special store sales which are held in August and September at Craven Arms, Church Stretton, and other smaller centres. Wether tegs are sold for fattening on the lower land. Large numbers of two- and four-toothed ewes are sold to various parts of the midlands for mating with a Down ram for the production of fat lambs. There they are usually kept for a couple of seasons and then sold fat with their lambs in the second year.

The cattle in this region are Herefords, Shorthorns, and Hereford–Shorthorn crosses. In many cases the cows are not milked at all, but kept merely to produce and rear a calf annually. Calving is generally in March, April, and May. Some of the calves are forced on and sold as baby beef when nine to twelve months old, but the majority are kept over winter and sold as stores in the spring. Some are kept until eighteen to twenty-four months old before being sold as stores.

Dairying is not a feature of this region, though a few dairy herds, mainly Friesians, do occur in the valleys, and there is of course some milk production round the small towns. Poultry are widely distributed, but neither numerous nor important in any area except round Church Stretton and Craven Arms. Pigs are also unimportant in this region. Of arable cultivation there is practically none, except in the valleys where mixed farming is practised.

III. East Shropshire, Mid-Staffordshire, and North Warwickshire

East Shropshire and the whole of Staffordshire, except the high land in the north and the Black Country round

Birmingham, and the northern part of Warwickshire, can be taken as one region. Geologically it is varied but mainly floored by Keuper marl, and agriculturally it is also varied. The region as a whole, however, may be classed as one of mixed husbandry—partly arable, partly dairying, partly stock fattening—with numerous minor local variations.

Dairying is the most general and most important enterprise, especially where the region adjoins the industrial belts and particularly in the vicinity of the Potteries in the north and the Black Country in the south, which consume the bulk of the produce from this region.

The arable farms are mainly large and are dependent on hired labour, a feature that is prone to give rise to difficulties owing to the demand for labour from the neighbouring industrial centres and the higher wages paid in industry. The grassland farms, on the other hand, are generally small and of the family farm type. The land is usually good, and where cultivated is well cultivated. Though it is a mixed area, grassland predominates, the ratio of permanent grass to arable acreage (including rotational grass) being about 3 : 1. The arable land is worked on the four-course system with variations, and the main sale crop is wheat. There is an increasing tendency throughout the region to displace root crops by vegetables for human consumption, especially in the vicinity of consuming centres.

In East Shropshire and round Newport especially, and along the Salop–Staffordshire border, the land is lighter than in the region as a whole and more barley is grown than is general throughout the region. In the immediate vicinity of Newport there is a special carrot and parsnip area, most of the produce being sent to the Black Country. Southwards and along the Severn Valley sugar beet is an important sale crop. There is a beet-sugar factory at Allscott (Salop), and another just over the border at Kidderminster in Worcestershire. Barley usually follows sugar beet in the

rotation. The south-east corner of Shropshire and the extreme south-west of Staffordshire form one of the few areas in the region where arable farming is more important than dairying. Wheat, sugar beet, and potatoes are the sale crops. This area has also some fruit growing (cherry orchards largely) and vegetable production, and also a few hop gardens.

Going eastwards into Staffordshire there is more arable in the Trent Valley than is general in the region, but milk is still the main interest, though cattle feeding occupies an important place. The rotation is the four-course, and wheat in many cases is the only sale crop. There are quite a number of farms, however, which grow potatoes on a commercial scale. Further south, in the Tamworth and Lichfield areas, more potatoes are grown and market gardening is practised on a large scale. There are some potato specialists, and market garden crops are grown both by specialists and on ordinary farms. Dairying is less important in this area, and pigs more important than elsewhere. The area known as Cannock Chase is useless agriculturally and is under the supervision of the Forestry Commission and the Preservation Trust. On the fringes of the Chase are small holders, quite a number of them part-time miners, each with a few cows. In the north of Warwickshire and that part of Staffordshire bordering on it there is again a higher proportion of arable cultivation, and potato growing is practised on a fairly large scale.

Among the live stock products beef cattle used to be the main product in the arable areas, and this still provides a fair proportion of the income. Dairying is everywhere encroaching, however, especially round the fringes. In some parts, as for instance just east of Stafford, yard fattening of cattle is tending to return, but this movement is neither pronounced nor widespread. All the beef cattle are either Herefords or Hereford crosses, and both summer and winter fattening is practised. The acreage of first-class fattening

pasture is limited, only occurring in a few isolated areas, and few fat cattle are finished on the grass alone. Two methods of producing summer beef are used. One entails buying in the stores in winter or early spring, feeding them in yards practically on a winter system of feeding, and turning out to grass during May, June, or the beginning of July. The other is to buy in fairly forward stores in April and put them on to the early grass; some are finished on grass alone, but the majority require a certain amount of concentrates to fatten them off in August and September. The winter fattening of cattle is done in yards. Very little breeding is done in this region, the stores being imported from the neighbouring breeding and rearing areas and from Wales and Ireland.

Formerly large numbers of tegs were fattened on roots in this region, especially on the lighter land, but for economic reasons this practice has been on the wane in recent years. In the sugar beet areas the sheep are often fed off on beet tops. The breeds of the region are Cheviots, Halfbreds, and various crosses. Flying flocks are kept in some areas, for example, east of Stafford.

The dairying is almost entirely for the production of milk for liquid sale, the region being well placed for this purpose since large markets exist both in the south—the Black Country—and in the north—the Potteries. Round the towns within the region itself retailing by the producers is fairly common, especially by small holders. There is a little farm cheesemaking in the neighbourhood of Market Drayton. The cows are mostly Shorthorns and Shorthorn crosses.

Pigs are not found in great numbers. Poultry are widespread and are increasing in importance, especially in the strip of country between Newport and Whitchurch. As elsewhere, there is a distinct tendency to regard the poultry enterprise as a definite part of the farming.

IV. North-east Staffordshire

The north-east corner of Staffordshire is a region lying above the 400-foot contour, with patches over 800 feet and one stretch over 1,200 feet. The land is about 95 per cent under grass, and the farming akin to that in North-west Derbyshire, having sheep on the highest levels and dairying below with store cattle and sheep raising in between. The sheep are of the Gritstone breed or Gritstone–Mashum crosses, and the cattle mainly Herefords, Shorthorns, and Hereford–Shorthorn crosses. Young cattle are produced both for the cattle feeders and for the dairymen in the lower levels. Leek is the largest store stock market.

Lower down—roughly between the 400- and 800-foot contours—the farming consists of grassland dairying and practically nothing else, but merges at the fringes of course into the mixed dairy farming of Region III. The farms are mostly small, using family labour assisted sometimes by a lad living in. There is a high proportion of producer-retailers in this area, but most of the milk produced is sold wholesale.

Neither poultry nor pigs occupy an important place in North-east Staffordshire, and being a grassland region there is of course no crop selling, except near the large centres of population, such as Stoke-on-Trent, where market garden crops are grown.

V. The Black Country

In this populous industrial belt round Birmingham there is very little general farming, but, as in other industrial areas, cash crops are made to grow on land which would in many cases be left as unfit for cultivation were it not for the large market offered by the industrial population in the immediate vicinity. The farmers (if they can be called such) live by retailing milk and eggs, potatoes and vegetables, and any other products which they are able to make their poor soils

produce and which the smoke pollution will permit to grow. In many cases the "farmers" are part-time industrial workers, and the "farms" may be little more than fairly large allotments. On the fringes of the industrial belt proper the farming is mixed arable and dairying, milk, potatoes, and vegetables being the sale products. The cropping is arranged so as to give a maximum production of cash crops and at the same time provide fodder for the dairy herds. As one would expect, the farmers replenish their herds by buying in heifers from other regions. The commonest breed is the Shorthorn.

VI. South Warwickshire

South Warwickshire may be classed as a grassland region of medium sized holdings whose main sale product is now milk. The county is largely under permanent grass, but has some arable farming, and dairying is the main live-stock enterprise; stock fattening and some store raising are also common. The northern part of the county has already been mentioned as part of Region III, with more arable and more potato growing than is general throughout that region.

On the Coal Measures, which stretch in a north-westward direction from just east of Coventry and extend into Staffordshire, the farming is only secondary to mining and is very much influenced by it. The soils are generally poor and acid, and the smoke pollution makes them worse. Potatoes and oats are the crops which can be grown most successfully, but in some parts of the area the crop range has been extended by liming to include sugar beet, barley, cabbage, broccoli, and vetches. The main feature of the farming, however, is dairying, with the cropping holding only a minor place and being mainly for the purpose of maintaining the dairy herds. Apart from local sales to the mining villages largely by producer-retailers, the milk is

sent to Birmingham and Coventry. There is little rearing in the area. Potatoes and such market garden crops as are grown are largely consumed in the mining villages.

Running down the eastern side of the county, and extending into Oxfordshire and Gloucestershire, is a strip of heavy land (lias clay), which is cold and late and largely under permanent grass used for grazing older classes of stock. Up to a few years ago it was a bullock-fattening area, well-finished Herefords, Shorthorns, and Hereford–Shorthorn crosses being produced, but recently there has been a very definite tendency for the area to go over to milk production, and now it is devoted more to dairying than to cattle fattening.

Most of the rest of this region, covering more than half the county, is under Keuper marl, which gives a heavy and sticky but fertile soil. In parts it is overlaid by drift deposits, but agriculturally it is one area, and mainly under grass and devoted to the production of liquid milk for the Birmingham and Coventry markets. There is a certain amount of arable farming conducted on a four- or five-course rotation, with wheat and potatoes as the main sale crops, and also some cattle feeding and a certain amount of stock raising. In some areas all the bull calves are sold for veal and only the heifer calves reared. The most popular dairy breed is the Shorthorn, but herds of Friesians and Ayrshires are also found. The beef cattle are mainly Shorthorns, Herefords, Shorthorn–Hereford crosses, Irish, Welsh, and some Devons.

Sheep do not form a feature in this area, or anywhere else in Warwickshire, but flying flocks are kept in some parts. Nearly every cross of note is to be found, but Suffolk, Ryeland, and Oxford tups are most commonly used. Pigs occupy only a very minor place, and so also poultry, though as elsewhere the importance of poultry is on the up-grade, especially near the large consuming centres.

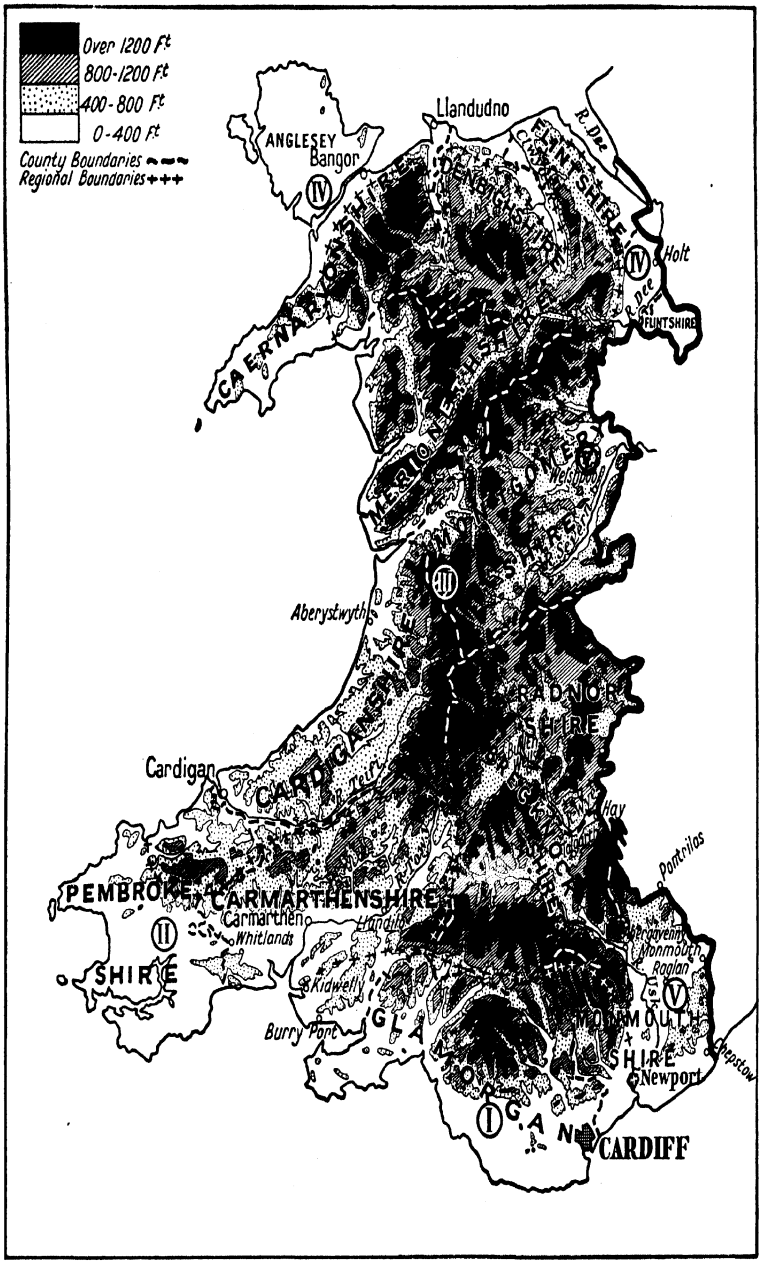
Another area in this region deserving special mention is

the Avon valley, where there is a narrow stretch of rich alluvial land on which the farming is very mixed. Milk, wheat, and sugar beet are the main farm products sold. Especially in the neighbourhood of Stratford-on-Avon, the farming is largely influenced by the demand from the large number of tourists for milk, meat, eggs, fruit, and vegetables. Dairying is carried on, all kinds of market crops are grown, and fruit growing is conducted on a commercial scale. In some respects the area is very similar to the Vale of Evesham further down the valley of the Avon. The most intensive cultivation is around Stratford, Bedford, and Alcester, plums being the main fruit crop. Inter-cropping with breaks of vegetables and soft fruits (raspberries, currants, gooseberries, strawberries) is a common practice, and the market gardening is tending to creep further up the valley. Around Kenilworth, Warwick, and Leamington there is a fair acreage of glass-house crops, tomatoes, cucumbers, and flowers being grown on a large scale.

Chapter XII

Wales and Monmouth

By A. W. ASHBY AND E. LL. HARRY
University of Wales



MAP OF WALES AND MONMOUTH

CHAPTER XII

Wales and Monmouth

THE physical and climatic features of Wales are markedly different from those of the greater part of Britain. Wales is an upland country with over one-quarter of its land area at more than 1,000 feet above sea-level; its centre is an almost solid block of upland traversed by a few comparatively narrow valleys, and its most fertile land is along the seaboard and in low-lying valleys and plains towards the English border. The westerly winds meeting the formidable mountains cause a variable but fairly high rainfall with a range of 70 inches or more in the higher regions to under 30 inches per annum in the lower regions. Temperatures are highest along the seaboard. The highland and some of the less sheltered valleys have a comparatively low annual temperature, and suffer particularly from a late spring growing season. The warm winds which travel northwards over Britain in late April and early May are deflected eastwards and westwards by the central hills, and thus midland Wales gets less of the benefits of these winds than the coastal regions. Rain is sufficiently well distributed throughout the year for the growth of all crops, and it is only in years of comparative drought that any shortage of water is experienced. But sunshine and heat are not so well distributed and this, largely combined with the high rainfall, gives Welsh farming its distinctive pastoral character. The upper limit of cultivation varies in different regions, but in Mid Wales it is reached at about 1,200 feet above sea-level. Virgin pasture, heath, moorland, and rocky land with little vegetation used for rough grazing lie above this height.

The disposition of the mountainous regions has important effects on the economic, social, and political life of the population. Communications are good from west to east, but relatively poor from north to south. Recent developments in road and aerial transport are making slight improvements, but the journey by rail from North to South Wales takes longer than a journey from North or South Wales to London. Both the southern and northern sections transact all their business intercourse across the border with England. But racial, social, religious, and linguistic similarities have kept the Welsh people distinct and they and their institutions have never been wholly merged into the national characteristics of the English.

Wales in general, and South Wales in particular, is better known for its coal and metallurgical industries than for its farming. Until the end of the eighteenth century its population had been sparse, and except for small areas in the north and south it had never been highly cultivated. The nature of its farming has been largely determined by the subsequent growth of population and towns, and by the geographical characteristics of the country. Nearly one-half of the present population of Wales is located in Glamorgan, and much more than half in Glamorgan and Monmouth, which contain the major part of the South Wales coalfield. There are coal mining, quarrying, and other industrial developments in North Wales, but these have led to a comparatively small concentration of population and growth of towns.

Wales is also rich in beautiful inland and coastal scenery, and in summer there is a large floating population at the health resorts, mostly on the coast but scattered in other areas. The resident population of the industrial areas and the floating population of the resorts make the important consumers' markets for food supplies and Welsh farming is mainly, but not wholly, devoted to production to meet this domestic demand.

In the whole of Wales and Monmouth about 12·5 per cent of the population may be described as rural, and 87·5 per cent as urban. Excluding the two highly industrialized counties of Glamorgan and Monmouth, the proportions are approximately 30 per cent rural and 70 per cent urban. These figures compare with about 20 per cent rural and 80 per cent urban for the whole of England and Wales. The number of persons engaged in agriculture represents about 10 per cent of the total occupied persons, but the proportion varies from 42 per cent in Montgomery to 2 per cent in Glamorgan.

Soils are shallow on the hills and slopes, and comparatively deep in the valleys. There are small areas of rich soils, but generally soils are of medium to low quality. While there are small areas of light sand, soils usually range from loamy to heavy. Speaking generally, the soils are characterized by fairly high content of nitrogen and potash and comparative poverty in calcium carbonate, while their phosphate content also is low. The decomposition of the organic matter is of course the main natural source of nitrogen to the soil. High nitrogen content arises from richness in organic matter resulting from humid climate favouring vegetative growth. The absence of calcium carbonate hinders the decomposition of this organic matter by bacteria with the result that this tends to accumulate and to cause deterioration of pastures in some regions.

Richness in potash is due to the type of rock from which the mineral portion of the soil has been formed. Paucity of calcium carbonate results from the fact that limestone scarcely occurs in the rocks from which the mineral portion of large areas of soils in Wales has been formed, but the high rainfall and humid climate tend to leach out calcium carbonate from the soil. The phosphoric acid content of soils is comparatively low and phosphates are the most extensively used of all artificial fertilisers.

The slopes, altitudes, soils, and rainfall all contribute to

making Wales a pastoral country. About one-third of the total land area of the country is classed as rough grazings, and only about 55 per cent of the land area is "farmed," that is, in crops and improved grass. The remaining 12 per cent of the area is in non-agricultural uses or waste.

The rough grazings vary in quality from those which will carry one sheep per acre to those which carry only one sheep to seven acres, and from those which are in use through most of the year to those pastured only for four or five months in the year.

Of the land classed as under crops and grass, about 23 per cent is under arable cultivation, but except for a few small areas mainly in the south and north, and relatively near the sea, there is practically no permanent arable land. The grass is broken up from time to time, and with a year or two's cropping is sown down again to grass for a period of years. Indeed there are many districts where ploughing and cropping at intervals are essential to the maintenance of good pastures.

The productivity of farming in Wales is highly dependent on the productivity of pastures. Maintenance of fertility of grasslands has long been recognized as one of the most important elements of good husbandry, and there is much valuable traditional knowledge and recent experience of methods of improvement by rotational cultivation and re-seeding. Many farmers are now keenly interested in the development of methods of renovation without a period of arable cropping, but the special feature of the new methods is their application to land often previously regarded as unimprovable.

Arable crops, therefore, do not figure largely in the farmers' income. Only very small amounts are grown for sale, and probably the net sales of crops do not exceed 5 per cent of the total farm sales. The crops are used mainly for the feeding of live stock and to some extent for home consumption.

Oats are by far the most important cereal crop and their production is widespread. Wheat, barley, and mixed corn together take up less than half the acreage of oats, and their distribution is relatively localized. Almost all these crops are grown for feeding live stock, and the amounts sold for other purposes are negligible. A certain amount of oats are specially bred and grown for seed to suit conditions in the uplands of Wales. The main root crops are turnips and swedes, which cover an acreage almost as great as all other root crops taken together. The mangold acreage is small, but the crop is still in popular use for spring feeding. Cabbage for fodder, kohl-rabi, and rape are grown to an increasing extent to supplement or replace turnips and swedes for winter feeding, but the acreage is less than half that of turnips and swedes. Vetches and tares are grown on a small acreage as forage crops to supplement shortage of spring and early summer grazing.

The only root crop grown extensively for sale is potatoes. They are almost universally grown and small plots will be seen on farms at the high altitudes at which homesteads are established. They are grown mainly for consumption on farms and in villages or small towns; very little organized trade with the large towns exists. South Wales has to draw heavy supplies from England, while North Wales draws supplies from Ireland. Recently, a scheme for controlled production and marketing of seed potatoes free from virus diseases has been in operation in North Wales, and it is proposed to extend its operation further. Efforts are also being made to use the opportunities provided by some coastal areas for the growing of early potatoes.

Production of the special crops like small fruit, orchard fruit, and vegetables for human consumption is low, and is confined to a few areas. The main concentration is on parts of the Welsh borders and round populous centres. Acreages of vegetables, however, other than potatoes are

increasing. Glasshouse production has recently undergone considerable development.

The essential and almost universal aim of Welsh farming is production of live stock and live stock products. The live stock industries have undergone and are still showing considerable changes. In the case of sheep, the change in the public demand following 1919 in favour of the smaller breeds of sheep, gave a popularity to the native breeds of Wales both for fattening and breeding. There has also been a big movement to much earlier slaughter. In the cattle industry, the change has been in the direction of a big increase in dairying and particularly towards the sale of milk. In the case of beef cattle, there has been a reduction in the age at which the cattle have been sold as stores. The pig industry shows little change, but poultry have increased on parts of the eastern border, particularly in Flint and Monmouth, and in parts of South Wales.

In the days before horse-transport was so much displaced by petrol, Wales produced many types of horses; heavy Shires in the Severn Valley, small and medium weight animals of the "heavy horse" type in many areas, "colliers" in South Wales, cobs and riding horses in many areas, and ponies in most of the mountain regions. The reduction in the market has caused a decrease of supplies of all types, but owing to the nature of the country, with its scattered and isolated farmsteads in hill and mountain regions, and the general unsuitability for motor traction, horses will always hold their own on farms in Wales. Breeding of horses for agricultural and rural purposes will still be necessary and there are recent indications of increased breeding both for replenishment of farm stocks and to meet the improved demand in the markets. Sales of horses during the past ten years have been about 3 to 4 per cent of total farm sales.

Sales of cattle on Welsh farms represent from 25 to 30 per cent of the total farm sales, while milk and dairy products

represent another 20 per cent, bringing total cattle and cattle products sales up to about half the total farm sales. In the past decade there has been a general increase in all classes of cattle, more so in the case of dairy stock. Welsh Black cattle are the national breed, but to-day several others are used. Cows of the Shorthorn type are common in the milk producing districts, though Friesians and Ayrshires are being fairly widely introduced and other breeds are used to a small extent. In the districts which raise cattle for the beef industry, Herefords or Hereford-crosses are common, although the Welsh Black breed is still popular on the poorer and more exposed areas. The Aberdeen-Angus is also used to a small extent. The majority of cattle offered for sale are of the Shorthorn or Hereford type or crosses. Production of cattle and cattle products is practically universal on the farms of Wales.

Sheep are common to all Welsh farms and sales of sheep and wool represent 20–22 per cent of total farm sales, but the permanent flock is not so universally found as the permanent herd of cattle. The types of flock husbandry vary from the use of a flying-flock on cow pasture, or the short period fattening of lambs in autumn and early winter, to the purchase of ewes and the rearing of fat lambs, or the maintenance of a permanent ewe flock for fat lamb production, and to the maintenance of breeding flocks on the hills and mountains. Numbers have been increasing and the proportion of breeding stock has risen. There has been a substantial decline in the proportion of sheep over one year old, and a proportional increase in sheep under one year, a change due to the policy of selling younger stock. This tendency to change has not yet reached finality, but the rate of change is not so rapid now as it has been in the past.

There are two famous national breeds of sheep, the Welsh Mountain and the Kerry Hill (Wales), both, but particularly the first, well suited to production of high-quality

mutton and lamb. While Welsh Mountain and Kerry Hill outnumber all other breeds, many other breeds are used, particularly for crossing for the production of early lambs.

Pigs are not a prominent feature of Welsh farming and represent some 10 per cent of total farm sales, but there is considerable variation from one area to another. There are indications of increasing numbers. In the more isolated and especially the high-lying areas, pigs are kept mainly for home consumption, though young pigs are sold in fairly large numbers from some districts to the lowlands for fattening. The South Wales counties have limited pig production largely to porkers of 80–100 lbs. deadweight. Cardiganshire and some of the North Wales counties have produced fairly large numbers of "cutters" (heavy porkers) and baconers of fairly heavy type but of good quality. The native Welsh pig is one of the white lop-eared varieties. It is hardy, economical, and prolific, and makes a good bacon type. But the numbers of the breed have declined somewhat, although the Welsh and the Large White are still the most common types and are frequently used for crossing.

The number of poultry per 100 acres of farmland is not as high as in England, but there has been a considerable increase in the last decade mainly, but not entirely, in fowls. Expansion of the industry has been mainly for egg production, but there is some increase in table fowls. The trade in table ducks is largely seasonal and geese largely, and turkeys almost wholly, are concentrated on the Christmas market.

The total number of farm holdings in Wales according to the official agricultural statistics is over 60,000. On the other hand, the decennial census returns only some 40,000 farmers and graziers. The discrepancy is in part due to two or more holdings being in occupation of one man, but it is probable that the main part of the difference is due to the prevalence of part-time farming among the smallest farms, where in the census the occupiers are

returned as being engaged in some other trade—publicans, shop-keepers, hauliers, miners, and quarrymen.

The average size of holdings runs to about 46 acres, excluding rough grazings. Less than a half of 1 per cent of the farms are over 300 acres and less than 33 per cent are over 50 acres. Typical farm business, as distinct from the acreage, is also small. There are few farmers having more than £5,000 capital in live stock, equipment, cultivations, and tenant-right, and the common variation would be between £300 and £3,000. According to the last available official figures published for 1922, about 15 per cent of the occupiers own their holdings or have an equity interest in them as proprietors.

The majority of the occupiers are "working farmers," who spend on the average about 60 per cent of their time on manual work, a proportion which varies from practically full-time manual labour on small holdings up to about one-third on the larger farms, where the manual labour of the farmer is more or less confined to periods of seasonal pressure. Family labour also provides a considerable part of the manual labour, and in many parts the combined labour of the farmers and their relatives exceeds that of the wage-paid labour.

Wage-earners in Welsh farming total 33,500, according to the Census returns, and are therefore fewer than the total of farmers. The ratio of farmers and graziers and their relatives to the employees for the whole country is 10 : 8, and varies from 10 : 9 in Anglesey to 10 : 4 in Carmarthen. Many of the employees are themselves sons and daughters of small holders and farmers, and there is little or no rigid class distinction between farmers and farm workers such as is characteristic of capitalist farming. The tendency towards this development exists only in those areas which have the better land and are normally the more prosperous.

The organization of farming in Wales approaches that of the "peasant" rather than that of the "capitalist" type,

and the economy is essentially that of "labour" rather than of "capital." But the current changes in technical practices and industrial organization tend to increase the importance of capital in the forms of both equipment and raw material, and it appears that although the size of the units may not show much change, and that probably in a downward direction, the importance of manual labour may diminish while the importance of capital with that of skill in its embodiment and use will rise.

Farming types are not sharply defined in Wales and the uplands dominate the nature of the farming almost everywhere. Most of the small tracts of lowlands are farmed in close relation to available upland resources. Regions roughly coinciding with watersheds are delineated below, but most of the farm types of Wales can be found in each one of these. The regions are:

I. The Industrial South
II. South-western Plain
III. West Coast and Mountains
IV. Anglesey and the North Coastal Plain
V. Border Valleys and East Monmouthshire

I. Industrial South

This region comprises West Monmouthshire, Glamorgan, and East Carmarthen. It extends from Newport in the east to Kidwelly in the west, and it is well known for its coal, metallurgical industries, and dockyards. The best agricultural land lies between the main railway line and the sea. Its area is small between Newport and Cardiff, but beyond this the lowlands open out into the fertile Vale of Glamorgan. The Gower Peninsula is also an important farming district. There is little lowland farming between Lougher and Burryport, but from this part onwards to Kidwelly there

is an almost unbroken stretch of fertile land. There is a fair amount of farm land nearer the hills, but it is generally poorer as the hills are approached. There is a general tendency for the grassland to increase in the whole region, but it is more characteristic of the western portion than the eastern.

Heavy and light-heavy horses are raised, but dairy farming predominates and the production of milk for sale is general. While there are still some areas where mixed farming prevails it is declining rapidly. Grass and stall-feeding of cattle is done to some extent in the Vale of Glamorgan, and stall-feeding in winter in some other localities, but this is on the wane. Sheep for breeding and raising stores are kept in the hilly districts, but fat lambs are produced in the lowlands. The flocks of the lowland are maintained mainly by purchase, but to some extent by breeding. A few breeding pigs are usually kept on most farms. The weaners reared on the upland farms are sold as stores to the lowland farms where they are fattened mainly for the pork market. Comparatively few baconers are produced for sale, but an appreciable number are produced for consumption on farms. Recently there has been an increase in the number of specialized bacon-producing plants.

Stocks of poultry on specialized holdings, general farms and backyards have been increasing mainly for the production of eggs for the industrial districts. Table poultry is produced in the region for the Christmas market. Market gardening is important in some of the town areas, where there is some concentration. Production is mainly of outdoor crops, and there is little glasshouse culture apart from tomatoes and cucumbers and some varieties of lettuces and flowers.

Farms are usually small on the gentle slopes at the foot of the hills and near towns, but they are much bigger in the lowlands. There are some sheep walks in the hills which,

of course, are bigger than any farms in the lowlands, because they usually include vast areas of rough grazings.

The farms are mainly conducted by family labour, but there is a considerable number of hired labourers on the bigger farms partly run by family labour; some farms are completely manned by hired labour, but these are few.

Taking the region as a whole, cattle and milk farms are the most important, cattle and sheep farms on better land fairly important, and cattle and sheep farms on poor land and mixed farms occur but are not numerous.

II. South-Western Plain

This region comprises almost the whole of Carmarthenshire and all of Pembrokeshire, with the exception of the Prescelly Mountains in the north of the county. Grassland dairy farming is the most prevalent type of farming in the east, but there is more arable land to the west. The tendency to increased recourse to the former type of farming is continuing in a westward direction. There is some mixed farming in the hill districts, but as roads improve, making the transport of milk possible and expedient, dairying replaces mixed farming. South Pembrokeshire is the most important area for sugar-beet growing in Wales, but there has been a decline in acreage with the decline in prices, for the cost of transport to the nearest factory renders production unremunerative. There is also some production of barley for seed. Early potatoes are now produced in commercial quantities, and an effort is being made to organize the trade in this area. Some branches of market gardening, both in the open and under glass, are receiving serious attention, but there is little land used for this purpose.

Shires, colliery horses, cobs and ponies are raised. Cattle are numerous and are chiefly of dairy type, and milk is an important sale product on almost all the lowland farms and

very many of the farms on the higher altitudes. In fact, the districts around Carmarthen and Llandilo have probably the longest history for sale of milk by wholesale in Wales. There are several milk-collecting depots and factories in Carmarthenshire. The main centre is Carmarthen town, but there are several at other places, notably Whitland to the west and Llandilo, which is in the centre of the fertile Vale of Towy in the north-east. South Pembrokeshire was once famous for a native breed of cattle, the Castle Martin Black, but they have largely disappeared. Sheep are kept mainly for breeding in the highlands and mainly for feeding in the lowlands. But the breeding and feeding of sheep are not localized in either district. There is some production of wether mutton, but fat lambs constitute the bulk of the fat sheep trade. Small numbers of breeding pigs are kept on practically all farms, and there is little specialized production, except perhaps pork pigs around Carmarthen town and towards the borders of Pembrokeshire. Breeding and feeding are not exactly localized, but there is a tendency for weaners to come from the poorer hill farms to the better farms for further feeding. Little bacon is made for direct sale, but a lot for consumption on farms. There is a tendency for more bacon to be produced in the west than the east of the region.

Poultry stocks are mainly of the general farm type, but there have been recent improvements in methods of management and some development of specialist poultry holdings. Eggs are the important sale product, and there is little production of table poultry, except perhaps turkeys and to a lesser extent geese around the Christmas period.

Farms are larger in the lowlands than in the highlands, and the largest farms are found in South Pembrokeshire. With the exception of the bigger farms, family labour is the predominant factor even in this region, but, of course, hired labour is necessary to successful conduct of the larger farms. The farms are mainly of the dairy type,

some are of the mixed type, and some cattle and sheep on better land.

III. West Coast and Mountains

This is much the biggest region in Wales, and comprises the uplands from the Prescelly Mountains in the south-west to Snowdonia in the north-west, and from the Foel Fammau in the north-east to the Brecon Beacons in the south-east. Cardiganshire, Merionethshire, Breconshire, Radnorshire, Montgomeryshire, and large portions of Caernarvonshire and Denbighshire are included in this region. But there are several fertile valleys in this area. There is some good live-stock farming for milk production and fat lamb production in some of them. (The Severn, Wye, and Usk Valleys merit separate treatment, and the farming there is described as a separate region.) Valleys like the Teifi and Dovey in the west, and the Teme and Lugg in the east are very much more fertile than the surrounding uplands, yet they are farmed in close association with the uplands through the customary transfer of live stock from the hills to the lowlands for further feeding. Generally the valleys in the rolling uplands towards the south are much wider than those to the north of the Dovey.

There is some good mixed farming along the foot of the Prescelly range of mountains, and much stock rearing, mainly cattle and sheep, but milk production is growing in favour. Along the coast to Cardigan farms are usually larger and better and almost wholly devoted to milk production. Above Cardigan and towards Aberystwyth and the Dovey estuary barley was produced in large quantities, but this district from the sea to the foothills now produces cattle and sheep and milk for direct sale on the better land, and many more sheep and fewer cattle on the poorer land towards the mountains. On the real mountain there are practically no cattle and a lot of sheep and some ponies.

The ponies are particularly numerous on the Eppynt Mountains and Beacons of Breconshire and to some extent on the borders of Shropshire, and the horses of the lower regions are of collier, cob, and strong pony types. Pigs and poultry are produced as sidelines, but there is some specialist production of poultry for egg production in the rolling countryside and slopes of the uplands. Market gardening is carried on only to a very small extent around the seaside and inland towns. The characteristic farm types are cattle and sheep on poor land with a little of cattle and sheep on better land in the better situations. But the latter are tending more to become milk-selling farms with the growth of economic possibilities in the milk market.

The north-west of this region is unique of its kind, with high peaks lacking vegetation and deep narrow valleys, some of which are full of boulders and stones, and others are fairly fertile. This is a sheep-farming country and little of any other type of farming stock is kept.

Farm sizes vary in the hill districts from big sheep walks to very small squatter farms. The farmers of the latter make full use of the free mountain grazing rights that are associated with their farms. Generally the lowland farms are bigger than those on the slopes but which are not properly in the mountain districts.

Labour is provided mainly by the families, but there is some hired labour on some of the bigger farms of the lowlands and uplands.

IV. Anglesey and the North Coastal Plain

The region comprises the Isle of Anglesey and the Lleyn Peninsula in Caernarvonshire, and the lowlands of Flintshire and Denbighshire.

Anglesey is the only county in Wales with all its land surface below 500 feet above sea-level, and this largely determined the character of its farming, which was arable

combined with cattle raising. Now, however, it is largely pastoral combined with cattle and sheep feeding. Hundreds of fatted Welsh Black and other cattle and cross-bred lambs leave for the English towns each year. The Lleyn Peninsula produces fewer fat cattle, though there are plenty of the Welsh Black dotted about on its better lands. This district is again famous for fat lambs and these go to English markets. Some pigs and poultry are kept on most farms, but both are regarded as sidelines, except perhaps pigs in some parts of the Lleyn district where there has been and still is some production of heavier type bacon for sale.

Both Anglesey and Lleyn show some development of market gardening in the open, though it may be less important now than formerly in the case of some crops. The former was a big producer of carrots, onions, and cabbage plants, and there is a tendency to revive production of some of these. Bulb propagation and cauliflower and broccoli production are being tried in the latter district. The farming would be described as cattle and sheep better land, with a tendency to favour the development of dairy farming, particularly towards the east and near centres of concentration of population.

Beyond Llandudno to the east the lowlands open out to the best lands of Flint and Denbigh, and include the fertile Vale of Clwyd. Dairy farming predominates, and this used to be combined with cheese-making and pig feeding, and cattle raising and butter-making, but now milk for sale is generally produced. Where cheese-making still persists pigs are made into baconers for the Midland trade, but in other areas they are made into porkers. Poultry are managed mainly on general farm lines, but there is considerable development of specialist production of eggs and some of table poultry, particularly along the eastern limits of the region.

There are several important market-gardening areas, and

they are mainly in the fertile valleys. That in the Holt district of the Dee Valley is the most important and is well known for its strawberries. There are others along the coast from Queensferry to Bangor, and some others in sheltered places, while there is some concentration in the Conway Valley. Seed potatoes certified free from virus diseases are produced over the whole region, and in some of the hillier districts outside the regional limits set here. The Clwyd Valley also produces a local type of clover seed, and some attempt is being made to improve and organize this industry.

Farms are generally fairly large in Anglesey and parts of the Dee and Clwyd valleys, but apart from these districts farms are generally small and of the type usually found in Wales and run by family and hired labour.

V. Border Valleys and East Monmouthshire

This is the region of the Severn, Wye, and Usk valleys which cut through the uplands of the mountain region. In the upper reaches of these rivers the farming is typical mountain sheep and cattle raising. But all three valleys are quite fertile not very far from their sources, and they ultimately contribute to that excellent agricultural land lying beyond the Welsh border in Shropshire, Herefordshire, and Gloucestershire, and part of east Monmouthshire gets its soil characteristics from the same source.

The Severn Valley is the most noted. It was once an important arable district very well known for its wheat, its grey Shire horses, and stout, tough oak trees. Now it is the most important grass stock-feeding district in Wales, being within easy reach of excellent supplies of store cattle and sheep. The centre of this feeding area is Welshpool, but milk production is rapidly gaining favour and tends to displace the feeding systems of farming, more particularly of cattle. The Shire horses are still produced and there is

a tendency for production to increase. Pigs and poultry are relatively unimportant enterprises and are managed on general farm lines. There is practically no market gardening, but there is a growing industry in seed production of indigenous clovers and grasses. The area devoted to this form of production is small, but it has been increasing in the last few years. Farms are generally larger than in other regions, and there is less family labour and more hired labour employed.

The farms in the Wye Valley are typical cattle and sheep farms down to Builth. From there the valley opens out, the land is more fertile, and there is some breeding and feeding of cattle and sheep and a considerable amount of arable cultivation. Pigs as weaners and porkers are produced, but there is little poultry farming except on general farms. Farms are larger in the east than in the west, and hired labour is more important than family labour.

The Vale of Usk is much like the Wye, and the agriculture in the upper reaches is typical mixed farming devoted to the raising of store cattle and sheep and some ponies. But at Brecon the valley opens out, and with its tributary valleys going up towards Talgarth and Hay and down towards Sennybridge and Devynock it forms a big farming district where the farms are probably the most neatly kept in Wales. Cattle and sheep were bred and fed, but latterly milk production has been becoming customary. Much the same sort of thing occurs along the valley to Abergavenny, cattle and sheep feeding and rearing being displaced by milk production. But around Abergavenny and along to Raglan and Monmouth there is still a lot of feeding of cattle on the lowlands and breeding of cattle in the uplands. East Monmouth, lying between the rivers Usk and Wye, is a cattle-raising country, but with a distinct tendency to change to milk production in the last few years. Pigs are mainly produced for pork, but some baconers for sale are made. Poultry, though mainly stocked on general farms, are

run on more specialized lines in the area than any other in Wales. There is a lot of market gardening in East Monmouth, both in the open and under glass, and this is localized in parts of the Usk Valley, more particularly near Abergavenny and also in places between Newport and Chepstow.

In the areas described there are many individual variations of farms and small localities from the main characteristics or types of the general regions. There are also similarities between the regions and their farming. From accounting data it is possible to display the economic features of four types of farming which could be found in any area covering lowland or valleys, hills and the higher uplands. Of these types, that described as "sheep and cattle poor land" would be found in any upland area where sheep predominate. The type described as "sheep and cattle better land" will be found in all middle-hill areas, and on some lowland areas where soils are poor. That described as "mixed farms" tends to follow the lowland areas, but rises to the hills to some extent. It represents more commercial interest in crops, and more specializing in live-stock enterprises—particularly pigs. The type described as "cattle and milk" can be found in every lowland area of the thirteen counties.

Type 1.—*Sheep and Cattle, Poor Land*

Over half the total area of these farms is rough grazing, about a third is pasture and hay, and the rest is arable, oats being the most important arable crop. Practically all crops are used for feeding farm households and farm animals. Live stock are mainly sheep and to a lesser extent cattle, with few pigs, poultry, and horses. Capitalization is low, being mainly in live stock and implements. Well over 90 per cent of receipts are for live stock and live-stock products. The percentage distribution is cattle and dairy produce 47 per cent, sheep and wool 27·3 per cent, pigs, poultry

and eggs, and horses 21·8 per cent, and crops less than 4 per cent. Rent, hired labour and family labour, feeding-stuffs and live-stock replacements are the main items of expenditure. Little is spent on seeds and manures. The labour complement is low at just over one fully employed man per 100 acres.

Type 2.—*Sheep and Cattle, Better Land*

Nearly 60 per cent of the land is pasture and 80 per cent is pasture and hay, 14 per cent is arable, and only about 6 per cent rough grazing. Three quarters of the arable land is cropped with cereals, and oats is the most important crop. Almost all the crops are consumed on the farms and in the farmhouses. Cattle are more important than sheep, and horses, pigs, and poultry are still less important in the stocking of the farms, which is significantly heavier than in Type 1. Capital is mainly in live stock and implements, and much higher than Type 1. Receipts are also much higher than in Type 1, and the percentage distribution is cattle and dairy produce 43·3 per cent, sheep and wool 31·5 per cent, pigs, poultry and eggs 8 per cent each, and horses 2·4 per cent; less than 7 per cent is derived from crops. Total expenditure is considerably greater than in Type 1, and the proportions are: rent and rates 21·7 per cent, family and hired labour 25·7 per cent, feeding-stuffs 12·8 per cent, live-stock replacements 26·9 per cent, and the remainder is for sundry items and seeds, manures, and implements. Slightly over two men are fully employed per 100 acres.

Type 3.—*Mixed Farms*

There is more arable land on this type than on any of the others, but nearly half the acreage is pasture and three-quarters pasture and hay. The area of rough grazing is significantly low at 2·3 per cent. Stocking is relatively

heavy and is nearly the equivalent of two acres to a cow. The cattle enterprise is particularly important, and it is fairly closely followed by pigs and sheep: horses and poultry are unimportant. Capitalization is higher than in any of the other three types and is about £12 an acre, and most of it is invested in live stock and implements; receipts are twice as much as those in Type 2 and are chiefly from the live-stock enterprises. The percentage distribution is: cattle and dairy produce 38·4 per cent, sheep and wool 12·2 per cent, pigs 28 per cent, poultry and eggs 10·2 per cent, horses 1·8 per cent, and crops less than 10 per cent. The principal items of expenditure are: rent and rates 16·8 per cent, family and hired labour 22·2 per cent, feeding-stuffs 22·9 per cent, live-stock replacements 26·1 per cent. Very little is spent on seeds and manures. The amount of labour employed is the highest of all types, being over three men fully employed per 100 acres.

Type 4.—Cattle and Milk

Over half the land on this type is pasture and 80 per cent is pasture and hay, while the acreage of rough grazing is higher and that of arable land lower than in Types 2 and 3. Less stock is carried than in Type 3, and cattle are easily the most important. Most of the capital is invested in live stock and implements, crops accounting for just over 11 per cent. Receipts are a little lower than those in Type 3, but over 93 per cent are from live stock and live-stock products, and the percentage distribution is: cattle and dairy produce 68·4 per cent, sheep and wool 10·7 per cent, pigs 8 per cent, poultry and eggs 5 per cent, horses 1·4 per cent, and crops slightly over 6 per cent. Expenses also are lower than those for Type 3. The main items are: rent and rates 17·5 per cent, family and hired labour 21·7 per cent, feeding-stuffs 23·9 per cent, live-stock replacements 22·7 per cent. Expenditure on seeds and manures is very low. Slightly under three men are fully employed per 100 acres.

Efficiency and Progress

In spite of its "peasant" character Welsh farming shows considerable adaptability within the range of its products and in technical methods. It also shows adaptability within the general form of its organization, although general farms show relatively little change. It is probable that production per acre was never so high as at present, and the production per person has been continuously increasing during the past sixty years. There has been a considerable substitution of equine power for manual labour, and at times development of substitution of mechanical power for both. There has been increasing use of fertilisers and increasing interest in the rational use of supplies. The increasing use of purchased feed-stuffs may be sentimentally deplored, but in view of the necessity of securing continued growth and early maturity or marketability of stock, and the fact that the products of the arable land are not rich in proteins, the extended use of purchased feeds has led to economy. Again, there has been increasing interest in the *rationale* of use.

Effort to maintain, even to improve, the quality of live stock is fairly widespread. There have been periods of confusion with regard to aims in breeding, uncertainty of trends in market requirements, and uncertain or intermittent breeding policies in some areas and periods. But since the introduction of the Live Stock Improvement Scheme Wales has made the greatest possible use of its facilities. On the whole, there is considerable interest in the maintenance and improvement of quality of grassland although there was considerable reduction in purchase of fertilisers during the recent depression. In general, there is higher output for given inputs in all classes of live stock than formerly. Yields of milk per cow have increased. In breeding herds of cattle and flocks of sheep sales per 100 head maintained have increased.

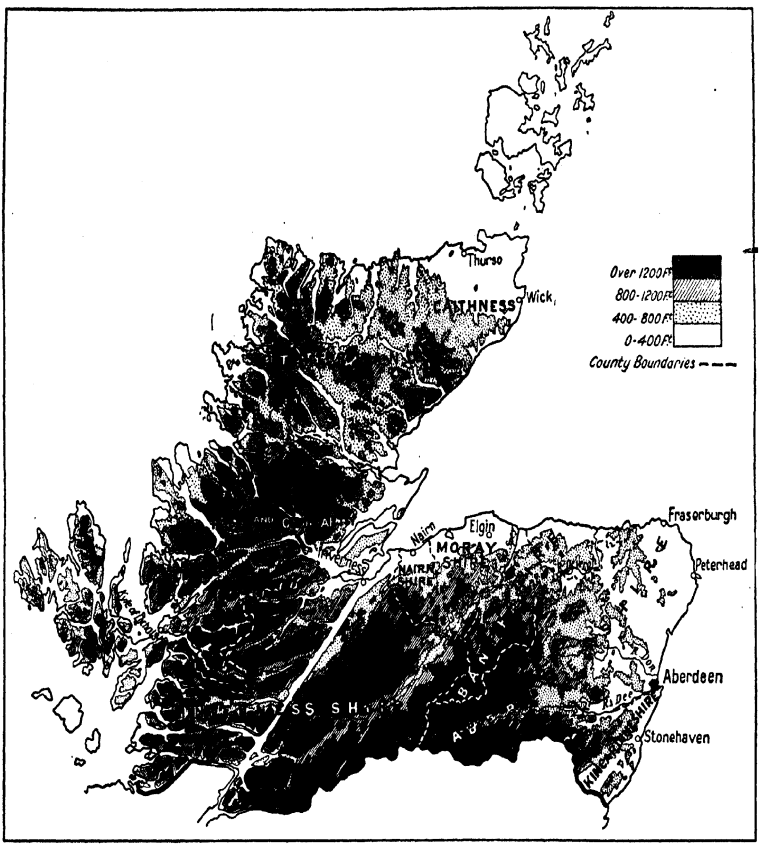
The net effect of the combined changes has been that of raising the productivity per person something like 50 per cent in the last sixty years, or at the rate of about 8 per cent in ten years. The actual rate of rise of efficiency varies from time to time, but it appears to have been relatively rapid between 1921 and 1931 and until depression caused some slowing down. With improvement in general economic conditions there is promise of fairly rapid technical improvements leading to further rise of economic efficiency.

Chapter XIII

The North of Scotland

THE COUNTIES OF
CAITHNESS, ORKNEY, SHETLAND, SUTHERLAND,
ROSS *and* CROMARTY, INVERNESS, MORAY, NAIRN,
BANFF, ABERDEEN, *and* KINCARDINE

By A. D. IMPER
North of Scotland College of Agriculture, Aberdeen



MAP OF NORTH OF SCOTLAND

CHAPTER XIII

The North of Scotland

THIS province embraces the mainland counties of Kincardine, Aberdeen, Banff, Moray, Nairn, Inverness, Ross and Cromarty, Sutherland, and Caithness, and the islands of Orkney and Shetland to the north and the Hebrides to the west. On its southern boundary, stretching from Loch Linnhe on the west to Montrose on the east, it joins with the provinces of the South-west and South-east of Scotland. In area it is over 9 million acres of which only 1½ million are under crops and grass. Mountain and heath land used for grazing occupy another 5 million acres, leaving over 2½ million acres as waste mountain land, deer forests, woodland, and land occupied by towns, roads, etc.

The province is sparsely populated, the average density being only 73 persons per 1,000 acres, compared with 480 per 1,000 acres in the South-west Province of Scotland. Excepting the narrow straths like the Spey and the Shin the population is concentrated in the lowland strip which runs along the eastern seaboard. Aberdeen, with a population of about 167,000, is the only large city. Inverness takes second place with a population of 22,582, and Peterhead comes next with 12,545. Inland there are a fair number of market towns and small villages, and along the east coast there are numerous townships and fishing villages, but all are small. There are no industrial belts in the province.

The roads, with the exception of those in the mountains, are mainly good. The largest proportion of agricultural transport is now by motor lorries, to such an extent in fact that farm horses now rarely cart any produce except for very short distances. Some part of the transport is done by coastal steamers. There are many small ports on the east coast where cargoes may be shipped, and from Aberdeen

many of the coastal services carry agricultural produce to England.

The province is practically an export area for all products. Cattle fattened in the area are largely designed for the London and Glasgow markets, especially the former, either direct or through various agencies. Oats, which are the main grain crop, are also sold to a large extent for export from the area, mainly to the Edinburgh market. The growing of seed oats for shipment south is also an important trade.

The agriculture of the province as a whole is determined and restricted by its physical features and its distance from the large industrial centres. As already stated, only 1½ million acres out of a total of over 9 million are classified as cultivated land, and except for small patches in the mountain glens, the whole of this cultivated land lies along the eastern seaboard. This coastal belt is 30–40 miles at its widest in Aberdeenshire and continues at widths of 10 to 20 miles along the shores of the Moray Firth in the counties of Banff, Moray, and Nairn, and on to Inverness. North of Inverness there is a short strip between the Beauly and Dornoch Firths which includes the fertile areas of the Black Isle and Easter Ross, but northwards for 40 miles or so the hills come right to the coast and there is no lowland until Caithness is reached.

Inland from the coastal lowland strip, and between it and the mountains, there lies a belt of foothills which, except in places where the mountains rise steeply, stretches from Kincardineshire to Caithness. Some of this is cultivated land, but it is mainly a grassland area devoted to cattle breeding and sheep rearing.

Elsewhere the province is mainly mountainous. The whole of the middle and western sections form a practically solid block of mountains, large stretches being over 1,200 feet above sea-level, and apart from the steep valleys and straths which are to a large extent occupied by deep sea

and inland lochs, practically the whole is over 800 feet high. Agriculturally this large area of rugged grandeur contributes rough grazings, but a very large part of it is barren waste. The province being bounded on the west by the Atlantic Ocean and on the east by the North Sea, and with its high mountains in the west and middle, has a rainfall exceedingly varied throughout its area. On the east coast it varies from about 21 inches at Nairn to 31 inches at Peterhead, while farther inland it rises to about 36 inches. On the west coast the fall varies from about 76 to 100 inches, according to location. In the Hebrides it varies from 44 to 71, while in the northern islands it is about 36 in Orkney and 38 in Shetland.

The system of land tenure over the major part of the province is that of landlord and tenant, although, as elsewhere in the country, post-war years have seen a marked increase in the number of farmers owning the farm they occupy. An exceptional type of tenure is found throughout the Highlands, more widely in this province than in the other provinces of Scotland, in the "crofting" system, which is briefly mentioned in the later description of the mountainous region.

Farms in the province are generally small, except for the large hill sheep walks. Many are of the family-farm type operated by the farmer and his family without any hired labour at all. On the larger farms, the married hired labour is housed in farm cottages and payment in kind is made in addition to the money wage. Single men are housed under either the "bothie" or the "chaumer" system. Half-yearly or yearly hiring of the regular labour is the usual practice.

The chief markets for fat cattle are Aberdeen and Elgin, but there are many other auction marts scattered throughout the province. The animals may be purchased by local butchers or by dealers or by agents for South firms. Dealer purchasers may repitch in a larger mart or, like the agents

for South firms, have the animals slaughtered and sent to London or elsewhere in the South in carcase form. As previously stated, a large part of the beef output of the area goes South but mainly to London. Apart from whole carcases there is also a definite trade in parts of carcases, e.g. "short sides" and "joints," between the North and London. Many small-town butchers send part of every carcase they handle to London.

Store cattle are generally sold through auction marts, but a fair number are sold privately. In the most noted store-raising areas, e.g. Grantown, there are special annual sales of store cattle and buyers attend from all over the country. Otherwise the auction marts handling fat stock are utilized. North country and Shetland stores are purchased in the Aberdeenshire and Morayshire marts for feeding in these counties. The supply of home-reared stores does not satisfy the demand for this class of stock, and large numbers are imported from Ireland and in some years from Canada also. These usually pass through the hands of one or more dealers before the feeder buys them through the auction mart, but in some cases the feeders may purchase direct from Ireland or immediately on importation.

Sheep are usually marketed through the auction marts also, but in autumn special sheep sales are held in the main sheep areas. Very large numbers of cast ewes and store lambs are sold for export to the more fertile areas, the lambs to be fattened off and the cast ewes to form the flying flocks of the lowlands. Many of the Highland store lambs are taken to the midlands of Scotland and to England. The fat lambs produced in the lowlands are generally sold through the auction marts though a proportion is sold privately.

Grain, mainly oats, is usually purchased by dealers who send it South. Barley when of good quality is purchased in some years by the local distilleries for whisky production. In recent years, however, the demand has been falling off,

and the farmers are now somewhat reluctant to continue growing the crop.

The various farming systems throughout the area can generally be traced to soil conditions, climate, altitude, and, to a less extent, accessibility. Thus the mountains with their poor grazings and general inaccessibility are devoted solely to sheep grazing; the foothills and the valleys with their relatively better soils and more sheltered conditions are mainly cattle breeding and sheep rearing areas; while the lowlands with their more fertile soil and more even climate form a mixed farming area devoted to grain growing and stock fattening.

Changes in practices are slowly taking place, and the farmers are trying to adjust themselves to the changing conditions of the country as a whole. The main effect of the agricultural depression has been to tend to increase the number of grass-fed cattle with a proportionate decrease in the number of house-fed animals. To meet this the cropping rotation has been extended from 6 to 7 or 8 years' duration, the extension being effected by leaving the grass down longer. In many cases the number of cattle carried has not been materially increased, but sheep, which have been less severely affected by the fall in prices, are being kept more extensively in order to utilize the grass.

The main features which affect agriculture are common to all areas, but as the great centres of population are far removed from this province, and the climate and topography cannot be compared with that of more southerly situated areas, the problems of reorganization are somewhat more difficult. Resort to wheat production under present favourable conditions is not possible, and utilization of land for the production of the more nitrogenous crops such as linseed has not proved successful, so that the farmer must consider the balance between crop and stock from a less diversified angle than his fellows in the South. His choice of grain crop being oats, and of root crops turnips and swedes,

does not give him much chance, but he has realized that to be successful he must organize his holding so that the maximum production is possible along the most efficient line. To accomplish this he is using as far as possible quality seeds and manures, improved bulls and females, and attempting to produce the commodities most likely to find a satisfactory market, provided the return for quality justifies the special attention to detail required.

For the purpose of more detailed description the province may be roughly divided into three main regions. The nature of the province makes it difficult to mark these off on the map, but from the altitudes shown by the shading of the map, the outlines of the two mainland regions are fairly clear. The regions are as follows:

I. The Lowland Coastal Belt and the Foothills
II. The Mountain Region
III. The Islands

I. The Lowland Belt and the Foothills

The whole of the undulating lowland belt along the eastern seaboard from Kincardine to Easter Ross is an area of mixed farming whose predominant features are grain growing and cattle feeding. In Kincardine, Aberdeen, and Banff the soil, though varied, may be classed as medium and is mainly free-working sharp land. Further west in Moray and Nairn it is slightly heavier and more fertile, while on to Inverness and the Beauly Firth it is sharper again and of medium quality. North of that there are the deep and highly fertile soils of the Black Isle and Easter Ross. The farms in the Haughs of Moray, the Black Isle, and Easter Ross are larger than elsewhere, but taking the lowland area as a whole the farms are comparatively small. In the foothills region they are smaller still, many of them being of the small holding type.

Aberdeenshire claims the largest area of lowland, and the farming here is largely typical of the whole belt. The cropping system in general practice is a six-course rotation, viz. oats, roots (turnips and swedes), oats (sown out), grass (partially or wholly hayed), grass, grass. In some areas, e.g. Moray and Banff, barley is sometimes taken after the root break, but very little wheat is grown anywhere. Generally speaking potatoes are grown only in sufficient quantity to supply the farmhouse and the employees, but there is some commercial growing for export to the South. Many farms near the towns grow a few extra acres for local sale. Very little sugar beet is grown, the land being too sharp and stony. Grass seed mixtures have been fairly closely studied, and the pasture of to-day shows a great improvement as compared with that of a quarter of a century ago. The balancing of the grasses and the introduction of wild white clover have materially improved the quality and the carrying capacity of the pasture lands.

The main, and in many cases the only, cash crop is oats, which, as already mentioned, is sold largely for export to the South. It is generally a condition of all leases that no straw be sold off the farm, the return of the straw to the land in the form of dung being considered essential for good husbandry. Hay used to be an important cash crop before the general adoption of mechanical transport.

It is not the cropping, however, but the live stock that dominates the farming practice in this area. The cropping is, in fact, largely incidental to the live stock branches, being designed primarily for the production of feeding stuffs for them. Among the live stock, cattle occupy by far the most important position either from the purely feeding or from the breeding, rearing, and feeding aspects. Sheep occupy an important but minor position and dairying is quite subsidiary to the production of fat stock.

The farms may be divided into three types: (1) those on which feeding is the main enterprise, (2) those on which

breeding, rearing, and feeding are combined, and (3) those which confine themselves to breeding and rearing.

There are no wide areas in which any one of these types occurs to the total exclusion of the others, but generally speaking the feeding farms are confined to the all-arable lowland strip and the breeding and feeding to the foothills and the more outlying districts generally, with the second type—the breeding, rearing, and feeding farms—lying between. There is no distinct division, however, the types merging into each other almost imperceptibly.

The farms on which feeding is the main enterprise are usually above average in size, and the cattle fed may be either home-bred or imported. Most, perhaps, handle both. The home-bred stores, mainly Aberdeen-Angus crosses, are obtained from the neighbouring outlying districts and foothills, and the imported are mostly Irish coloured cattle of the Shorthorn type.

The feeding practices vary somewhat, but generally speaking a proportion of the cattle are fed inside during the winter months either in courts or in byres, and the remainder fed off the grass in summer. During the last few years there has been a tendency towards a larger number of summer-fed cattle with a proportionate decrease in the number of house-fed animals. In certain instances only grass feeding is practised, the cattle being carried through the winter in store condition.

The farms which go in largely for breeding, rearing, and feeding cattle are very often the smaller in size. The usual practice is to carry a number of breeding cows and to purchase a number of young calves, so that each cow rears more than her own calf. On a few of the smallest farms "cogging," i.e. pail-feeding, of calves is practised. The animals are fed off on the farm on which they are reared. The cropping on these farms is the same as on those on which feeding is the main enterprise except that there may be a larger proportion of grass.

This group merges with those farms, mostly all small, which confine themselves to breeding and rearing only, and are typical of the foothills region and the poorer and more outlying districts of the lowlands. The system, up to a point, is the same as that of the breeding, rearing, and feeding farms, breeding cows being carried and made to rear more than their own calves. The calves may be sold off as soon as they are weaned or they may be kept on and sold later as stores. The cropping is also much the same except that there is less of it and a much larger proportion of permanent pasture.

In this region as a whole dairying is quite subsidiary to the production of beef cattle, but round the towns it occupies an important place in the farming. The production of milk is in fact in excess of local requirements and there is some export to the South, but it is only a small trade. There are no purely dairying districts in the region. The milk farms are scattered among the ordinary farms and differ very little from them except that milk cows have taken the place of beef cattle. The cropping is practically the same as on the neighbouring farms, and, like their neighbours, the dairy farms vary greatly in size and quality. During recent years the milking machine has been introduced to a number of dairy farms, and progress in this direction is steady but not rapid.

The cows are predominantly of the Cross Shorthorn type, and are mainly imported from Ireland and the South-west of Scotland. During the last few years there has been a tendency for farmers to favour to a greater extent the Ayrshire breed, and to-day there are several pure Ayrshire herds and quite a few Ayrshire-Shorthorn crosses. The usual practice is to buy cows either as calving heifers or as calving cows and to keep them for several lactations and then replace by purchase. On very few farms is the breeding and rearing of young heifers practised, except in the case of the pure-bred Friesian (Holstein) and Dairy Shorthorn

herds scattered throughout the area. There is no dairying in the foothills except around the small upland towns. Throughout the area a few cows are kept on every farm to supply the farmhouse and the employees.

Before the war sheep were seldom seen on the lowland arable farms except when they were taken in from the hills for wintering, but now the majority carry sheep. Some carry flying flocks, some feeding flocks, and some carry both. With the feeding flocks the general practice is to purchase store lambs from the hills at the autumn sales, and feed them off on grass and roots during the winter. The flying flock consist mainly of cast ewes from the hills and foothills, and have one or two crops of lambs and are then fattened off. The lowland lambs are generally born early in the year and are mainly away for slaughter by autumn, so that they do not compete with the winter-fed lambs any more than can be helped.

Pedigree sheep are to be found scattered throughout the province, and annual sales of this class are held. They are mainly purchased for changing the blood in the commercial flocks which consist mainly of Half-breds.

In the foothills there is more concentration on the breeding and less on feeding, most of the lambs being sold as stores. The foothills are essentially a store stock area, the main products sold being store sheep and store cattle.

Pigs on the whole are not found in large numbers, but during the past few years a number of farmers have extended this enterprise and now produce bacon pigs and/or young pigs to an appreciable extent. The poultry enterprise has in many instances become of such a size as to have a definite position in the farm economy. In the majority of cases commercial egg production is the aim, but a few poultry keepers specialize in pedigree breeding and cater for the stock bird trade. Many breeds are represented, but the most common are the White Wyandotte, Leghorn, and Rhode Island Red.

The foregoing description applies in general to the whole lowland strip along the eastern seaboard and its neighbouring foothills, but in particular it applies to Aberdeenshire, and some further details are necessary about some parts of this region as they differ slightly from the general system of farming already described.

Banffshire, which has only a narrow strip of lowland, has on the whole more breeding and less feeding of cattle than Aberdeenshire. Poultry are less important, but arable sheep-farming is more common. More barley is grown here than in Aberdeenshire generally, and is sold when possible to the many distilleries which are mainly situated in the foothills of Banff and Moray. These distilleries provide draff (wet distillers' grains) and other by-products which are used as foodstuffs by the neighbouring farmers. In these foothills also there are found many pure-bred herds of Aberdeen-Angus cattle of world renown, e.g. Ballindalloch.

The lowlands of Moray and Nairn, or the Haughs of Moray, form the most fertile and most intensively farmed area in the whole of the North of Scotland Province. It is often referred to as the "Garden of the North." The farms are larger and more intensively cultivated than in Aberdeenshire, but cattle feeding is still the main enterprise. Some wheat is grown here, also some sugar beet, and also carrots on a small scale commercially. More barley is grown, and more hay is cut than in any other part of the province.

Moving westwards into Inverness-shire conditions and farming similar to those in Banffshire are found until, turning northwards, the Black Isle and Easter Ross are reached. These are two fertile lowland regions in which many of the farms are fairly large and in which the farming is fairly intensive. Potato growing is more extensively carried on here than in most areas of the province, and there is a considerable export trade of seed and ware potatoes to the South. Breeding and feeding of cattle and of sheep is prac-

tised with emphasis on the feeding in the lowlands and on the breeding on the foothills to the west. Highland cattle crossed with Shorthorn are more common in this area than the Aberdeen-Angus crosses. Crofting is the common tenure in these foothills.

The mixed arable and beef farming typical of the province as a whole terminates in Easter Ross. Further north there is practically no lowland until the fairly flat north-east corner of Caithness is reached. This area is very largely under grass, and cattle and sheep breeding are the main features of the farming. The cattle are mixed, but are mainly of the Shorthorn and Aberdeen-Angus types with an admixture of West Highland blood. In this region there is much moor all over the flats and stone slab quarries are numerous. The slabs are used for fencing and also for building purposes.

II. The Mountain Region

This region occupies most of the land area of the North of Scotland Province, but as most of it lies above 1,200 feet, and the lower altitudes are found in steep glens and straths and inland lochs, sheep hold almost exclusive importance in the farming. The land is rocky and the herbage largely mountain grasses and heather. Carrying capacity is therefore very low and the sheep walks large, usually running into thousands of acres.

The system of sheep farming is in the main the same as that described in more detail in the province of West and South-west of Scotland. The flocks are maintained by home-bred ewe hoggs. The lambs are sold in the autumn mainly at special sheep sales, buyers attending from all over the country but mostly from the neighbouring lowlands. The ewes are usually taken to the lower ground during the winter and the ewe hoggs may be sent to the lowlands and wintered away. Many of the lowland farms

let winter grazing for this purpose, and the foothill region usually winters a large proportion of the mountain breeding stock.

The sheep on the mountain sheep walks are mainly pure-bred Scotch Blackface, but the two most northerly counties of the mainland, Sutherland and Caithness, are famous as one of the chief areas of the Cheviot breed, the other being the Border counties which give the name to the breed. The Cheviot breed found in these northern counties is larger and has other points of difference from the breed of the Cheviot hills. In the valleys and lower altitudes of the mountain region Cheviots, Half-breds, and Greyfaces are found.

Cattle are found only in very small numbers and are mainly of the West Highland breed, in some cases crossed with the Shorthorn. Cultivation is non-existent except in some of the valleys, and then only to a very small extent. Throughout the whole mountainous region sheep are in undisputed possession.

In the Highland glens, and particularly on the shores of the sea lochs which bite everywhere into the rugged coast, the system of "crofting" prevails. The system is one of ancient, hereditary tenure of small patches of cultivated land combined with rights of common grazing on the steep hillsides. It is little more than subsistence farming helped out by part-time occupation in fishing, domestic spinning and weaving, and in some of the occupations provided by the need for catering for the summer and autumn sporting and holiday trade. The problem of these "congested" crofting areas has been exercising public authorities for the past half-century.

IV. The Islands

This region is made to include both the islands of the Hebrides which lie in great number on the west coast, and

also the two groups of islands which make up the counties of Orkney and Shetland in the north.

From Thurso in the north-east corner of Caithness the Orkney Islands can be seen on a clear day. The group is composed of many islands varying greatly in size, some being inhabited and some merely the resort of sea birds. The soil is also vary variable, but where it is cultivated it is fairly good loam.

The farms are mainly small and are farmed similar to the foothills of the mainland. The farmers are very progressive and have introduced up-to-date methods of culture and marketing. In some respects they are ahead of their neighbours on the mainland.

Cattle breeding and sheep breeding are the main enterprises though there is a certain amount of feeding also. Some of the islands are wholly stocked with sheep. The store stock produced is marketed on the mainland largely in Aberdeen. The cattle are mainly Aberdeen-Angus type of fair quality. Horse breeding is also practised, and a moderately good class of commercial gelding is exported. The poultry enterprise is highly developed here and forms a very definite source of income to the majority of the farmers.

The Shetland Islands lie further north, and the land is more barren. Peat bogs abound, and arable land is scarce. Several valleys in the largest island—Zetland—are fairly fertile, but the large proportion of the county is little more than rough grazing stocked with Shetland, Blackface, and cross-bred sheep. The Shetland pony, which in bygone days was a valuable part of the stocking on these grazings, has almost disappeared and sheep have now full sway. On the south of Zetland the climate is exceptionally mild, and vegetable crops of the early variety can and are grown in small quantities, but seldom on a commercial scale.

Some of the northern islands in this group, e.g. Fetlar and Unst, export numbers of store cattle, and generally

the breeding and rearing of stores is practised. The type of cattle in many cases leaves much to be desired, but there are definite signs of improvement taking place due to the importation of good bulls mainly of the Aberdeen-Angus and Shorthorn breeds.

The Hebrides on the west coast, the largest of which are Lewis and Skye, are similar to Shetland in that they are largely peat bog and rough grazing on which sheep predominate although they are not numerous. The rearing of store sheep is the main farming enterprise, but farming here is very largely only a part-time occupation. Fishing is perhaps the main source of income to the crofting community. Other sources of income are the gathering of kelp for the manufacture of iodine, cottage weaving, and in some cases catering for the tourist, but with all the sources the livelihood obtained is only meagre.

Chapter XIV

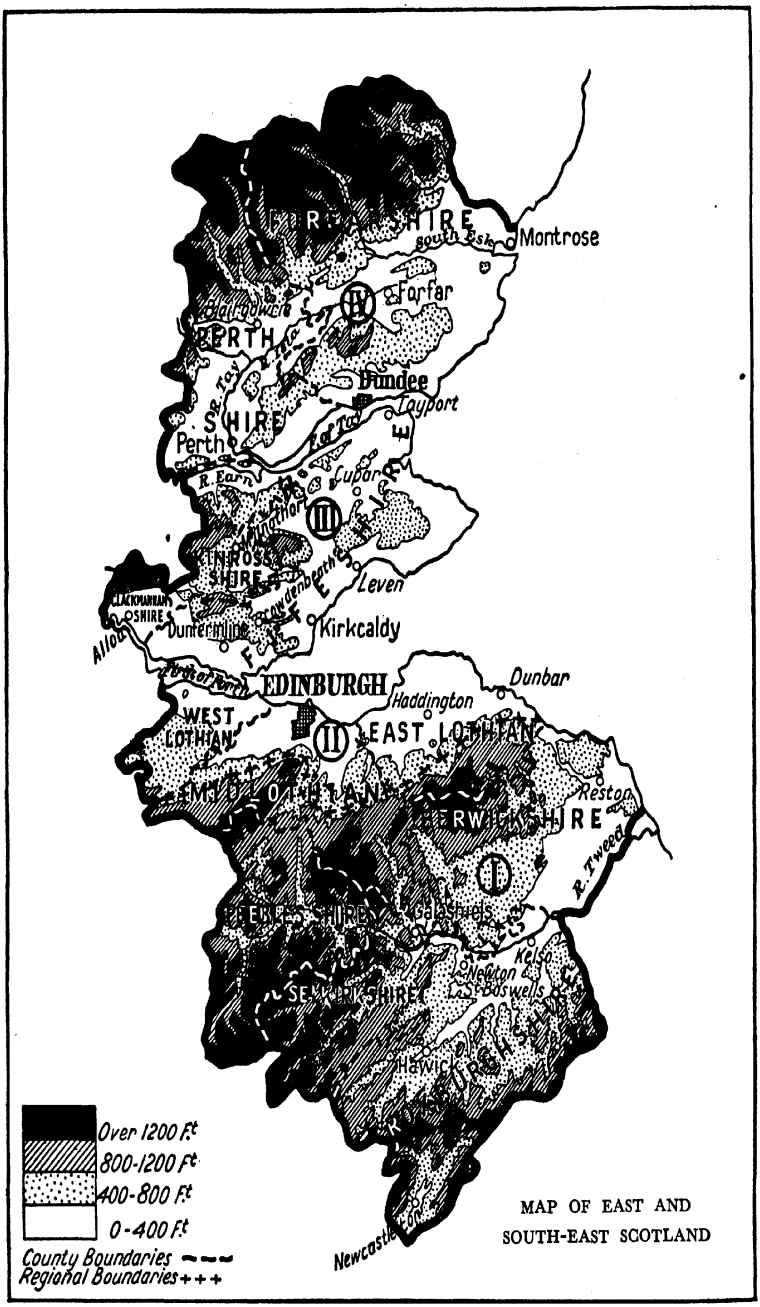
The East and South-East of Scotland

THE COUNTIES OF

AUGUS, FIFE, EAST PERTH, CLACKMANNAN, KINROSS, WEST LOTHIAN, MIDLOTHIAN, EAST LOTHIAN, PEEBLES, SELKIRK, ROXBURGH, *and* BERWICK

By D. WITNEY

Edinburgh and East of Scotland College of Agriculture



MAP OF EAST AND
SOUTH-EAST SCOTLAND

CHAPTER XIV

The East and South-East of Scotland

THE South-eastern Province comprises the counties of Berwick, Selkirk, Roxburgh, Peebles, East Lothian, Midlothian, West Lothian, Fife, Clackmannan, Kinross, Angus, and the eastern part of Perth. The province runs from the borders of England in the south to Montrose in the north, where it adjoins the North of Scotland Province, and, on the whole of its western side, adjoins the South-western Province. The eastern boundary is the North Sea, with the wide estuaries of the Forth and Tay cutting deep into the land.

Although lying outside the main industrial belt of Scotland, these counties contain nearly one-third of the population of the country, rather more uniformly scattered than in the other two provinces, the one with its dense population round Glasgow and the other with its very sparsely populated Highlands. The main centres of population in the province are Edinburgh (439,000), Dundee (176,000), Kirkcaldy (44,000), Dunfermline (35,000), and Perth (35,000). These towns contain about half the population of the province. Apart from these large centres, each important for one or more industries, there are one or two small industrial areas in the province, although none of the towns in them have over 20,000 inhabitants. A famous woollen cloth industry in the Tweed valley has as its centres Hawick and Galashiels. East Lothian, Clackmannan, and Fife have important coalfields, and shale-mining is carried on in West Lothian. The estuaries of the Forth and Tay contain a number of seaports of greater or less importance.

There is wide diversity of geography and soils in the province which largely influences the method of land utilization. Compared with Scotland as a whole, a large pro-

portion of the land area is in agricultural use. Only about one-quarter of Scotland's area is under cultivation and rather more than half the total is mountain and heath land used for rough grazing, leaving almost one-quarter as waste or in non-agricultural use. In the South-eastern Province 38 per cent of the area is under cultivation and about 47 per cent is mountain and heath land used as rough grazings, leaving 15 per cent as waste or in non-agricultural use. Within the province, the proportions of cultivated land and rough grazing vary considerably from county to county. The proportion of rough grazing, for example, varies from as much as four-fifths in Selkirk and practically three-quarters in Peebles—a sure indication that the greater part of these counties can at best be utilized for hill sheep-breeding—to one-tenth or less in Fife and West Lothian, these two counties being unique in Scotland for the high proportion of the land in cultivation of crops and grass.

Of the area under crops and grass in Scotland, roughly one-third is in permanent pasture, one-third is under rotation grasses, and one-third under other crops (grain and green crops). Rotation grass usually well managed plays an important part in the agricultural economy of this part of Scotland, although not so important as in some other areas further north; it may consist of one year's grass, or longer leys left down for three or more years, which have become increasingly common of late years.

In what may be regarded as the arable farming districts of this province—the lower parts of Berwick and Roxburgh, of the Lothians, of Fife and Angus—the favourable climatic conditions usually enjoyed, and the fertility of the soil, utilized to the best advantage, lead to the production of bountiful crops of grain, potatoes, and hay of good quality, considerably heavier than the average crop in Scotland as a whole. Over the whole of the province oats is by far the most important grain crop, and only in East Lothian is it

rivalled in extent by either wheat or barley. Wheat production, stimulated by the Wheat Act 1932, is extensively undertaken in the Lothians, Fife, Angus, and part of Perth, which together produce about three-fourths of the total Scottish wheat crop. Good qualities of malting barley are grown in East Lothian and in the Merse of Berwickshire, but low prices and the greater attraction of wheat growing have combined seriously to reduce the barley acreage of late.

Except in the Border counties potatoes are very extensively grown and form the farmer's most valuable sales crop, so important that potato prices may make or mar the financial results of the whole farm. Notwithstanding the oscillations in potato prices from year to year, their long experience of this crop partly accounts for the farmers' reluctance to turn to the production of sugar beet on any scale; only in Fife, and to a less extent in East Lothian, is it of much importance; and as a result of its disappointingly low throughput the future of Scotland's solitary beet factory at Cupar is somewhat uncertain. Turnips and swedes are extensively grown for winter fodder wherever any arable cultivation at all is carried on.

Even in the arable districts, however, stock-farming forms an indispensable enterprise on the vast majority of farms, whilst on the higher ground stock-raising becomes the farmer's principal objective—to the exclusion of all else on the hill sheep farm. Although parts of Perth and Angus, and of the Border counties are mainly concerned with the *breeding* of cattle, the arable areas are concerned with the *fattening* of cattle, large numbers of cake-fed cattle being housed in courts during the winter to convert straw and turnips into dung, which is required in liberal quantities for the extensive root break.

Sheep, too, are extensively kept, except in West Lothian and Fife, where the proportion of rough grazing land is small; in the counties of Selkirk, Peebles, and Roxburgh they predominate over cattle to such an extent that they

may be said to carry the agriculture of those counties on their shoulders.

Whilst dairy farming is not characteristic of this part of Scotland, the town dairies of Edinburgh are still a factor in the city's milk supply; dairy farms are to be found in the neighbourhood of most towns, although without any marked concentration. Dairying is, however, fairly common on small farms within the mining districts of West Lothian, and on larger arable farms in Fife, Clackmannan, and the neighbourhood of Dundee. Dairy farming has been increasing of late years due partly to the number of small holdings recently established by the Department of Agriculture for Scotland, and partly to the development of milk production on arable farms at the expense of unprofitable cattle feeding, in many cases by experienced dairy farmers who have come from the West.

In Scotland as a whole the poultry population doubled between 1913 and 1933, and the eastern counties are no exception to this; the increase has been common on both large and small farms, although in Berwick, Roxburgh, and Selkirk the density of fowl population is still low. Well-managed poultry flocks now make a substantial contribution to the farmer's income on many large arable farms. Pig-keeping is not widespread, but is increasing since the advent of the Pigs Marketing Board.

Although in common with the rest of Scotland a big proportion of the holdings in this province are small family farms below 50 acres (partly due to the activities of the land settlement branch of the Department during the past twenty years) the large farm, run by business-like, enlightened farmers possessing ample capital, combining practical experience with the teachings of agricultural science, and employing a large permanent staff of men and women specialist workers, is more truly representative of this part of Scotland. Berwickshire and East Lothian stand out particularly in this respect: whereas the average

size of farms for all Scotland is only 61·6 acres, in Berwick it is 187·7 acres, and in East Lothian 167·6 acres, and almost as high in other Border counties. Farms of over 500 acres are common in some parts, and some exceed 1,000 acres.

Most farms are let on long leases, generally 14 to 19 years, still valued for their security by both laird and tenant, although on the expiration of the lease it is not uncommon for the tenancy to continue from year to year on "tacit relocation." As in England, insecurity under the Holdings Acts just after the War was mainly responsible for a marked tendency towards occupying-ownership as compared with pre-war days, and approximately one-third of the farmers now own their farms; the long-term credit facilities introduced in 1933 through the Scottish Agricultural Securities Corporation have stimulated this movement, besides the conversion of existing mortgages to lower rates of interest.

Farm workers are in almost all cases engaged on long hirings at May 28th or November 28th—married men for 12 months and single men for 6 months; it is not unusual for a farmer to have a complete change of staff at "the term." In the Lothians and the Border counties the single men generally live with their own people; further north, especially in Angus and Perth, they are usually housed in a bothy, a meagrely-furnished hut or apartment where they sleep and cook their own meals. The married men live in "tied" cottages rent-free—many of which have been considerably improved and renovated recently under the facilities enjoyed under the Rural Workers' Housing Act; and where from 6 to 12 workers are regularly employed the cottages and extensive steading give the farm the appearance of a small village. The married worker receives a considerable portion of his total remuneration in kind, his perquisites often including his cottage rent, and allowance of milk, potatoes, and oatmeal, which, in all, might be worth £20–£25 per annum. The staff employed often

includes a grieve, a cattleman, a shepherd, several ploughmen, an orraman (odd man), a boy, and one or two women. The Agricultural Wages (Regulation) Act 1924 does not apply to Scotland, wages being fixed by private treaty, to some extent influenced by recommendation of the Scottish Farm Servants' Union. Owing to low prices, wages fell for several years prior to 1936, but are now definitely rising again; it is difficult to make an accurate comparison between wage rates paid in Scotland and England. At the present time a married ploughman's total remuneration is computed to be between 33s. and 35s. a week; cattlemen and shepherds, upon whom more responsibility rests, receive rather higher wages.

Farm steadings, more particularly in the arable east, are necessarily large, consisting of substantial stone buildings which give ample accommodation for stock, crops, and implements; stable room, often provided on the larger farms for 10 to 12 pairs of horses; cattle courts, partly roofed over in the older steadings, but entirely covered in the more modern ones, ensuring more economical fattening and better conservation of the manurial properties of the dung; barns, etc., for the fixed threshing mill and other machinery, such as a bruiser, grister, cake-crusher, etc., as well as an engine-house for the engine which provides motive power; and the usual granaries, straw barns, tool sheds, etc. Most of these farms have one or more tractors, the fields being large enough and the farms compact enough to ensure economic operation, whilst the tractors also often do a considerable amount of belt work. There has recently been a tendency for farmers to instal electricity in house and steading to provide power and light. The impoverishment of the landowning classes has often caused very necessary repairs and maintenance work to be left undone over a long period of years, and many farm steadings are sadly in need of repair.

The steading accommodation is generally suitable for the

size and type of farm, and is much simpler on higher ground farms. Hence on even a large hill-sheep farm, there is usually nothing beyond a shepherd's cottage for each "hirsel," a small cowshed to house the shepherd's cow, an old store shed or two, together with the dipper and its adjoining "buchts" (pens), whilst there may be a few scattered "stells" to provide a little shelter out on the hills.

The tenant's capital requirements in this province are heavy. On arable and semi-arable farms in the Lothians and further north £12 to £14 an acre are required for live stock, implements and fixtures, produce, and unexhausted improvements, so that a tenant should be able to command £4,000 for a 300-acre farm, to be well-stocked and worked; suburban cropping farms do not require so much. In the Border counties, £8 to £10 an acre is invested on semi-arable farms, much depending on the type of farming; here, farms are large, and a 400- to 500-acre farm would require from £4,000 to £5,000.

Physical features divide the province into four well-defined regions, the farming in which may be described in greater detail, namely:

I. Tweedsdale—comprising the border counties of Berwick, Selkirk, Roxburgh, and Peebles
II. The Lothians—comprising the three counties of East Lothian, Mid Lothian, and West Lothian, all bordering the south bank of the Firth of Forth
III. The Fife Peninsula—consisting of the counties of Fife, Clackmannan, and Kinross, all lying between the Firths of Forth and Tay, and
IV. Angus, north of the Tay, and consisting of the county of that name (perhaps more often known as Forfar) together with the eastern part of Perthshire, which lies in the South-eastern Province.

I. Tweedsdale

This region comprises almost the whole basin drained by the river Tweed except the southern portion drained by the

Till, which lies in England; together with the Vale of Liddisdale, in the south-west corner of Roxburgh, with its outlet to the Solway Firth, which lies outside this basin. The Tweed and Teviot and their many tributaries find their source in the broad encircling belt of heather-clad hills and fells known as the Southern Uplands, which reach a height of 2,723 feet in Broad Law, with the Moorfoot and Lammermuir Hills forming its northern bulwark, and the grassy Cheviot Hills in the south forming a natural boundary line between England and Scotland for a considerable distance. The greater part of Tweedsdale consists of a plateau above the 500 feet contour.

Passing from east to west, we traverse first the highly fertile plain bordering the lower Tweed known as the Merse, where the soil consists of drift materials overlying the later carboniferous rocks. Beyond the Merse there is a gradual ascent from the 300-feet or 400-feet contour to a height of about 800 feet, over Old Red Sandstone soils—an area famed for the quality of its stock. From these uplands we pass to the true hill regions which lie west and north, composed of the older Silurian rocks, an area where the rigours of climate, elevation, and soil combine to make it unsuitable for any branch of husbandry except hill sheep farming.

Rich alike in the kaleidoscopic beauty of their scenery, in the wealth of legends concerning the forays of the old-time Border reivers, and in the silent majesty of their ruined monastic establishments founded centuries ago by the monks on many fertile river-sites, the Border vales in these modern days confine their attention largely to agriculture. Sparsely populated, all four counties have no large industrial market at hand for their produce, although organization and modern transport are reducing the ill-effects of this handicap.

The principal types of farm are hill sheep farms on the high ground, mixed farms at the intermediate levels, and

arable farms (with stock) on the low ground, although these systems of farming shade into one another imperceptibly and are closely interdependent economically.

On the hill sheep farms, many of them "led farms" or else run in conjunction with an arable farm, pure Blackface or Cheviot flocks are carried, the latter being nearly all of the Border type as the larger North Country (or "Caithness") Cheviots find conditions on these bleak exposed hills too hard for them. Living throughout the whole year entirely on such herbage as they can pick, mainly heather and rough grass, except for the valuable "draw-moss" not infrequently found during spring in the moister parts of the hills, these breeds are economically run in large flocks; and only in extreme weather conditions are small quantities of "bog hay," made by the shepherd during the summer, doled out to them, rather grudgingly, whilst the feeding of concentrates only occurs very rarely.

Selling off their cast ewes in the autumn, as 3, 4, or 5 crop, and such ewe lambs as are not required for maintaining their own flock, in addition to wedder lambs and wool, these hill farms mainly act as a reservoir of supplies of breeding stock to farms at lower altitudes.

On farms at intermediate levels some arable crops may be grown—mainly oats and turnips to provide winter keep for the stock. Although there are wide variations in systems of management and organization, broadly speaking, Cheviot flocks may again be kept pure as on the hill farms, or else crossed with a Border-Leicester ram to provide the popular Scottish Half-bred sheep, much in demand both for breeding and for fattening on turnips. Pure Blackface flocks, too, may be kept or crossed with a Border-Leicester tup to produce Greyface stock, not quite so heavy as the Half-bred which it threatened to displace for a while, requiring a smaller root-break and producing the smaller carcase weights much in demand; but just lately farmers have shown a tendency to revert to the Half-bred. On these

high-ground farms, which frequently have quite an extensive area of hill land, many farmers maintain a herd of breeding cows (which incidentally have a very beneficial effect on the grazings). Generally the thrifty and hardy Galloway, which runs out of doors all the year round with the minimum of feeding, is kept and crossed with a White Shorthorn bull to produce blue-grey calves usually sold as stores at the special suckled-calf sales held annually at Newtown St. Boswells, Hawick, Newcastleton, and Reston in October.

On the semi-arable farms lower down the Tweed Valley, and in the Merse, the growing of crops for sale becomes important, especially wheat, barley, and oats; only small acreages of potatoes are grown—usually just sufficient to provide for the farmer's own family and for the labourers' perquisites, the difficulty of securing sufficient casual labour for planting and lifting tending to limit its extensive cultivation as a sales crop, although a few farmers grow bigger acreages, notably men who hail from the West. Of late years there has been an increase in the acreage of temporary pasture, the old four-course rotation being lengthened by putting land down to grass for two, three, or four years; and this fact, together with its improved quality arising from the use of white wild clover in the grass seeds mixtures, causes grain crops (usually oats) taken after lea to lodge, besides impairing the quality of barley.

Sheep, however, still play a very important part on these farms. Where sufficient ground is available, a Half-bred ewe flock is generally carried, which may be maintained by the purchase of either ewe lambs or gimmers (shearling ewes) from the higher ground farms; these are crossed by either Oxford or Suffolk tups to produce the early-maturing, blocky type of lamb favoured by the butchers. Elsewhere, only feeding hoggs are carried, bought in in the early autumn to run on the foggage and, later, on the turnips. Of late years low grain and cattle prices have caused many of these farmers to stock up their ground more thickly with

sheep, building up heavy stocks of breeding ewes in addition to their feeding hoggs, and much land has become "sheep-sick" owing to worm infestation.

On most of these semi-arable farms cattle are also kept. On the higher ground, herds of Shorthorn or Cross cows are kept, run with an Aberdeen-Angus bull, the calves either being sold at weaning or pushed on quickly to the baby beef stage. Elsewhere feeding cattle only are carried, Irish or English store cattle being bought in big numbers for court feeding. A succession of bad turnip seasons has led to an extension of the cultivation of kale as a substitute, but it does not yet find much favour with cattle feeders. Milk production in this region is solely confined to meeting local requirements.

The autumn sheep sales at St. Boswells, Hawick, and Reston, models of up-to-date organization, have now become an indispensable adjunct of Border sheep farming. Commencing in July, these auction marts handle in the course of the next three months something like 500,000 sheep which are assembled from farms mostly situated in parts of the Tweed basin, and disposed of to breeders and feeders lower down the valley, and to others hailing from places as far apart as Angus and the Midlands of England. The sheep sold consist of: store lambs for feeding—Cross Oxford, Cross Suffolk, and Half-bred lambs, and Cheviot wedders; ewe lambs for breeding—Half-bred and Cheviot; cast ewes for breeding—Half-bred and Cheviot (3 or 4 crop ewes). In addition there are annual ram sales at Kelso and Hawick, at which are exposed first-class rams of all breeds of interest locally, and which attract buyers and sellers from a wide area.

II. The Lothians

The Lothians, bordered on the north by the Firth of Forth, consist of a narrow coastal plain rising to the Lammermuirs,

the Moorfoots, and the Pentlands, which, though barely reaching a height of 2,000 feet above sea-level, form an almost continuous barrier of bleak inhospitable hill country which was only effectively pierced with the advent of the railway age, and even yet makes road communication a matter of some difficulty in winter. Geologically, most of the soils are of carboniferous origin, although numerous volcanic intrusions form prominent landmarks near Edinburgh. Coal is worked in a small area east of Edinburgh, whilst oil shale bings are a familiar feature of the landscape in parts of West Lothian. Apart from the fact that here and there along the coast are raised beaches and blown sands —highly valuable market garden areas—the transition to the old Silurian rocks of the hills is not dissimilar to that of the Tweed basin; although in the East, where the plain widens out considerably, we have the fertile red soils of Dunbar derived from Old Red Sandstone rocks. In West Lothian strong clay loams are common; east of Edinburgh light soils prevail, the whole area being noted for the high standard of its arable farming, in good times and bad, unsurpassed in Britain.

Known traditionally as "The Garden of Scotland," the Lothians form one of the most favoured, most productive, and most highly-rented parts of agricultural Britain, more particularly on the lower coastal belt situated east of Edinburgh. Running up to the higher ground approaching the Lammermuirs and the Moorfoots the farming is semi-arable in character, differing little from that in corresponding districts on the south side of those hills in the Tweed Valley, whilst in the mining districts of West Lothian there is much poor land.

Otherwise, for the most part, farms are intensively worked —with many variations of late years—on the typical East Lothian six-course rotation, viz. grass, oats, potatoes, wheat, turnips, barley—which is associated with the winter feeding of cattle and sheep. The whole of the potato crop, the wheat crop, and barley crop is sold off, together with

considerable quantities of hay and oats, the fertility of the soil being maintained by liberal dressings of dung and artificial manures. Heavy crops of potatoes are grown—Kerr's Pink, Golden Wonder, and Great Scot being the most popular varieties—and yields of 12 tons per acre are not uncommon. Dunbar red-soil potatoes command a substantial premium in the market. East of Edinburgh is one of the most important early potato growing districts of Scotland—favoured by a light sandy soil, a sheltered situation, and equable climate unmarred by late frosts, and easy access to an excellent market; Epicures are the principal early variety, in some favoured districts grown on the same ground year after year. Generally the early potatoes are followed by a catch crop such as rape or Italian rye grass.

Between North Berwick and Edinburgh, market gardening has long been carried on on the light lands skirting the coast; more recently there has been an expansion of this type of cultivation on several arable farms.

The town dairies of Edinburgh are a peculiarity of this region. Large herds of Ayrshires and cross cows, bought in newly-calved, are housed and stall-fed throughout the year, to supply warm milk which was formerly much in demand in the city. The city dairymen are heavy feeders of concentrates, and buy in all their requirements of turnips, grass, and straw from local suburban cropping farms, to whom also the dung is sold. They are thus closely linked with these suburban cropping farms, which are usually very highly-rented farms carrying no live stock other than workhorses (except possibly a few breeding sows), and worked on a four-course shift—hay, oats, roots, wheat—all these crops being sold off. The town dairies, however, are of diminishing importance, their decline being associated with the competition of more-cheaply produced pasteurized milk from the South-west of Scotland which now forms the bulk of the city's milk supply, with the tightening of health

regulations, and with the growth of dairying in outlying farms following the development of motor transport, whilst the era of flat-rate prices for milk associated with the advent of the Scottish Milk Marketing Board will probably hasten their end. In the circumstances, the suburban cropping farms are of declining importance, whilst building activities in the neighbourhood of Edinburgh are also steadily encroaching on them. Meantime many of them keep herds of Large White sows for breeding purposes, the weaners being sold to specialized feeders in Edinburgh. Both breeders and feeders are large purchasers of dreg from the city breweries, and of hotel waste.

The Edinburgh market serves the whole of this area, but Haddington market is popular with East Lothian farmers.

III. The Fife Peninsula

The Fife Peninsula is an uneven plain with a natural slope towards the east and south broken by the Cleish and Lomond Hills, and hemmed in on the west by the imposing massif of the Ochil Hills which rise sheer from the surrounding plain with surprising suddenness, to reach a height of 2,343 feet in Ben Cleuch, their ramparts being cleft by numerous deep and beautiful glens. Geologically the features of the Peninsula are comparatively simple: the Ochils and their easterly spur flanking the north coast of Fife as far as Tayport consisting of igneous rocks, bordered by a belt of Old Red Sandstone; east and south, occupying the greater part of Fife and Clackmannan, are carboniferous limestone formations, whilst raised beaches occur in the extreme north-east. Coal mines, though distributed over a wider area than in the Lothians, are confined to a triangular area between Leven and Kirkcaldy, to villages around Cowdenbeath in West Fife, and to the neighbourhood of Alloa (Clackmannan). Agriculturally, this region does not differ greatly from the Lothians.

The ancient "Kingdom of Fife" has been aptly described as "a beggar's mantle fringed with gold"—a happy allusion to its fertile coastal belt and the number of thriving little seaports and industrial villages along its shores, which make East Fife one of the best markets of Scotland. "But hard work, long continued, has wrought wonders with the interior," and to-day, apart from one or two pockets of poor soil, the whole of Fife consists of good land well-farmed, the best soils and farms being on the east of Fife. In the main the system of farming follows the customary lines of farming in the Lothians, embracing the production of potatoes and grain for sale, combined with the fattening of cattle and sheep, Cupar being their principal market.

Farms are not so uniformly big in this area, however, and the absence of any distinct cleavage between the small farms and the large farms—such as occurs in the Lothians—makes for more mobility amongst the farming community. Many farmers to-day run both an arable farm and a hill farm for raising store stock—the latter often some distance away. This practice is facilitated in Kinross where many of the arable farms have a run of hill land attached to them. Hemmed in by the Ochill Hills, the Cleish Hills, and the Lomond Hills, the farmers of this area concentrate on the breeding and rearing of cattle from Shorthorn cows with an Aberdeen-Angus bull, and of sheep—either Blackface or Greyface stock—for which they have a local market at Milnathort; some dairying too is carried on, whilst the peaty soils around Loch Leven are used to advantage for the production of seed potatoes. In the neighbouring county of Clackmannan, also, the Ochill Hills are extensively used for flocks of Blackface sheep. A number of arable farms carry dairy herds, supplying milk to local consumers' co-operative societies, the local industrial population providing a good outlet. Farmers in this district have ready access to the excellent live stock mart at Stirling.

IV. Angus and East Perth

Angus (Forfar) and East Perth, lying west and north of the Firth of Tay, are drained mainly by the Tay and its tributaries, chief of which are the Earn and the Isla. Occupying the greater part of the interior of these counties, is the great Highland mass of the Grampians running north-east and south-west, gashed in the east by the remote and lovely Braes of Angus, and pierced further west by beautiful glens which are now utilized to form easy routes to their more accessible and well-known beauty spots such as The Trossachs. With vast stretches used solely for deer-forests, the barren wilderness of the Grampians effectively limits the area capable of utilization for agriculture, which is still further curtailed by the Sidlaw Hills running roughly parallel to them.

Otherwise this region is occupied by three well-defined and fertile straths (valleys)—Strathmore running north-east from the River Earn throughout the whole of Angus, with its continuation of the Howe of the Mearns running north-eastwards to the coast at Stonehaven; Strathearn, bordering the River Earn, and the Carse of Gowrie between the Sidlaws and the Firth of Tay.

Geologically, the region consists of the hard granitic, pre-Cambrian rocks of the Grampians; the igneous rocks of the Sidlaws, and the reddish soils of the Old Red Sandstone type on the lower ground. Agriculture in this region too is mainly arable—again very progressive—although live stock farming features more prominently than in Fife and the Lothians.

In broad outline, the agriculture of Angus and East Perth is not unlike that of the Lothians (excluding the more favoured market gardening and early potato-raising districts of East Lothian), though differing from them in the greater concentration on live stock rearing and feeding, and in their remoteness from markets—a disadvantage

which would be greatly reduced by the construction of road bridges across the Firths of Tay and Forth, both of which are now being strongly advocated.

In the foothills of the Grampians below the regions set aside for deer-forests, and in the Sidlaw Hills, hill sheep farming is carried on much on the same lines as in the Borders, preference again being given to the Blackface, run in flocks renowned for their hardiness and health. Lower down, the Blackface ewe may be crossed with a Border-Leicester tup; whilst on the arable farms at still lower levels, which normally only fatten off hoggs on turnips, many men have lately been keeping flocks of breeding ewes—either Half-bred or Greyface—run mostly with Suffolk and Oxford tups for early fat lamb production.

This area is more concerned, however, with cattle than with sheep, for from the remote farms and crofts in the glens of the Grampians come large supplies of store cattle—Aberdeen-Angus—bought up at the special sales at Aberfeldy and Blairgowrie by the feeders who specialize in finishing off in courts prime, high-quality home-bred cattle. As elsewhere, Irish cattle, too, are fattened in courts.

In the lowlands, the fertile vale of Strathmore produces a pleasing picture—large farms, substantial farmhouses and steadings, large well-ordered fields producing heavy crops of wheat, oats, and potatoes. Angus is especially noted for its production of potatoes—both seed and ware—particularly Majestics, in which yields of as much as 14 tons per acre are sometimes lifted, much of the crop being dispatched by sea to the English market from Arbroath and Montrose. In addition to an extensive trade in seed potatoes with England, seed is sent abroad to countries such as Spain, the Canaries, and South Africa. Perthshire also is a large grower of seed potatoes.

In the Carse of Gowrie, where the soil is a heavy alluvial clay, excellent crops of wheat and beans are grown. Owing to the difficulty of growing roots for cattle feeding, silage is

now grown on a number of farms, and silos form quite a feature of the landscape. Good fruit crops also are common here, whilst reeds, growing on the banks of the Tay, prove valuable for thatching materials.

As in the south, the big farms of Perth and Angus require ample stable room for their many work horses, whilst most of them now find a tractor indispensable. The Angus ploughman is renowned for his skill and industry, and is paid rather higher wages than in most other counties, being deemed well worthy of his hire.

One peculiar feature of agriculture in this region is the extensive cultivation of raspberries in the neighbourhood of Blairgowrie, and to a less extent near Montrose and Forfar. A prominent firm of preserve manufacturers has played a leading part in the establishment of this industry, which is still expanding.

The area is well served by two important cattle markets —Perth and Dundee—together with smaller markets at Forfar and Arbroath.

Chapter XV

The West and South-West of Scotland

THE COUNTIES OF

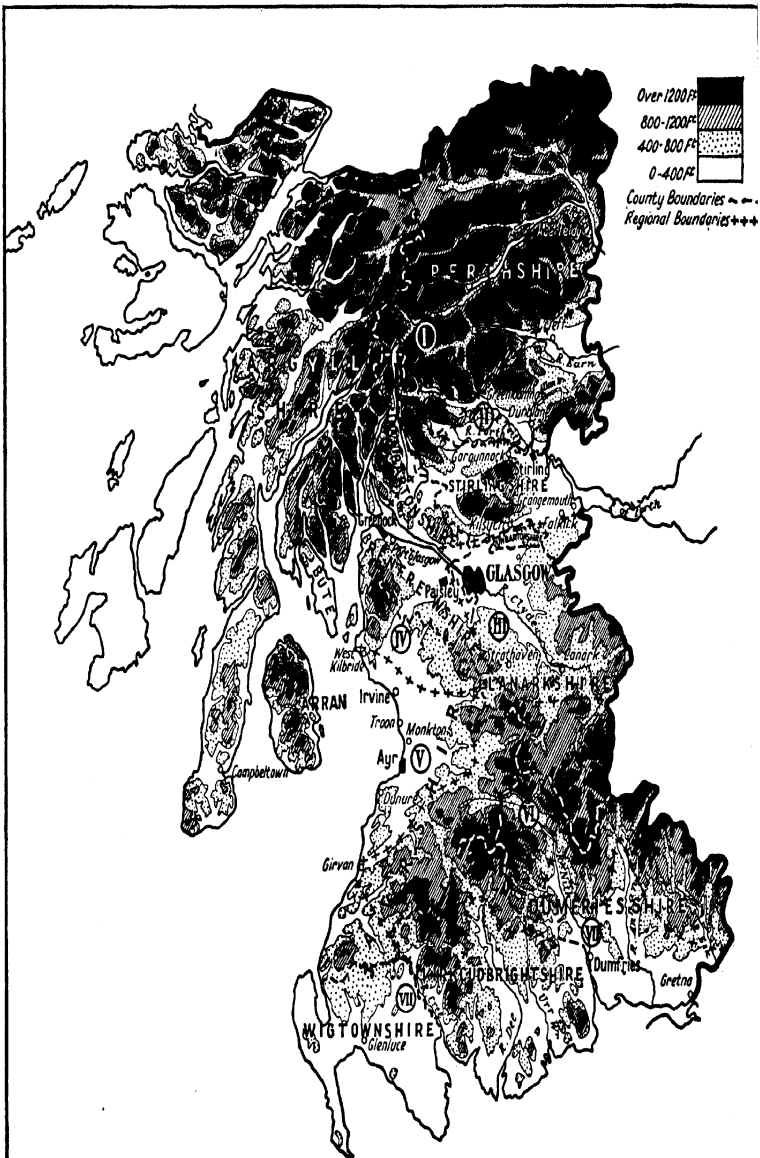
ARGYLL, WEST PERTH, STIRLING, DUNBARTON, LANARK, RENFREW, AYR, WIGTOWN, KIRKCUDBRIGHT,

and

DUMFRIES

By J. A. GILCHRIST

West of Scotland Agricultural College, Glasgow



MAP OF WEST AND SOUTH-WEST SCOTLAND

CHAPTER XV

The West and South-West of Scotland

THE province of South-west Scotland consists of ten counties and the western district of Perthshire. It occupies about one-third of the land area of Scotland and follows the west coast from the Solway Firth and the English border to the northern boundary of Argyllshire. On the east, it adjoins the province of South-east Scotland. The counties included are Argyll, the western part of Perthshire, Dunbarton, Stirling, Lanark, Renfrew, Bute, Ayr, Wigtown, Kirkcudbright, and Dumfries.

The province has within its boundaries the great industrial belt of Scotland, with Glasgow and its population of over one million inhabitants as its centre. Spreading round Glasgow are coal-mining villages, iron and steel towns, shipbuilding yards on the Clyde, and everywhere within a radius of from 15 to 30 miles small towns have grown round furniture-making, cotton spinning, lace, other textiles, and a number of other industries. Over half the whole population of Scotland is within the five counties adjacent to Glasgow. The density of population in the counties in the province varies from about 3 persons per acre in Lanarkshire to 3 per 100 acres in Argyllshire. Other references to the industrial population will be made in the description of the various regions within the province.

Much of the land surface of Scotland is classified in the agricultural returns as "mountain and moor land used for grazing." This province contains about one-third of the total area so classified, while its share of the Scottish acreage of "land under crops and grass" is again approximately one-third. In relation to all Scotland, however, the province contains only one-quarter of the arable land, while it grows only 13 per cent of the wheat, 2 per cent of the

barley, 2 per cent of the sugar beet, and 24 per cent of the potatoes. The acreage under oats and turnips is also low in comparison with the other provinces. On the other hand, within the province is one-half of Scotland's permanent grass, and about 40 per cent of the cattle, sheep, pigs, and poultry in the country as a whole. Complete land utilization figures are not available, but mountain and moorland grazings (excluding those stocked only with deer) make up 60 per cent of the land surface; another 25 per cent is land under crops and grass; deer forests carrying no agricultural stock account for 3 per cent, while the remainder is planted and cut-over forest land, waste land, and urban districts.

A rapid glance at the map is sufficient to indicate the extensive area lying above the 400-foot contour line. A very large part of west Perth, Dunbarton, Argyll, and Bute is hill country, varying somewhat in "roughness" according to locality. Argyll, West Perth, and Bute have only 5 per cent, 15 per cent, and 18 per cent of their total land area returned as under crops and grass. The north-west corner of Stirlingshire is similar, while an intrusive mass of high ground is found in the centre of this county. Between the Clyde and the Solway there are large areas of hill land, more kindly on the whole than in the areas already dealt with, but in parts of Kirkcudbright closely resembling those of the Highlands. For the province it may be said that the areas of cultivation are confined to coastal plains, river valleys, strathlands, and the lower uplands of hill districts. Rainfall is generally high, definitely so as compared with conditions ruling in the East of Scotland. Wet westerly winds prevail and lack of sunshine is marked, particularly in the Highland region. Over the major part of Argyll and in the hill country of Bute, Dunbarton, Stirling, and West Perth, 50 to 60 inches per annum is not uncommon. This, combined with the naturally heavy soils and contour explains the mainly pastoral activities of these areas. In the strathlands of West Perth and the river valleys of the

Forth and Clyde, and the coastal plains and low-ground districts of Ayrshire, conditions are more favourable to cultivation. Rainfall varies from some 30 inches on the lowlands to upwards of 50 inches near the hills. Lying within the counties of Lanark, Ayr, Dumfries, Kirkcudbright, and Wigtown is the area of hill and moor later termed the Southern Uplands district, where rainfall is often well over 60 inches per annum and cultivation almost absent. In the remaining part of the province, which consists of practically all Wigtownshire and the river valleys and coastal districts of Kirkcudbright and Dumfries, there are considerable variations within a rainfall range of from 30 to 50 inches per annum. Parts of Wigtown and Dumfries have a lower than average rainfall, and this district is more favourably situated as regards soil and climate than many of the more northerly parts of the province.

Considered as a whole, the low grounds of the province are mainly concerned with the production of milk for liquid sale. Poultry, kept for commercial egg production, may be regarded as the second enterprise, especially in the area close to the industrial centres. Hill and park sheep are everywhere kept. The income of the province is mainly derived from the sale of these products. Wheat is relatively unimportant, barley is almost absent, but the oat crop, grown principally for stock-feeding, is widespread; the straw being of high feeding value. Hay, often as Timothy meadows on the heavier soils, is extensively cut. Silage is of very minor importance. With the exception of the South-western region turnips and swedes are not nearly so important as in other parts of Scotland. Small acreages of marrow-stem kale are now grown on most farms, and the practice is spreading. Potatoes are of varying importance, but sugar beet is confined to small acreages in favoured districts. There are no extensive areas of vegetable production, but a part of the Clyde valley is noted for fruit and glasshouse produce.

The system of land tenure is still that of landlord and tenant and, even with the increase since the War, no county has more than 40 per cent of the farming area farmed by owner-occupiers. The most typical size of farm in and around the industrial belt is from 100 to 150 acres, but in the south-west of the province the typical farm is definitely larger. Farms under 50 acres, as elsewhere, are of varying importance. In Argyllshire the crofting system exists, and there has been elsewhere an extension of State-established small holdings; of the larger sizes in Dumfries, and from 5 to 10 acres in the industrial counties. In the hill districts there are sheep farms running to several thousand acres.

The manual labour of the farmer and family labour are important over the large part of the province, but farms with some wage-paid labour are much more common than the purely family farm. The majority of regular wage-paid workers live on the farms, either in cottages or, in the case of single men, in the farmhouse or bothies. Half-yearly or yearly hirings are the rule for the regular workers, and money wages are at a higher level in and around the industrial belt. Payment in kind for married skilled workers is a not inconsiderable part of the earnings, especially in the non-industrial regions. The employment of families at a combined wage is found on many of the larger dairy farms. A system of labour, intermediate between master and man, exists in the "bower system," found mainly in Kirkcudbright, where the "bower" in effect hires the dairy herd from the farmer on a rental basis.

Motor transport for long and intermediate road haulage is now universal, but short-distance road work and field operations are largely performed by horse labour. Tractors have increased where conditions are favourable. Mechanical milking is of greatest relative importance among the larger cow-herds of the south-west, but scarcity of suitable labour is hastening its adoption in the inlying counties. A survey

to gauge the extent of machine-milking among milk-recorded herds showed that, in 1934, Dumfries, Kirkcudbright, Wigtown, and the Kintyre district of Argyll had about 30–35 per cent of the cows milked by machine; comparable figures for the shires of Ayr, Lanark, Renfrew, Dunbarton, and Bute being 8 per cent.

From the physical features it is possible to divide the province roughly into seven regions. The boundaries of the regions, as shown on the map, by no means indicate a hard-and-fast demarcation. Regions shade off into one another and within each region are many districts which have different features from one another.

The regions are as follows:

I. The Highland Region
II. West Perthshire and Stirlingshire
III. Lanarkshire and Dunbartonshire
IV. Renfrewshire and North Ayrshire
V. Coastal and Central Ayrshire
VI. The Southern Uplands
VII. The South-west Region

I. The Highland Region

Argyll, part of Bute, and the hill country of Dunbarton, Stirling, and West Perth are included in this region. North of the rivers Forth and Teith in Stirlingshire and West Perth and rising behind Strathallan and Strathearn lie the escarpments of the Grampian hills. The striking contrast in geographical features between lowland and highland in this part is denoted by the old saying that "Forth bridles the wild Highlandman." Away to the westward all of this district, until it meets the islands and the long sea lochs of Argyll, contains the southerly fringe of the Grampians. Glen and ben, inland loch and sea loch, and stretches of moor and machar land all combine to produce the famous scenic beauty of these parts. The whole region is sparsely

populated, and towns or villages nowhere show any marked development. The main non-agricultural activities are fishing, quarrying, some distilling, game preservation, and catering for the tourist trade; the principal towns now depending largely on the latter during a comparatively short season.

The main agricultural feature of the region is the importance of hill sheep farming with which there is sometimes combined a measure of cattle-rearing. As the hill sheep farming is run on comparable lines throughout the whole of this area, a general description will suffice, much of which will also apply to the practice in the Southern Uplands and hill districts elsewhere.

This type of extensive farming began in the late eighteenth or early nineteenth century when lowland sheep-owners replaced the native population which had depended on subsistence cropping and the sale of cattle. Except for minor changes, the practice has remained fundamentally the same since its inauguration. Ewe-stocks are almost wholly of the Blackface breed and the ram is generally Blackface, but the Border-Leicester-Blackface cross is common on many of the kindlier hills. Usually only small areas of arable or low-ground pasture are attached to each hill farm, but tenancy of a low-ground farm and adjacent hill farm is common. Hand-feeding of the hill ewes is seldom resorted to and from hill grasses, heather, and moss plants they draw their whole sustenance. Lambing commences in April, and where the available hired or family labour is insufficient, extra lambers are employed. By late August or early September the "tops" are being marketed. Grazings vary greatly in their capacity for finishing, and a large proportion of the lambs, when sold, go to low-ground farms for further keep on arable or grassland. September sees the peak of the hill-lamb sales and about October the old cast ewes are drafted out, many to be purchased by low-ground farmers for crossing. The ewe-stocks are generally main-

tained by home-bred lambs, which are, however, almost invariably wintered away; the grazing of these "ewe-hoggs" proving a source of income to many dairy and grazing farms. This wintering period usually runs from October until April, but a further "springing" until May is sometimes adopted. This "wintering," especially since the advent of motor haulage, is often at a considerable distance from the home hill.

All handling is done at large gatherings, which are often conducted on a basis of mutual help. The first clippings are those of the hoggs and eild ewes followed by the main ewe-clipping at a somewhat later date according to the "rise" in the old wool. Blackface wool is used for the coarser textile manufactures, mainly carpets, and much of it is exported, formerly to Italy and now mainly to the United States of America. The difficulties against which the hillman has to contend are many, but inoculation and other treatments against disease, such as braxy and louping-ill, are a growing practice. The spread of the bracken is everywhere causing concern, partly on account of its invasion of good grazing areas and partly because of the increased difficulty of herding, especially when sheep are ill or struck by maggot-flies.

To the broad classification of this region as one engaged in hill sheep farming there are, however, notable exceptions. In the vicinity of towns and villages dairying is carried on, usually by producer-retailers. The dairy farms of the Cowal district of Argyll cater for the demands of the holiday resorts on the sea-coast. In Kintyre, dairying is found over an important area. By far the largest stretch of "good" land on the mainland of Argyll lies in the southern half of the peninsula of Kintyre. Situated remote from industrial markets, this region developed as a farm cheese-making district, but gradually a change-over in selling milk to the local creamery at Campbeltown has taken place. Between 1922 and 1935 the number of cheese-making farms declined

by half. Milk production, except on producing-retailing farms, is mainly seasonal; cows calving from mid-February on to the end of March. There is, however, some increase in winter-milk production in the area, and also a tendency on some farms to shorten the cheese-making season by delaying the start of manufacture until the "fodder-cheese" period is over. Cropping practice is largely similar to that in the peninsular part of Wigtownshire, the rotation being shorter than is usual in Lanark, Dunbarton, Renfrew, and Ayr. The common rotation here is lea oats, roots, oats, bere or barley with grass seeds, hay and two or three years' pasture. Barley was a favourite nurse crop for the seeds, being formerly an important cash crop sold to the distilleries in the area, but now, since the number of these in operation has very markedly declined, oats have tended to take the place of barley. Hay is not here so important as in other parts of the province where the rotation is longer and for a large part of the winter, when milk production on the seasonal farms is at its lowest, roots and straw form the basal ration. Little or no Timothy hay is grown. Relatively little potato-growing is done—about one acre per farm may be considered a fair average—and comparatively few farms make a speciality of the crop. The common cross among low-ground sheep flocks is the Border-Leicester ram and Blackface ewe, with other crosses definitely much less common.

On some of the islands off the coast of Argyll, notably in Islay, farms organized towards cheese-making are to be found, but these are now much declined in number from the immediate post-war years, partly because of labour and transport difficulties and partly on account of market conditions for the product in an area remote and outwith the operation of the Scottish Milk Marketing Board. Conditions on the other islands vary. In the island of Mull, hill sheep and deer are numerically most important. The island of Tiree, once an important source of grain to the Columbian

monks in Iona, has soils where barley can successfully be grown. Lying in the Clyde estuary and sheltered to the west by Kintyre and Cowal, the islands of Arran and Bute depend mainly on agriculture and holiday traffic. On the lower grounds of Arran, milk and egg production and a small development of early potato-growing typify the farming, while there is a large export of hill-sheep. The northern highland part of Bute is given over to sheep, with milk production, for sale or export, on the lower slopes. The southern part of this island, by reason of lighter soils, lower elevation, and equable climate, is farmed in a manner closely similar to that found in the adjacent coastal districts of Ayrshire. Liquid-milk production, partly to meet the demands of the island's holiday resorts, is the main feature of the farming, and the concentration of poultry is high. There is some development of early potato growing.

From the whole of this region, particularly so as regards the dairying districts, there is an export of cattle to mainland or central markets. Calving heifers and other milk stock are exported from Kintyre, Bute, and other districts. Older calves and stores, drawn from the crofting, low-ground and hill farms, are collected by means of local sales in spring and autumn ultimately to be exported without the area. Cattle-fattening is carried on only in small unimportant areas. Argyll was at one time a noted source of stores of the native Highland breed, huge numbers of which used annually to be sold at Crieff market and Falkirk tryst; many to be fattened on the pastures of Southern England. This breed is now greatly diminished in numbers, but is still found in the more remote districts of the country, while a cross with the Shorthorn is common. In the dairying districts of Cowal, Bute, and Kintyre the Ayrshire predominates, but Shorthorn, Shorthorn crosses, and Aberdeen-Angus crosses are relatively more important towards the east of this district.

II. Western Perthshire and Stirlingshire

The hill-country lying in the north and west of Western Perthshire and Stirlingshire has been included in the Highland district already described. There remains the low country of Strathearn, Strathallan, the Teith and Forth valleys, and two upland districts. These latter, of which one is the western slopes of the Ochil hills and the other is made up by a continuous area, known according to locality as the Gargunnock, Kilsyth, and Campsie hills, may be dismissed by the statement that the hill sheep farming, which is the only activity on the higher slopes, is in organization and practice similar to that described in the Highlands region. On account of lower elevation and more gentle contours, conditions are, however, generally more favourable than in the former district and the Border-Leicester-Blackface cross relatively more common.

Even within this region some marked differences are found, and an itinerary in a south-western direction will illustrate them. In the north-east corner, that is, from about Dunblane to the boundary of the province, in an area mainly rural but within moderately easy reach of large urban centres lying to the east and south, the farming takes on many of the features of the arable districts of East Scotland, being in fact, a transition area between west and east. Arable crops are important and cattle-rearing and feeding low-ground sheep flocks, and some producer-retailer dairying are the main enterprises. The usual rotation is a five or six shift, with oats, greencrop, oats, one year's hay and two years' pasture. The lower slopes and glens of the Grampians provide a satisfactory environment for producing healthy stocks of seed potatoes, and this branch is important in Western Perthshire. Many varieties are grown almost wholly for the English seed potato trade, and an area lying north-east from Greenloaning has a special reputation in this connection. This Western Perthshire area is also an

important stock district. From noted herds come Scots Beef Shorthorns and Aberdeen-Angus which, sold at the annual bull sales at Perth, are exported to all parts of the world. These breeds and their crosses are most common in this locality. Commercial cattle are fattened in Strathearn, Strathallan, and the Forth valley, but recent years have seen some decline of this branch in the last two localities on account of the spread of dairying. Many farms have ewe-flocks and there is some sheep-fattening on turnips. The Border-Leicester-Blackface cross is most common. The westerly fringes of the Perthshire raspberry growing districts extend into this district.

Southwards, Strathallan opens out into the wide valley of the Forth, with the town of Stirling as the centre. Lying south-east and west of the town is a stretch of heavy clay carseland, level and at a low elevation. The extremely tenacious clay soil gives special features to the farming. Wheat, oats, beans, or a mixture of oats and beans as "mashlum" have their place in the rotation, but the area under roots is small, and except where some "dryfield" land is available, the potato crop is negligible. Timothy hay is a very important cash crop, and the district is the chief Scottish producer of Timothy seed. Some of the farms in this locality produce milk, mainly for sale wholesale, others have dairy and beef cattle, while the remainder rear and/or feed and are non-dairying. Here again the tendency of the post-war years has been towards an increased dependence on milk-production. Many of the herds are maintained by purchase.

Going towards the west from Stirling and after circling the northern base of the Gargunnock hills, the main road forks, to lead either westwards into the Highland parts or south-west until Dunbartonshire is reached. The former route skirts the large peaty tract known as Flanders Moss, once the scene of reclamations carried out by small "improving" tenants known as "moss-lairds." The latter route

passes through the largely wholesale dairying area of Strathendrick. Potato-growing is of some importance here. Practically all this area is mainly rural, but there are many small towns in West Stirlingshire and the region is situated conveniently to Glasgow and its northern environs.

The remaining parts of this district lie south and south-west of the town of Stirling, between which and Falkirk is an important industrial area, depending chiefly on coal and the manufacture of light castings, and in close proximity to the shipping and dockyard town of Grangemouth. Southwards from Stirling to Falkirk shows a merging of the "carse" type into farming with more emphasis on grassland and milk production, but some of the intermediate localities have more arable land than is common further west and the potato crop plays an important part. South of Falkirk lies an area of cold upland at about 500 to 600 feet above sea-level, which, on account of its being part of a locality extending into Lanarkshire, is dealt with later.

III. Lanarkshire and Dunbartonshire

Within this region is situated the major part of the Scottish industrial belt, centring on the city of Glasgow. The most easterly part of the region links up with the south-east boundary of the previous region. South of Falkirk and west towards Glasgow is an upland area, much of which lies on coal measures and contains many mining villages. The most common farming type, in a locality containing a large acreage of rough grass or moor and with a high annual rainfall, is a small type of dairy-farm, where cropping is at a minimum and the milk produced is often sold retail. Poultry begin to be important. Towards the south conditions improve somewhat. Going westwards and passing along the base of the Kilsyth hills, this locality shades off into the eastern district of Dunbartonshire, and then into the low-lying part of this county which borders on the Clyde. Over

this stretch wholesale and retail milk-selling is the main source of income, but poultry on small holdings and specialist poultry holdings and on the general farm are important. The potato crop takes a greater place in the rotation and the lighter soils of the Cardross district offer scope for the earlier crops.

Lanarkshire shares with Renfrew and Dunbarton the distinction of belonging to the older established liquid-milk counties of the province. The lower lands of Lanarkshire lying along the Clyde valley show considerable diversion in farming enterprises. Close to the city in the north, east, and south-east there is some development of arable farming with wheat, potatoes, and hay as cash crops, also a measure of market gardening and rhubarb-growing, while dairying is everywhere found. The intervening district between this and the upland area already described shows a gradual transition in type with grassland and the home-rearing of dairy stock becoming more important. The large and small industrial centres in this region afford outlets for milk, eggs, and potatoes.

To the south-east of Glasgow Lanarkshire stretches back to the hill areas of the Southern Upland district. The main farming activity is the production of milk for sale wholesale. Long rotations, the commonest being oats, greencrop, oats, hay, and a varying number of years' pasture, and the maintenance of herds by rearing, are typical features. The acreage under potatoes is usually small. On some of the stronger soils wheat is grown. Ewe flocks may be kept, but many farms buy in lambs for further keep on grassland or "winter" ewe hoggs from hill farms. Except in the more remote districts, there is considerable emphasis on commercial egg production. In this area was developed the Clydesdale horse, now used for draft over all the province except where the Highland pony still has its adherents in the West Highlands.

In the Clyde valley, in the vicinity of the town of Lanark,

lies one of the "gardens of Scotland." The "apple-yards" of Lanark are mentioned by an eighth-century chronicler, but the main area of fruit and glass-house production now covers a much wider district, overlapping on each side of the valley proper. Tomato-growing is especially noticeable, partly owing to the proximity of cheap fuel. Some winter crops are grown under glass, but the tomato is paramount. The strawberry crop, once very important, has met with many vicissitudes. Developed as a field crop about 1860, a rapid increase in planting took place, but mainly owing to the onset of disease almost 1,000 acres went out of cultivation between 1914 and 1933. Partly offsetting this decline is a growing acreage under raspberries. Plums are also important. On the southern side of the river the land rises gradually to end in an area of upland and moor. South of the towns of Strathaven and Lanark this high-lying region passes into the district described as the Southern Uplands. West of Lanark and north of Strathaven lies an area at about 500–600 feet elevation concerned mainly with wholesale milk and receding down to the border of Renfrewshire.

IV. Renfrewshire and North Ayrshire

Renfrewshire, lying due west and south-west of Glasgow, contains an area of low uplands and moor in its south-western corner where it bounds with Lanarkshire. This upland region runs in a north-westerly direction, and with several intervening spaces of low ground joins up with a definitely hill region in the western corner of the shire. On the higher grounds of these two areas hill sheep farming is found, but the lower grounds are concerned principally with milk production. The north-east corner, on the alluvial terraces of the Clyde, has a stretch of highly arable land with potatoes and wheat important. The farming practice in this district has been modified of late, due to the intro-

duction of the sheep enterprise, the shortage of town dung, the smaller demand for hay from the adjacent town areas, and the influence of the Wheat Act. Where park sheep are kept the old four-course rotation of oats, potatoes, wheat or oats, and hay has been lengthened by adding two or three years' grass. Second early potatoes, in the hands of large growers, are a feature of this locality. Over the county as a whole poultry are important, and near the urban districts, as in all shires abutting on Glasgow, pig-keeping for pork and bacon is found. Paisley provides a clearing market for dairy stock drawn from a wide area, and while on the lower inlying farms many dairy herds are maintained by purchase, rearing of replacement stock is universal on the higher-lying and cheaper-rented farms. Herds of British Friesians are a noticeable feature in Renfrewshire farming. Where park sheep are kept the Half-bred ewe is most common, and crossing with a Suffolk ram to obtain lambs dropped in early February is a usual practice. The low-lying parts of the county in the vicinity of Glasgow are densely populated, and shipbuilding, engineering, thread-making, and textiles (in Paisley) are the main avenues of industrial employment. The central parts contain many small towns, while another industrial area engaged in shipbuilding, ship repairing, marine engineering, and sugar refining is found around Greenock and Port Glasgow.

To the south this shire marches with the portion of North Ayrshire included in this district. This part of a large county is essentially a dairying area, having for long supplied the Glasgow district with milk, either direct or through the farmers' co-operative creameries, which were the first in Scotland to be established. Since the end of the War poultry have increased rapidly, and many localities are very heavily stocked. The influence of soil on cropping is marked here. A heavy loam, too heavy for profitable greencropping, is found over a large part of this area. The greencrop acreage is much smaller than the average for the province, and in

some instances is completely absent. Timothy meadows are very frequently met with, and the hay crop is important. Ryegrass seed is threshed for sale over an area extending into the next region.

Herds of British Friesians and many Friesian-Ayrshire crosses are common, but the Ayrshire cow, originally improved in this county, is numerically most important, as it is in the whole south-western part of the province. A description of dairying practice here will apply with little modification, except as regards the importance of greencrop, to conditions found in most areas of the large central dairying belt. Average cow herds run at about twenty-five to forty cows with varying proportions of followers. Winter milk production is important. Where possible, home-rearing of incoming heifers is aimed at, many farms renting grass to summer young stock. The "grass-milk" period is from May to October, with only day-grazing in the closing weeks. In late summer and early autumn declining pastures are supplemented with concentrates, kale, and the first of the turnip crop. The "winter-milk" period lasts for about seven months, when practically no grazing is available. Usually all stock are housed for the winter, and hay, roots, and oat straw form the basis of the ration, with home-grown oats and purchased concentrates fed for production. Remodelling of byre accommodation is constantly going on, so that a high standard has been reached.

V. Coastal and Central Ayrshire

This region stretches from around West Kilbride in the north to Girvan in the south, and reaches back to the upland areas which adjoin Lanarkshire and, further south, to the hill country of the Southern Upland district. Dairying is again the major enterprise, but in the east and south-east localities milk production is more seasonal and cheese-making, although considerably declined, is still commonly carried

on. Poultry are again important, while ewe flocks are found on the low ground and lower upland farms.

The growing of early potatoes on the light soils of the coast is a feature of this region. The town of Girvan may be regarded as the centre of the early potato industry in the south, but there is also a similar area towards the north, of which West Kilbride may be regarded as centre. Second earlies are also grown near Ayr and Monkton, while the potatoes grown inland from Irvine and Troon are also lifted considerably in advance of the main crops, generally in the month of August. The bulk of the Ayrshire earlies come on to the market in July, being usually a little later than the earliest crops from similar localities in Wigtownshire, and in addition to meeting a large Scottish demand are exported to North of England markets. Production is mainly in the hands of large growers. The seed is sprouted, planted usually in February on light coastal sands heavily manured with dung and seaweed and liberally treated with artificial manures. The crops are sold by auction just before digging commences. Cattle fattening is generally practised on the coastal potato-growing farms between Girvan and Dunure, and also on some of the potato-growing farms in the northern area. On a few of these coastal farms, and generally on the other potato farms and mixed farms, dairying is practised. The normal five-course rotation is often departed from. The seeds may be left for pasture for one or often more years, and potatoes often without dung (if it is required for potato land not in rotation) may be taken after lea. Recent years have seen an increased acreage of wheat grown after potatoes. The Italian ryegrass, which is usually grown as a catch-crop after early potatoes, is sometimes left as a hay crop for one year so as to break the continuity of this crop.

Back towards the hills rotations are longer and grass more important, while dairying assumes chief place and some ryegrass seed is sold. Cheese is made, sometimes the local cheddar type termed Dunlop. The decline in the number

of cheese-making farms in Ayrshire since the turn of the century, and especially in the post-war period, is marked, and in consequence of this pig numbers declined considerably, although recent years have seen a definite upturn in this enterprise.

Blackface ewes are generally found in the hills, and Border-Leicester Blackface cross ewes on the lower ground. Border-Leicester rams are used with the Blackface ewe on the better hill land and Blackface rams on the poorest grazings. For early lamb production on the low ground the Suffolk ram is commonly used on cross ewes.

VI. Southern Upland District

This region consists of all that part of the Southern Highlands of Scotland which lie within the province. The biggest area of these Highlands is to be found in the province of the south-east of Scotland, but large stretches lie in the south of Lanarkshire, all down the east of Ayrshire, and the northern parts of the counties of Kirkcudbright and Dumfries. Thus it includes all the more mountainous parts of these counties not dealt with in other regions. It consists entirely of hill and moor, and in some respects resembles the Highland region, especially in the Galloway hill country, where conditions are generally more bleak and rugged than the kindlier, rounded, grassy hills of Dumfries.

Sheep farming is the main enterprise, with cattle rearing subsidiary. In the west and north-west the Blackface predominates, but Cheviots increase in numbers towards the east. Many of the store cattle reared in the southern districts are of the Galloway breed, an ancient breed native to this district and once exported, like the Highland, into England in great numbers. The hill sheep farming of the eastern parts of this district merges into that common to the Cheviot hills, the practice of which is described in the section of the East of Scotland Province.

VII. The South-west Region

This region stretches from the Ayrshire border south of Girvan to the Scottish border near Gretna and to the junction with the East of Scotland Province at the Roxburghshire boundary. Conditions necessarily vary considerably over such a wide stretch. The rough rugged hill country already described in the previous section (Region VI) lies in the northern parts of Kirkcudbright and Dumfries. The rest of this region is made up of the more kindly hill land, the river dales or valleys, and the low land of the coast. Wigtownshire divides itself into the moors, about 600 feet in elevation, occupying most of the north, and the coast and peninsular parts, very little above sea-level, on the south. The low land of Kirkcudbright is found on the coast and in the valleys of the Rivers Cree, Dee, and Urr. In Dumfries the rugged hills come nearer to the coast, but the long valleys of the Nith, the Annan, and the Esk, as well as the lesser valleys of the Lochar and the Kirtle, together with the district on the shores of the Solway, provide areas available for low-ground farming.

The region is mainly rural, the principal towns being important mainly as market towns. Dairying is the main farming activity, but towards the east much of its development is of more recent origin than in Lanark, Dunbarton, Renfrew, and Ayr. The increase in cow stocks has been rapid in post-war years, partly displacing from the mixed farms cattle rearing and feeding, which has been pushed back from the good land on to the poorer, high-lying pastures. Wigtown and Kirkcudbright, together with parts of Ayrshire and the Kintyre peninsula, are Scotland's only important cheese-making areas. In Dumfries, on the other hand, cheese-making is unimportant. Poultry figures much more prominently in Dumfries than in the other two counties. Wigtown and Kirkcudbright, mainly on account of the whey by-product from cheese-making, are the principal

pig-keeping districts of the province. The fattening of purchased and home-bred stores is widespread over these counties, and supplies of bacon and pork are sent to other parts of Scotland and to England.

Characteristics of Wigtownshire farming, in contrast to inlying counties near the industrial belt, are the shorter rotation and greater acreages of roots and oats per farm, the relatively larger cow herds, the more seasonal nature of the production, and the place occupied by farm cheese-making. In many respects the peninsular "Rhinns" district of this county resembles the Kintyre district of Argyll. The general scheme of cropping is oats, greencrop, oats, followed by three or four years' pasture. On some farms hay is taken from either the first or last year of the pasture, while on a number of farms meadow grass meets this requirement. Timothy meadows are nowhere important. Blackface or Greyface cross lambs are the product of the higher land of the county, while the Down ram by Half-bred ewe cross is used where early lamb is aimed at. On the shores of Loch Ryan and at Glenluce early potatoes are grown. East of Glenluce, i.e. in the Machers district of the county, cattle rearing and fattening for beef production is carried on, and crossing the Galloway or Aberdeen-Angus bull with Shorthorn cows to obtain rearing calves is practised. The cross of the White Shorthorn bull with Galloway cows is also found.

Much of the land in Kirkcudbright is very broken owing to the outcrop of rock. Much of what has been said of dairying in Wigtownshire can be taken as applying here. Among dairy farms the "bowing" or letting of dairies is common. Some cattle fattening is carried on in the parishes surrounding the town of Kirkcudbright, but the change-over to dairying has affected this practice. As regards sheep, the more northerly third of the county included in the Southern Uplands district may be looked on as Blackface sheep country, while low-ground and park sheep are confined to

the more southerly part. The Borgue and Kirkcudbright districts produce Half-bred ewe lambs for sale, while many of the dairy farms run Half-bred, Cheviot or Blackface ewes, the two former breeds being permanent park flocks. Mostly the cross is with a Border-Leicester ram, but sometimes Suffolk rams are used to obtain early lambs. The prevailing rotation is the six- to seven-course shift.

Dumfries shows mixed farming in all its variations. Dairying (mainly for liquid milk), the sale of prime dairy stock, poultry, pigs, cattle rearing and feeding, ewe flocks and early lambs, sheep fattening on turnips, and growing of second early and maincrop potatoes—the latter enterprise generally concentrated on the fine soils of the Annan district—have varied emphasis in different localities. There is only one rotation that is followed to any great extent, namely oats, greencrop, oats (with grass seeds), hay, and a varying number of years in grass. Quite frequently the seeds are grazed instead of being hayed. Only a few farms are now on a five-course rotation, and six-year shifts are not as common as formerly. Where dairying is practised seven-year and eight-year rotations are usual.

Milk production has increased greatly in this county in post-war years, and it now ranks high among the largest milk-producing counties in Scotland. The fattening of cattle is practised on farms fairly well distributed among the dairy farms. There is no district that can now be regarded as a purely cattle-feeding area, although this branch is important south of the town of Dumfries and generally among the southerly fringe of the county. No hard-and-fast line of demarcation now exists as between dairy and non-dairy districts.

The park sheep are either Cheviot ewes from the hills or Half-bred ewes from intermediate localities. On the lower and better sheep farms the Border-Leicester-Blackface cross is common. On the real low-lying farm the Cheviot and Half-bred ewes are crossed with a Border-Leicester or

Down ram. The favourite Down ram is the Suffolk, but Oxfords are frequently used. There is always a fair demand for good quality Half-bred ewe lambs for stock purposes, but the great majority of park lambs are sold for the London market, some straight off the ewe as early lamb. The remainder are turnip-fattened and sold later. Cross lambs, Cheviot wether lambs, and Blackface wether lambs from the higher grounds and the hills are also fattened on turnips in winter, while many go into England to be fattened there.

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