Recent Trends in the Agricultural Geography of Leicestershire.

A Thesis Presented for the Degree of M.A. of London University in May 1952.

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ABSTRACT OF THESIS.

Recent trends in the Agricultural Geography of Leicestershire.

The thesis, a comparative account of the post-war agriculture of Leicestershire, is an attempt to assess the extent of the changes which have taken place since the pre-war Land Utilisation Survey was carried out, in order that the changing value of the geographical factors influencing agriculture in the pre-war depression and post-war period of agricultural prosperity may be appreciated.

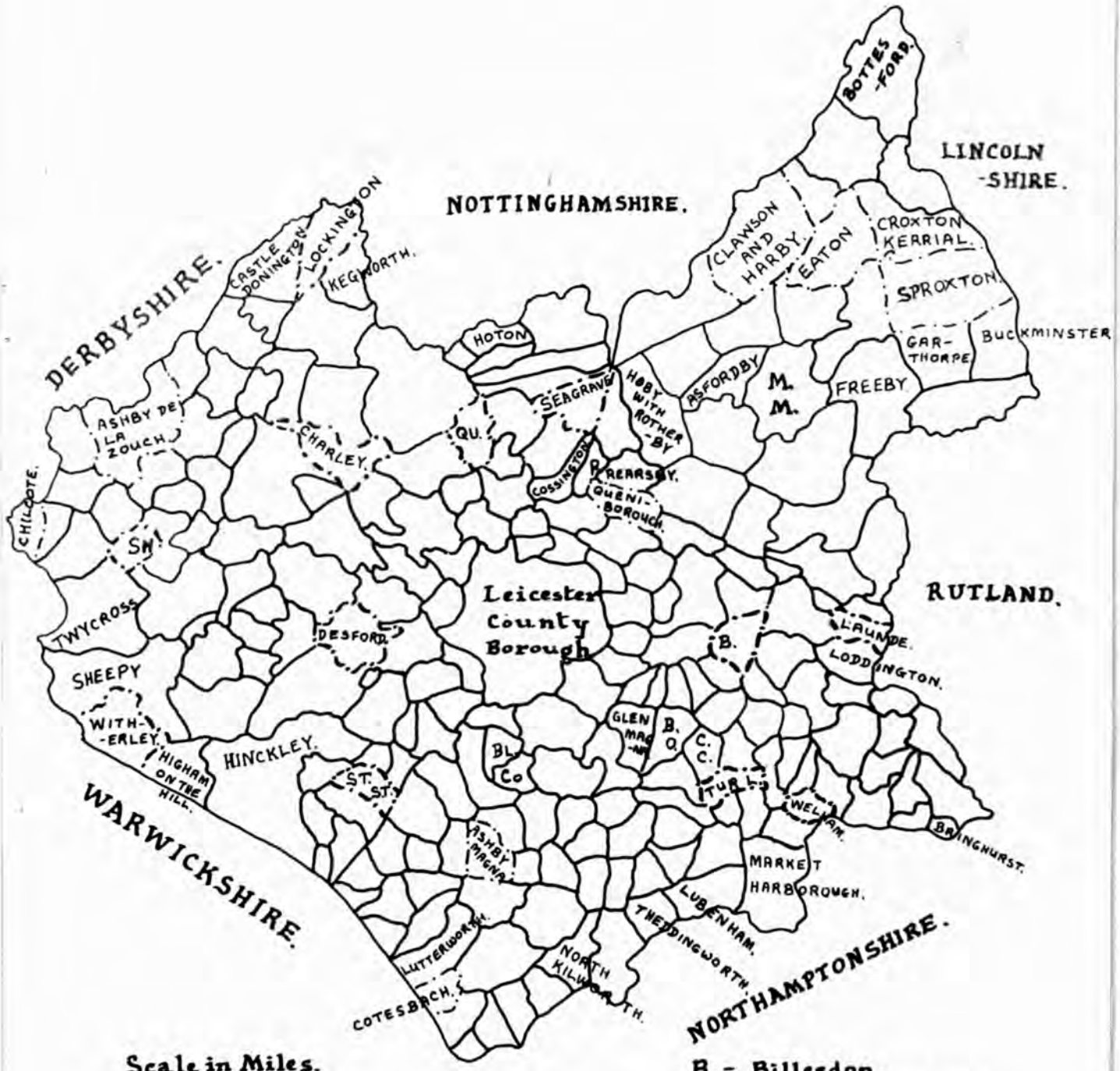
The first part is a brief descriptive account of the geography of the county stressing the factors of particular significance in the study of agricultural distributions. After an outline of the development of agriculture in the county since the enclosures of the 18th Century a short account of agriculture in the nineteen-thirties follows. Changes in the character of British agriculture, and in farming techniques which have taken place between that time and the present period are also considered.

The next part of the thesis embodies the main bulk of the research and falls into two principal sections. The first of these is a comparison of distributions of arable land, pasture, crops and stock in the county for the two selected years 1933 and 1948, and the relationship of the major changes to geographical factors is discussed. Secondly a detailed study is made of those parts of the county where the distributions indicate that significant variations in farming practice have occurred. In each area the course of the changes during the ten years 1939-1948 is traced by reference to parish statistics. The pattern of present-day land use in each area is compared with that of the pre-war period and the economy of specimen farms discussed.

Finally the main agricultural trends of the last two decades are summarised and conclusions drawn.

CONTENTS

LEICESTERSHIRE CIVIL PARISHES



Scale in Miles.

0. 6.

B.- Billesdon.
M.M.- Melton Mowbray.
R.- Ratcliffe
TUR L.- Tur Langton.
ST. ST- Stoney Stanton.
SN. - Snarestone.
QU.- Quordon.

BL- Blaby.
C.- Countesthorpe.
B.O.- Burton Overy.
C.C.- Carlton Curlieu.

-·-·- Boundary of specimen parishes for which statistical diagrams are given.

Figure 1.

INTRODUCTION

Since the pre-war Land Utilisation Survey of Britain was carried out very great changes have taken place in the agriculture practised in this country, particularly in the former grassland areas. The aim of the research, the results of which are embodied in this thesis, has been two-fold. By examining the use of the land and the system of farming which has emerged in the post-war period, an attempt has been made to assess the character and the extent of the changes which have taken place in this sample county. Secondly, by comparing present day and pre-war conditions the changes in the value of the geographical factors concerned has also been studied. Leicestershire was frequently considered to be the grassland county 'par excellence' in the pre-war period, and is therefore well suited to serve as a sample area for such a study as this.

The carrying out of this work was made possible owing to the award of a two year research scholarship by the University College of Leicester, for which I wish to record my thanks. The work has been done during the sessions 1950-51 and 1951-52.

The chief source used for information about the pre-war system of agriculture has been the Land Utilisation Survey Report of Leicestershire with the accompanying Land Utilisation maps. In order to facilitate comparisons

between pre-war and post-war distributions Ministry of Agriculture parish statistics for 1933, the year in which most of the Land Utilisation field survey was carried out, have also been used. Other sources are noted in the list of references.

For the study of post-war agriculture three main sources have been used. The land use of sample areas has been mapped in the field by the writer and where ever in the thesis reference is made to post-war land use survey it is to this survey. Similarly the pre-war survey with which it is compared is in all cases that shown on the Land Utilisation survey maps. The areas surveyed include parts of each of the Land Utilisation Regions distinguished in the pre-war report. In addition surveys of sample areas have been carried out wherever it seemed likely, from the study of distributions and natural conditions, that significant variations in the land use pattern might occur.

The second source of information has been the Ministry of Agriculture parish statistics. Statistics for all parishes in the county for 1948 were extracted from the records of the Ministry. This is the latest year to the records of which direct access ~~of records~~ may be obtained. For later years, statistics are available only if extracted by the employees of the Ministry and the cost of obtaining these is prohibitive. Statistics for all years between 1939 and 1948 were also extracted for sample parishes and from all

these, distribution maps and diagrams have been constructed.

These statistics do not give any indication of the changes in the area of agricultural land in the individual parishes. The holdings classified by the Ministry as belonging to particular parishes extend in many cases beyond the boundaries, and when such land changes hands the total area of farm land in the parish may be altered although no real change in the area of land in agricultural use has occurred. Similarly, the fact that civil parish and 'agricultural' parish areas do not coincide has necessitated the mapping of agricultural data against the total area of crops and grass rather than the actual parish area. As a result the influence on distributions of areas of rough grazing, woodland, or land agriculturally unproductive is not indicated on these maps. However, in Leicestershire only a relatively small area of land is excluded from the total area of agricultural land and allowance can be made for this in interpreting the maps.

As a third main source of information specimen farms have been visited. It was originally hoped that information might be obtained from the Ministry of Agriculture, but all information concerning individual holdings is strictly confidential. Similarly the National Farmers' Union could not give any information. About 50 farms were visited personally. The information collected varied somewhat in exactness and content. The bulk of it seemed reliable and

was willingly given by the farmers. Used in conjunction with the parish statistics it has facilitated the interpretation of distribution maps, and has given a relatively clear picture of the major changes in farm practice and the particular problems of farming in the different parts of the county.

The majority of the specimen farms selected are situated in the east of the county as in this area parish statistics show that the major changes have taken place. They were selected after a study of the statistics had been made and preliminary field survey carried out, in order that as representative a group as possible might be obtained. Permission was not obtained to disclose the identity of the particular farms. In the Vale of Belvoir, the Wreak Valley and the area due east of Leicester former members of the War Agricultural Executive Committees were able to supply a considerable quantity of general information about the farming in their districts. In the north-east, the Welland district, and the Wolds, in particular, general information was also obtained from practising farmers who have been well acquainted with the agriculture of these areas for a long period of time.

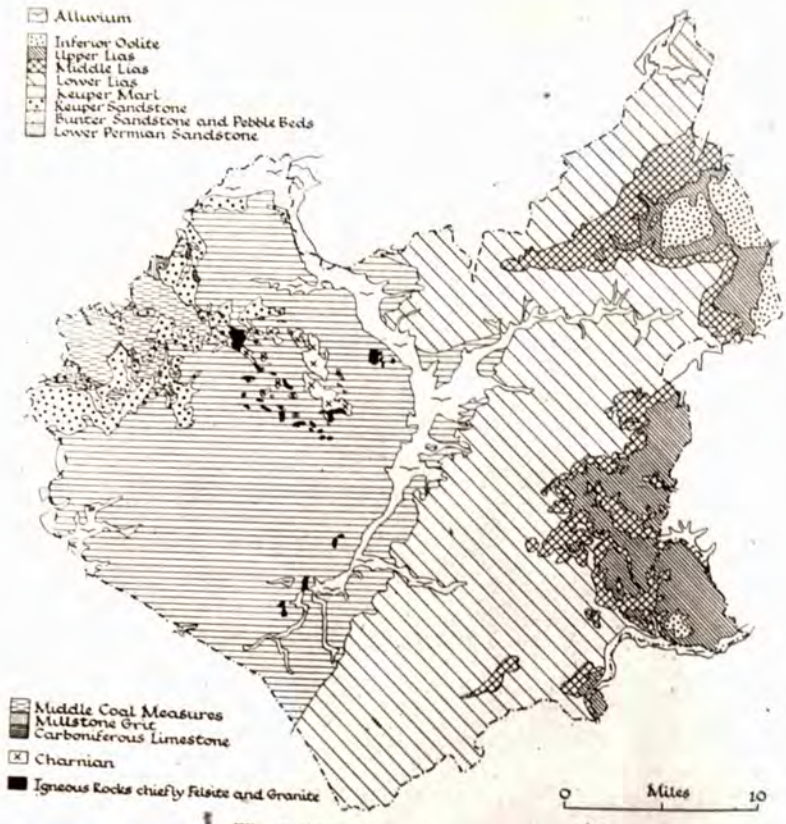
In general the farmers appeared to be well informed of recent improvements in farming, and although many do not take advantage of these they seem to have been well considered.

At an early stage in the work a survey of land use in the county was made from air photographs, by which about two thirds of the area is covered. The quality of the photographs is variable and as they were taken in the winter months, namely in January 1947, they show remarkably little evidence upon which land use survey may be based. The signs that land has been recently ploughed or otherwise worked for arable farming are in many cases distinguishable, but permanent pasture which has been disc-harrowed or cut late for hay shows similar features. Crops were almost entirely absent and in parts of the county liming had been recently carried out adding further uniformity to the land. This survey was therefore abandoned as the results were considered to be too inaccurate to be of any real value.

Certain aspects of the agricultural geography of the county have been omitted owing to the limited time available for the work. From the distributions of stock, pigs and poultry, and from crop production, market gardening and fruit growing have been omitted. In addition, the number of labourers employed in agriculture at the two periods has not been considered. Time did not permit the extraction of detailed statistics of labour, and in 1948 Prisoners of War and Womens' Land Army personnel were still employed. It is therefore felt that the figures of total labour are of relatively little value.

These considerations do not play a large part with

regard to the changes in the agricultural economy of the county and their omission does not have any real effect upon the main study undertaken.



The Solid Geology of Leicestershire.

Figure 2a.

The Superficial Deposits of Leicestershire.

Figure 2b.

From R.M.Autry. L.U.S. Report of Leicestershire.

CHAPTER I.

Section a).

Geology Relief and Soils.

The 801 square miles of country included in the County of Leicestershire, situated almost entirely in the Midland Plain of England, belong but for a very small area to 'Lowland Britain'. As this implies, the rocks of which the land is built, with the exception of the ancient Charnian masses and an area of approximately 24 square miles in the north west of the county where Carboniferous rocks outcrop, are young sediments of Triassic and Jurassic age, overlain over much of the area by glacial drift. (Figure 2).

The ridges of ancient Precambrian metamorphic and igneous rocks of Charnwood Forest standing out above the surrounding lowland resemble on a very small scale the mountainous districts of north west England in the sharpness of their slopes and the rugged character of the hills where rocky masses devoid of soil cover outcrop. The north-west to south-east trending ridges are separated by wide valleys floored by Triassic sediments. Towards the south-west of the county a number of other isolated masses of igneous rock project likewise through these younger beds. Where the ancient resistant rocks occur conditions of relief are definitely unfavourable for agriculture, while the soils are thin, siliceous and poor. As a result farmers in the district regard the 'Forest' as the poorest land in the

county.

Of the Carboniferous rocks which occur to the north-west and west of Charnwood the Carboniferous Limestone and Millstone Grit outcrop in only a very limited area. The former is quarried at Breedon and elsewhere is largely overlain by shales with thin limestones and sandstones of the same series. The Millstone Grit, a relatively unresistant deposit in this county, is composed of soft thin-bedded sands with little massive sandstone and consequently, unlike the outcrops in the neighbouring county of Derbyshire, it is characterised by no marked relief features. It is, however, noteworthy as a water-bearing bed of which few occur in the county.

The Coal Measure sandstones and shales with interbedded coal seams form the most extensive Carboniferous outcrop. They give rise, however, to no marked relief features. The resistant sandstones which occur in Yorkshire are missing, although small areas of sandstone cause low hills to occur in the extreme west near Moira. The soils which characterise the Coal Measures are for the most part cold heavy clay loams but where they are derived from the sandstones they are lighter and more free-working.

Of the younger sedimentary rocks the Trias occurs in the west of the county where the beds lap against those of the Carboniferous series and surround the Pre-Cambrian masses. The outcrop of Keuper Sandstone occurs in a roughly semi-

circular area in the north-west of the county around the Carboniferous rocks. Owing to its resistant nature it gives rise to a distinct escarpment about 400 feet above sea-bed extending from Staunton Harold southwards to Thringstone. It differs from the Keuper Marl in being a water bearing bed, while the soils derived from it are well drained and light.

To the south and east of this limited sandstone outcrop the Keuper Marl extends in a broad belt to the southern boundary of the county, including the greater part of the land west of the Soar and small areas east of that river, flooring also the valleys in Charnwood Forest. This is not a true Marl in that it is only slightly calcareous. It is composed of beds of red and chocolate coloured mud-stones with a high proportion of clay minerals and quartz dust. Interbedded in the deposit occur silty shales and beds of gypsum and of calcareous sandstones or 'skerries'. These latter beds owing to their relatively resistant nature give rise to low hills. The Keuper Marls reach their maximum thickness in the west of the county and, thinning eastwards, dip beneath the more recent beds. A large proportion of the outcrop is overlain by boulder clays and glacial gravels. As a result large continuous stretches of land where Keuper Marls are exposed occur in few areas but they are found at the surface in river valleys where the overlying drift has been removed.

Where soils are derived from the Keuper Marls they vary from heavy clay loams where the parent material is largly composed of clay particles to light calcareous soils on the 'skerry' beds.

The remaining beds of the Trias, the earlier Bunter sandstone, which occurs near the coalfield, and the Rhaetic Beds, which outcrop to the east of the Soar, occupy a very small surface area and consequently are of little significance in so far as any influence on agriculture is concerned. The former do, however, give rise locally to small areas of lighter gravelly soil.

Eastwards of the Triassic outcrops the Jurassic beds are exposed, ranging in age from the Lower Lias to the Inferior Oolite. The outcrop of greatest area is that of the Lower Lias Clays which extend from the Vale of Belvoir in the north-east of the county to the southern boundary between Lutterworth and Market Harborough and occur also in the Welland Valley. This division of the Lias consists in the upper part of a thick series of clays below which are bands of thin argillaceous limestones and shales. Apart from the extensive exposure in the Vale of Belvoir where only occasional thin patches of drift occur, the Lower Lias is very largely covered by superficial glacial deposits. Consequently like the Keuper Marl it is exposed, for the most part, only in the river valleys where erosion has removed the overlying boulder clays and

LEICESTERSHIRE RELIEF.

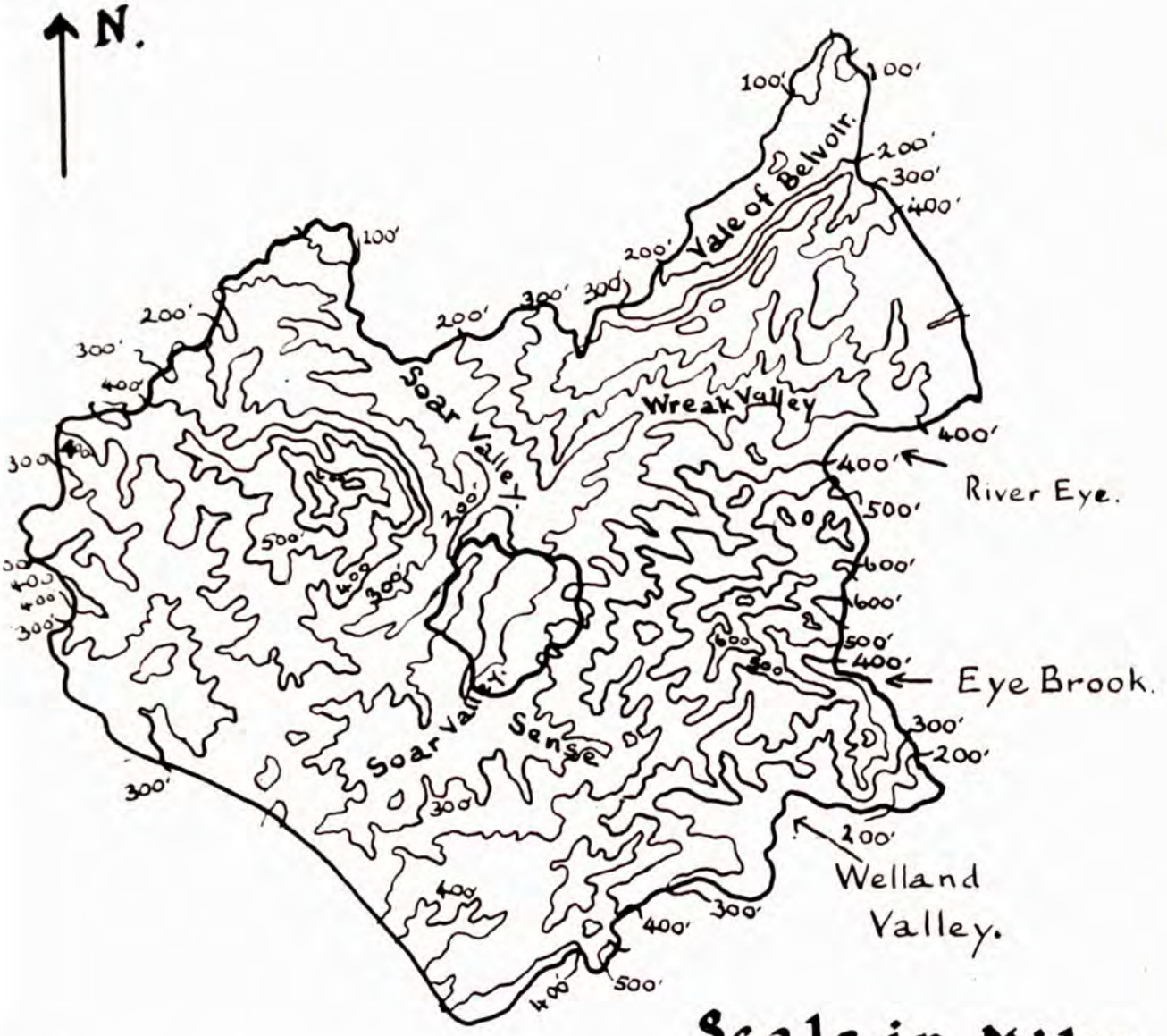


Figure 3.

glacial gravels which cover the low interfluvial ridges. The soils derived from the Lower Lias Clays vary considerably but tend to be deep and heavy clay loams. In the Vale of Belvoir soils two or more feet deep occur varying in heaviness within a small area from 'two' to 'four horse' land. The variability is probably caused by the presence of more calcareous material derived either from the thin limestones of the Lower Lias or from thin drift overlying the solid beds.

Apart from those areas where the prominent hills of Charnwood Forest and those of the few scattered igneous masses to the south west occur, the relief of the area of the county already described shows a high degree of uniformity whether developed on the Carboniferous, Triassic or Lower Lias beds or on the deposits of glacial drift. (Figure 3).

Few areas reach 450 feet above sea level while the valleys of the numerous streams are seldom cut below 200 feet except in the extrme north-west of the county. It is therefore an area of subdued relief. The relatively more resistant beds give rise to greater elevations but few well marked relief features occur. Low hills are frequently to be accounted for by the presence of masses of glacial drift; the hills upon which Higham, Market Bosworth and Bagworth are situated are of this type and owe their occurrence to cappings of water-bearing glacial

gravels. Gradients are relatively gentle. The unresistant nature of much of the underlying rock and the small size of most of the streams cause the valleys to be open in character. The larger valleys, those of the Trent, Soar, and Wreak are similarly wide and flat floored. Terraces of alluvium and gravels, of Pleistocene age, which weather into deep light soils, flank these valleys and their low but abrupt edges stand about 30 feet above the almost featureless floors of Recent Alluvium.

To the east of the Lower Lias outcrop, on the other hand, the relief shows greater variety and the character of the landscape is modified by the occurrence of more persistent beds of a resistant nature (Figure 3). Of these the Middle Lias Marlstone Rock Bed is the most outstanding. Although thinner than the underlying beds of the Middle Lias Clays which succeed those of the Lower Lias it gives rise to the most marked relief feature of eastern Leicestershire; an escarpment which, though in parts low and discontinuous, can be traced from the north-east of the county, where it is most clearly developed and overlooks the Vale of Belvoir, to the Welland Valley in the south. Reaching its greatest thickness in Life Hill in Billesdon Parish east of Leicester, it thins eastwards, dipping beneath the Upper Lias deposits. Like the majority of the solid beds of the county it is overlain by glacial drift but large drift-free exposures, totalling approximately 14 square miles in area, occur on

the dip slope of the Belvoir Escarpment in the Parishes of Ab Kettleby, Eaton and Croxton Kerrial. Elsewhere, apart from the exposures on the scarp face and small extensions on to the dip slope, this bed is to be found at the surface only where streams have removed the overlying deposits. In such valleys as that of the Chater and Eye Brook the resistant Marlstone occurs as a terrace in the floor of the wide valley cut in the overlying clays, the rivers being restricted to narrower valleys cut in the Marlstone.

Small exposures of the Marlstone also occur in the parishes of Rolleston and Noseley where they are believed to be outliers of the main bed. The Marlstone is composed of ferruginous sandy limestone in the upper layers below which are sandy shales. The occurrence of the bed at the surface can be easily detected by the appearance of red loamy soils usually deep, relatively well drained and easily worked. In addition to giving rise to the chief scarp of the county the bed also has a marked influence upon the relief features of the land which lies to the east. Where streams on the plateau-like dip slope have cut through to the clays below, especially in the north east of the county, the resistant nature of the bed has caused their valleys to be gorge-like in character; with sides of sufficiently steep gradient to impede tillage, in marked contrast to those of the valleys in the unresistant clay areas to the west of the Marlstone escarpment.

In the upper layers of the Marlstone the iron stone bed occurs and is worked on a considerable scale by open cast methods. It is said to have been worked since Roman times. Evidence of the older workings is to be found in the occurrence of areas of irregular hummocky ground of little agricultural value. At the present time the top soil is removed separately and the land subsequently restored. Farms, roads and villages stand out above the general level of the land but little other trace of the workings is to be seen in the restored areas. A further economic use of the Marlstone has been for building material, as many of the older buildings especially the churches of eastern Leicestershire and the dry-stone walls of the Marlstone districts bear witness. The worked hill-sides are pitted with irregular holes and numbers of larger quarries, Although some are now soil covered and provide pasture land, as in the case of the areas of the older iron workings, the agricultural value of the land has been impared and they are useless for arable farming.

The lower beds of the Middle Lias, those of the clays and sands, occur at the surface only in very limited areas, either on the face of the Marlstone escarpment or in the sides of valleys cut through this bed. They are therefore associated with steep gradients while the heavy clay soils derived from them form a marked contrast to the lighter loams of the Marlstone 'Redlands'.

Towards the eastern boundary of the county more recent deposits overlie the Middle Lias. The most extensive outcrop of the Upper Lias, a series of thick blue clays, occurs in the south-east along the border of Rutland. Partially overlain by glacial deposits and by small areas of Inferior Oolite they are exposed over a comparatively small area, but their outcrop is nevertheless significant in the consideration of the agriculture of the county. The area concerned is an upland averaging 600 feet above sea level; a height almost equalling that of the Charnwood Hills. (Figure 3). The unresistant nature of the beds has allowed deep dissection by the streams. Some of the river beds such as those of the Chater and Eye Brook are cut as far as the Marlstone, 200 feet below the general level of the upland, while the gradients of many of the valley sides are greater than 1 in 7, sufficiently steep therefore to impede the use of farm machinery. Although lacking a clear cut boundary the area stands out distinctly as one of more varied relief in this county of gently rolling country. The prominence of many of the hills such as Robin-a-Tiptoe or Whatborough Hill is accentuated by the occurrence of outliers of Inferior Oolite while others are capped with glacial gravels. The soils of the Upper Lias are medium to heavy clay loams. Cold and stiff, they increase the difficulties of tillage on the steep hillsides and are both unworkable in wet winter weather and inclined

to bake and crack in dry periods.

In the north-east of the county the Upper Lias clays also occur, but their outcrop is very limited. The beds of Inferior Oolite predominate and the clays are exposed, for the most part, only in the sides of river valleys or on the lower slopes of the escarpments to which the more resistant gently dipping beds give rise. Of the Inferior Oolite beds the Northampton Sands, usually associated with areas of rich calcareous soils, are poorly represented, but the Lincolnshire Limestone is exposed over an area of gently sloping land about 400 feet above sea level and ten square miles in extent in the parishes of Waltham on the Wolds, Sproxton and Croxton Kerrial.

The Inferior Ooolite escarpments, though not as striking as that of Belvoir which lies to the north west, are distinct features of the landscape, while the dip slopes from relatively level table-lands cut by valleys some of which reach the Upper Lias while others in the limestone are dry. The soils of the Lincolnshire Limestone are particularly outstanding in this county as they constitute the only large areas of light lands, the typical barley turnip and sheeplands of pre-war days. Thin and extremely stony they are seldom over 5 inches in depth while in some parts solid bed rock is reached 3 inches below the surface.

For the area towards the south east of the county no

drift edition of the Geological Survey map is published . The uplands of the Upper Lias with outliers of Inferior Oolite continue southwards until the land falls abruptly to the Welland Valley. Bordered by a broken rampart of steeply sloping hills this area forms a distinct relief region. A terrace[1] of gently undulating land extends from the steep sided bounding hills until by a sharp edge about 50 feet in elevation the land falls to the level alluvial flats which border the river. A number of hills such as Langton Caudle and Slawston Hill rise from the terrace, the latter an outlier of Middle Lias Marlstone, and low hills occur possibly marking patches of drift. Otherwise the solid beds of this lower area are the clays of the Lower Lias. The alluvial flats by the river like those bordering the Soar and Wreak are liable to serious flooding which prevents their use for arable farming. On the terrace however the medium to heavy clay loams are better drained and the water table is not so high as to interfere with arable crop production.

In the east of the county as in the west drift deposits overlie much of the area, masking the pre-glacial relief and giving greater uniformity to the landscape. Wherever it occurs in the county the glacial drift is essentially a

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1. Sufficient evidence is not available to show whether or not this is a true terrace and it possibly differs in type from those of the Wreak and Soar Valleys.

varied deposit. That derived from the west is characterised by quartz fragments and is covered by later chalky boulder clay from the east containing chalk and oolite fragments. Both types of drift contain and are overlain by patches of glacial gravels and their character changes from that of a stiff heavy clay to a light gravelly material within very small areas. As a rule the drift is thickest on interfluves, thinning towards the valleys. It accounts for the presence of hills, which when composed of water bearing gravels frequently provide settlement sites. As the parent material varies so the soil derived from the drift is varied in character. Patches of lighter gravelly or sandy soil are mingled with the more usual medium or heavy clay loams. The soil is normally relatively shallow, being only about 6 inches deep and underlain by stiff raw clay. The total depth of the drift rarely exceeds 100 feet. It is thickest in the south of the county and thins towards the Trent valley but great thicknesses are also reported to the north of Melton Mowbray and on the Wolds north of Leicester. Gravels are most prominent near Lutterworth, Hinckley and Earl Shilton.

As far as the agricultural geography of the county is concerned the study of geology and relief is of significance only in so far as they influence such factors as gradient, and aspect, soil and natural drainage. It is apparent that this county is an area in which there is a high degree

of uniformity both in relief, soils and drainage, but nevertheless there are some important variations which cause particular areas to stand out as more or less distinct natural regions which show corresponding differences in their characteristic systems of agriculture. In the west of the county the most striking area is that of Charnwood Forest and it is indeed the only clear cut natural region standing out in the relatively monotonous landscape. East of the Soar Valley the north eastern scarplands form a marked contrast to the dissected uplands near the Rutland border. Similarly distinct are the larger river valleys, those of the Welland, Wreak, Soar and Sence, and the small section of that of the Trent, with their associated terraces of gravels and older alluvium and their low lying recent alluvial flood plains.

The uniformity of much of the county can be easily correlated with the fact that so much of it is built of unresistant clays and marls. Gradients over a large part of the area are gentle and consequently do not interfere with arable farming. The subdued nature of the hills and generally low altitude of the land lessens the variations in local climatic conditions resulting from different exposure.

The most outstanding features of the soils of the greater part of the area are their generally heavy nature and comparatively close connection with parent material

but, above all, their marked variation within small areas is most striking. As a result of this the soil in a single 20 acrea field may be of several distinct types. The variable patches are how ver usually small and irregular and do not permit the lay out of farms to be easily related to them. The only areas with a comparatively uniform soil are those where the parent material is the Inferior Oolite or the Middle Lias Marlstone. The heavier soils are everywhere tenacious sticky and unworkable after wet weather and as a result the working season in spring and autumn is restricted. After dry periods the soil tends to bake and crack so that a good tilth of sufficient depth to allow good crops to be grown is difficult to obtain.

With regard to soil fertility reliable information is difficult to obtain. In the parts of the county west of the Soar where considerable areas were under crops before the war it was stated, in the Land Utilisation Survey Report[2] that the soils were of moderate quality. In the north-east where the light lands of the Inferior Oolite occur the soils were described as poor and infertile but a large proportion of these was nevertheless retained in arable use. In the east of the county where over large areas no land remained in tillage little information is available but

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2. R.M.Auty. Leicestershire. The Report of the Land Utilisation Survey of Britain. Edited by L.Dudley Stamp. Part 57, Page 307.

Table 1

The Percentage of Tested Land Found to be Lime Deficient in Parishes in Different Parts of the County.

The Coalfield	Ashby de la Zouch	45%
	Coleorton	53%
	Swannington	52%
Charnwood Forest	Bardon	78%
	Swithland	56%
	Woodhouse	70%
The Vale of Belvoir	Clawson and Harby	5%
	Redmile	8%
The North-east	Sproxton	20%
	Croxton Kerrial	36%
	Belvoir	48%
	Eaton	41%
Eastern Leicestershire	Billesdon	34%
	East Norton	49%
	Hallaton	34%
Western Leicestershire	Shepshed	46%
	Broughton Astley	45%

From unpublished information from the Ministry of Agriculture, Lands Department, Leicester.

from specimen farms it has been possible to obtain some idea of the opinions of practising farmers about the productivity and fertility of their land. All are more or less unanimous that it is the method of farming practised, the tilth obtained, the amount and type of fertilisers or manures and the rotation used which determines the productivity of the land and that inherent natural fertility is of minor importance. However it appears that the areas of lighter soils are 'hungry' lands and require larger quantities of artificial fertilisers or farmyard manure than the heavier clay loams. Considerable areas of the county have been tested for lime deficiency but this also does not give a true picture of the natural state of the soil as, especially during the war when cheap lime was available, its use has been widespread. In the majority of the parishes for which records have been obtained about half of the land tested was found to be lime deficient. On the clay loams of the Lower Lias in the parishes of the Vale of Belvoir it was considerably lower and in the few parishes of Charnwood Forest for which information was obtained about three quarters of the land was lime deficient (Table I).

To gain some idea of the productivity of the heavy lands recently returned to cultivation in the east of the county information about the yield of wheat, obtained on the specimen farms visited has been used. This crop is grown on the majority of farms and the average yield for

the county is about 4 quarters per acre. On the boulder clays the yield obtained was about this average varying from just under 4 to 4½ quarters. On the alluvial soils of the Wreak Valley terraces however and the deep soils of the Lower Lias Clays it was said to be considerably higher varying from 7 to 8 or 9 quarters. This higher yield seems to be related to the depth of the soil for the alluvial and Lower Lias Clay soils are of considerably greater depth than those usually derived from the boulder clay. The evidence obtained from the farms seems to indicate that the productivity of land, in spite of this apparent correlation, is rather the result of good husbandry than of natural factors except in extreme cases where conditions of soil are particularly favourable or adverse and very little of such land occurs in Leicestershire.

The clay subsoil underlying so much of the county restricts the sub surface drainage to such an extent that the water stands for a long time on the level lands and most gentle slopes while the rapid run-off from the impermeable steeper hillsides results in serious flooding of the valleys at lower levels. The alluvial stretches bordering all the larger rivers, the Wreak, Soar, Sence, Mease and Trent and some of the lesser streams are liable to severe flooding for considerable periods especially during the winter. Although this improves and makes earlier the growth of grass it renders their use for arable farming unprofitable.

In the consideration of the impermeable nature of much of the underlying rocks it is noteworthy that the county is very poor in water bearing beds. Apart from the few sandstones of the west, hydraulic limestones of the Lower Lias, and patches of glacial gravels, the only good water bearing bed is that of the Middle Lias Marlstone. Where springs occur or this outcrop may be tapped by wells, adequate supplies may be obtained but over much of the county where piped supplies are not available the provision of a water supply, especially for stock or for use in dairies, constitutes a real problem.

In the Land Utilisation Survey Report[3] the natural factor considered to be the major control of land use was the heaviness of the soil. During the years following the depression of the 1930's the ability of the farmer to use heavy land for arable farming has increased and simpler less expensive methods of draining clay land are available. Heaviness of the land and problems of drainage are both deterrents to arable farming but they do not provide insurmountable problems for a well equipped modern farm.

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3. R.M.Auty, Op.Cit. P.263, 276-7, 309.

Table 11

Climatic Tables for Belvoir Castle, Leicestershire.

A. Mean Annual Temperature (°F) (Sea level)

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belvoir Castle	39	40	42	46	53	57	61	60	56	50	42	40
Cambridge	39	40	42	46	53	58	62	61	57	50	43	40

Sunshine hours per day

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belvoir Castle	1.7	2.6	3.6	5.5	6.6	6.4	6.2	6.0	4.8	3.4	2.2	1.4
Cambridge	1.7	2.5	3.9	4.9	6.4	6.8	6.2	6.0	4.9	3.5	2.0	1.3

Percentage of Possible Sunshine

	Jan.	Feb.	Mar.	Apl.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belvoir Castle	21	27	30	40	42	36	38	41	38	32	26	19
Cambridge	21	25	33	36	41	41	38	41	39	33	25	17

Number of Days with Ground Frost

	Jan.	Feb.	Mar,	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belvoir Castle	15.9	15.4	15.9	11.8	3.5	1.1	0.1	0.0	1.1	6.3	13.2	12.7

Section b)

Climate

The climatic conditions obtaining in Leicestershire do not differ materially from those characteristic of the arable farming counties of eastern England. Owing to the position of the county distinct traits of continentality are discernible. Maximum rainfall occurs in the summer months but the amount is not excessive, being at Belvoir Castle for August and September, the two months of the grain harvest, 2.62" and 1.87" respectively. At this time of the year the number of rain days here for August (17) and September (15) similarly are only a little more numerous than in the East Anglian grain areas while the amount of possible sunshine received is also comparable (Table II).

A further factor which shows Leicestershire to be climatically well suited to grain production is that the three summer months are the calmest in the year with calms recorded on 20% of the days. Thus damage to crops resulting from rain and strong winds together is far less liable to occur than in the less 'continental' western areas of England.

Climatically however this county is definitely not a favourable area for one specialised type of crop growing, namely market gardening for the production of early crops. Although the number of frost days occurring yearly, 97, is not excessive they are likely to occur in any month but

Table 11 (continued)

B. Rainfall

Mean Annual Rainfall (inches)

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belvoir Castle	1.7	1.7	1.8	1.5	2.1	1.9	2.4	2.6	1.9	2.7	2.2	2.5
Cambridge	1.5	1.3	1.5	1.3	1.8	2.1	2.2	2.3	1.6	2.4	1.9	1.9

Number of Days with Rain

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belvoir Castle	19	16	18	16	15	12	15	17	15	20	22	20
Cambridge	15	13	14	13	13	12	13	14	11	15	14	16

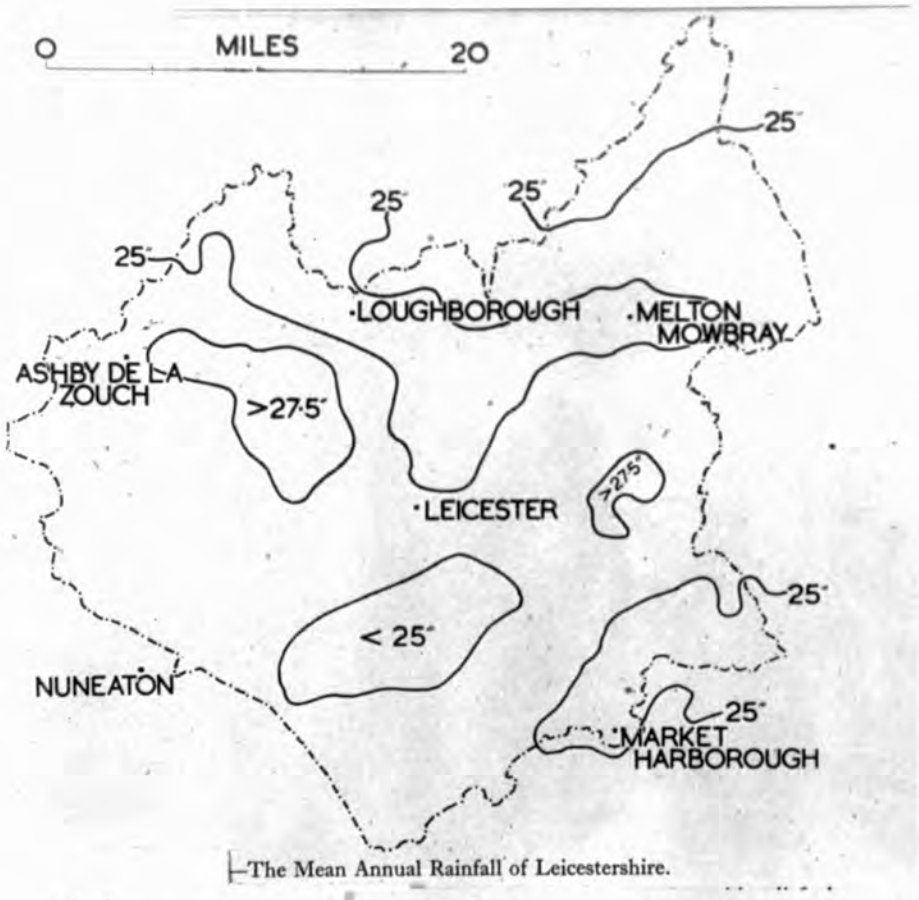
Relative Humidity (Mean of 9h and 21h) (%)

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belvoir Castle	92	87	88	82	80	80	81	83	85	90	91	92

References: L.U.S. Report of Leicestershire. R.M.Auty. pp. 256-258.

B.A. Report 1933. A Scientific Survey of Leicestershire and District. Appendix pp.40-48.

E.G.Bilham. The Climate of the British Isles. Appendix p. 327.



The Mean Annual Rainfall of Leicestershire.

Figure 4.

From R.M. Autry. L.U.S. Report of Leicestershire.

August, with disastrous effects on fruit and vegetables. The occurrence of frost may be correlated with the ridge and valley relief of the county, cold air draining into the valleys in periods of calm weather and clear skies.

Although unfavourable in this respect for one type of farming, frequent frosts in autumn and winter are of value in that they improve the tilth of the heavy clay soils. These soils owing to their impermeable nature promote the growth of pasture grasses and in this way compensate for the rather low rainfall which in light land areas allows pastures to burn in the dry periods. The high relative humidity[4] is also probably associated with the impervious soils and poor drainage which causes pools providing evaporation surfaces to remain several days after rainfall.

The total rainfall of the county varies with relief, being greatest, approximately 28 inches per annum, in the areas of Charnwood Forest and the eastern upland bordering Rutland and least in the low-lying river valleys where the yearly total is about 23 inches. These variations from area to area do not appear to have any real effect upon the distributions of crops at the present time. (Figure 4)

The climatic conditions of the county allow the cultivation of all the major farm crops characteristic of eastern England. But also, owing to the modification of

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4. The relative humidity for all months from October to January is over 90%.

their influence resulting from the impermeable nature of the soil, they favour equally the grassland type of farming more usually associated with the milder and wetter districts of western England. Climatically therefore this may be regarded as a 'convertible' agricultural county.

Vegetation.

According to the Ministry of Agriculture statistics for the county in 1939, approximately 84% of the total area was under crops and grass[5]. It is therefore apparent that very little of the vegetation of the county can with any degree of truth be termed 'natural'. Only 2.5% of the total area was recorded as woodland, heath and rough pasture in the Land Utilisation Survey. Approximately two thirds of this area was classed as high forest and it is known that part of this area, at least, was the result of artificial planting. Along the Belvoir Escarpment remain the fir and oak plantations made in the 18th Century by the Duke of Rutland. Otherwise the only considerable areas of woodland are to be found in Charnwood Forest where also much of the heath and rough pasture occurs. On the hills of south-east Leicestershire a number of areas of woodland occur near the Rutlandshire border. Fox coverts and small patches of woodland are scattered over the county but are

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5. Ministry of Agriculture and Fisheries Agricultural Statistics, England and Wales, Part I, 1939.

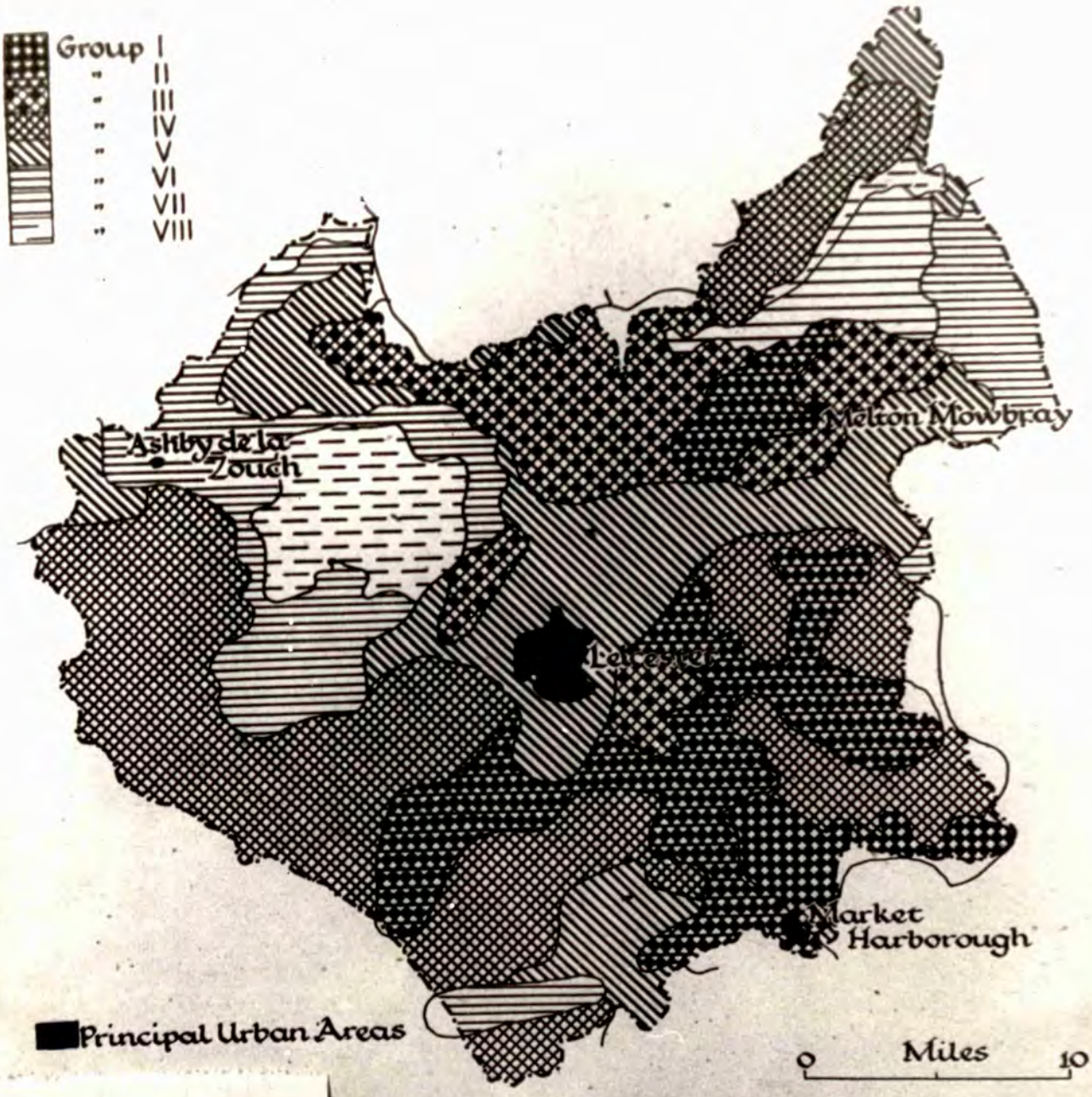

Figure 5. —The Grassland Types of Leicestershire.

From R.M. Auty. L.U.S. Report of Leicestershire.

as a rule shown to be plantations by the presence of ridge and furrow in the land they occupy. Apart from the hedgerows of hawthorn and blackthorn and the associated trees or those of the parklands belonging to the various manor houses and halls the vegetation of the bulk of the county not under arable crops is composed of pasture grasses of differing but usually relatively high quality.

In 1939 approximately four-fifths of the total area of crops and grass was classed as permanent pasture, the most extensive areas lying in the east of the county. According to the observations of Gisborne in 1849[b] it appears that much of the land returned from arable open fields to grasslands after the enclosures was allowed to revert to pasture but was not resown. Similarly after the 1914 to 1918 war, in the subsequent depression land was allowed to 'tumble down to grass'. In this sense therefore the pasture grasses are to a certain extent natural vegetation cover, but they have been regulated by years of carefully controlled grazing and skilled management. In fact the plant succession has been stabilised to what is quite an artificial vegetation for the climate and soils.

From the map of the grassland survey of England and Wales carried out in 1940 (Figure 5) it can be seen that considerably more than 50% of the county is characterised by pastures of the first four out of the total eight grades

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b. Quoted in the L.U.S. Report of Leicestershire P.263. Original source, the Quarterly Review clxvii 1849.

used by the survey. Only very small areas on the Belvoir scarp and in Charnwood Forest were found to be of the lowest grade with a high percentage of the less nutritious agrostis and fescue grasses. The grasses of the river valleys, especially those of the Welland, Soar and Wreak water meadows are of particularly high quality. The south-east of the county is generally considered to be the area of the best pastures, but even here fields of relatively poor pastures are to be found. The best pastures will fatten between one and two bullocks per acre each year with the minimum use of concentrates. On such pastures in this county the best swards are composed of 45% perennial rye grass, 25% wild white clover and 15% rough stalked meadow grass, all highly nutritious plants which will remain productive under careful management for very long periods, some of the meadows of the Welland Valley are believed to have been excellent pastures for over a hundred years. It is noteworthy that Leicestershire possesses a higher acreage of first class pasture with over 30% of the herbage made up of perennial rye grass, whether measured by total area or as a percentage of permanent grassland than any other county in the country. 6.9% of the permanent grass was so classified, an area of 26,300[7] acres, the bulk of which occurred in the Welland Valley.

Northampton the second county, and similarly a grazing county possessed 22,500 acres or 5.8% of the total permanent

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7. Journal of the Royal Agricultural Society of England and Wales 1942-43. Wm.Davies. Ploughing up policy in relation to the fatting pasture districts.

Table 111

The Composition of the Best Swards in Various Counties of England.

The percentage of ground covered by the three best grazing plants.

	Leicester	Northampton	Warwick	Kent	Northumberland
Perennial Rye Grass	45%	40%	44%	35%	45%
Wild White Clover	25%	25%	12%	7%	10%
Rough Stalked Meadow Grass	15%	15%	15%	3%	10%

Reference. Plough up policy in relation to the fatting pasture districts. W.Davies.
Journal of the Royal Agricultural Society of England 1942-1943.

grass. Since of the total lowland grassland of England and Wales only 1.6% was classed as first grade, the extremely high position of Leicestershire on the scale of grassland counties can be seen (Table III).

Over much of the clay land of the east of the county apart from the Welland Valley district perennial rye grass and wild white clover are prominent among the grasses. The second which gives a close valuable grazing sward also grows readily when the pastures are reseeded or land is put down to a temporary ley. On some of the areas of lighter soils, on part of the Marlstone outcrop for example, cocksfoot is particularly abundant. This is a nutritious grass which although requiring careful management is particularly well suited to cutting for hay or grass drying owing to its tendency to upright growth. The heavy clay soils being retentive of moisture allow the grasses to continue growth even in dry seasons. It is only on the lighter soils that there is real danger of pastures burning during dry weather.

The true water meadows, subjected to seasonal flooding, are the earliest of the old pastures[8] in spring growth. It is of interest to note however that in years of drought or continued cold weather in early spring the old sward is definitely later than the areas of temporary grassland and

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8. Old pastures are those which have been under permanent grass continuously for over 30 years approximately.

grazing is delayed. In the drought of May 1940 for example the old pastures in the south east of the county had not started to grow while new leys in the same district had a sufficient cover of new grass to allow normal stocking. Similarly in 1951, a year with a cold late spring, grazing was retarded in the Welland Valley by approximately one month while on a farm on the rather poorer lands in Seagrave parish north of Leicester the ancient turf could carry no stock until 6 weeks after new leys had been supporting a normal herd of cattle.

Although the pastures of the county are, in general, good, this can only partially be attributed to the natural conditions governing vegetations. Poor pastures occur in all areas and although the strong clay lands, especially those of the river valleys, are undoubtedly very favourable for the development of good pastures, it is largely the careful management of the grassland which accounts for their high reputation as grazing and fattening pastures.

Section c)

Economic and Human Factors

The physical characteristics of the county give considerable diversity to the landscape but none give any real physical unity to the area. It has been pointed out however that the chief unifying influence is the dominance exerted by the city of Leicester over the economic life of the area[9]. Situated in a central position in the Soar Valley this administrative market and industrial town is the nodal point of the main lines of communication radiating across the area which it serves. The city exerts its greatest influence upon the agricultural life of the county in its capacity as a market centre and to it is sent a very large proportion of the farm products, particularly milk and stock.

Its dominance is to be expected in view of the fact that in the 1931 census the population of the city, 239,169, exceeded that of the second town, Loughborough, with 26,945 persons by over 200,000. Nevertheless the mining and industrial towns of the west of the county and the two centres of the east, Melton Mowbray and Market Harborough, serve as local markets. All of these are minor focal points in the network of main roads. In addition several large towns beyond the administrative county boundary serve the peripheral areas. For example, produce from the northern

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9. Report of the British Association 1933, Appendix P.3. P.W.Bryan. Leicester in its Regional Setting.

districts, the Trent and Lower Soar Valleys, the Vale of Belvoir and extreme north east is marketed in Derby, Nottingham and Grantham. In the south, similarly, are areas partially served by the markets of Northampton and Rugby.

Not only do the urban centres influence agriculture in providing markets but also they form sources of possible labour and conversely attract labour from the agricultural districts. The limited and regular hours of work of urban occupations are considered by many to compare favourably with the long hours associated with many of the smaller farms especially those concerned with dairying, and with the need for overtime work especially in the accepted holiday season. However not all the disadvantages are on the side of the more urbanised areas. Such areas can usually more readily obtain casual seasonal labour for lighter harvesting work than the remote country areas.

With regard to the number of urban and industrial centres there is a definite contrast between the west and east of Leicestershire. The towns of the western area are primarily mining centres of the concealed or exposed parts of the coalfield or outlying centres of the hosiery or leather industries. In addition quarries in the Charnwood district and at Breedon and gravel pits near the Trent also provide alternative occupations competing for labour.

In the eastern part of the county the vast majority of

the settlements are groups of farms with few other buildings, and industries of any kind are largely absent. Only two urban centres occur, Melton Mowbray and Market Harborough, while the iron stone quarries and a small number of Ordnance Factories are the only other enterprises likely to compete with agriculture for labour.

The convenience of layout and the accessibility of farms depend chiefly upon economic and human factors. In all parts of the county compact 'homestead' type farms occur but especially where the villages are merely groups of farms many are of the strip type extending away from the farm buildings. Such farms are usually inaccessible and inconvenient especially for mixed or arable farming. They are most numerous and inconvenient in the case of such linear settlements as Billesdon, Long Clawson and Tur and Thorpe Langton where many are only one field wide. In the more industrial parts of the county farms of this type are less numerous.

Accessibility to main roads for marketing produce or to minor roads and tracks for the easy movement of farm machinery are also factors of considerable importance facilitating the economic use of the land especially in mixed or arable farming. In general the western districts of Leicestershire are better served with main roads than the east, while fewer areas of land inaccessible from roads or hard tracks also occur. In the eastern districts many of

the minor roads are gated and a considerable number of the bridle roads and tracks indicated on the 1914 edition of the 6 inch maps are completely overgrown and barely traceable in those areas where all-grass farming was practised in the 1930 depression.

In connection with the physical geography of the county it has been noticed how poor the area is in water bearing rocks. The close connection between the siting of rural settlements where water bearing glacial gravels or springs from the Marlstone occur is most marked. The remoter districts away from the urban centres, with supplies piped from outside areas, are far from well served with water mains. In the National Farm Survey of 1941-43 it was shown that in the county as a whole only between 30% and 44% of the farm houses possessed piped supplies[10]. On the other hand electricity supplies are better, the county falling into the second highest group distinguished by the Survey[10] in which between 35% and 50% of the holdings possessed either public or private supplies.

It is clear that as far as economic and human factors are concerned definite contrasts occur between the urban and the rural parts of the county. In the more urbanised areas, mainly west of the Soar and near Leicester itself the holdings

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10. Ministry of Agriculture and Fisheries. National Farm Survey of England and Wales. 1941-1943. A Summary Report H.M.S.O. 1946 pp. 64 and 66.

are rather better placed with regard to roads and markets, and main water supplies than the remoter areas towards the south and east of the county.

CHAPTER II

The Development of Agriculture in Leicestershire from the Break up of the Open Field System until the 1930's.

In order that the state of agriculture in the county during the depression of the 1930's can be more clearly understood it is necessary to consider the development of the system of farming and the changes which had taken place in preceding times. A brief survey of the agricultural changes in the county after the break up of the three field system is therefore included, but a detailed discussion of these and of the geographic and economic factors underlying them is considered to be beyond the scope of this thesis.

Enclosure had been carried out in certain parishes in the county before 1600, especially in the east and in the south where the majority of the larger sheep runs associated with the early enclosures were to be found. The greater part of the area, however, was still in the open fields until the Parliamentary Enclosures took place during the second half of the 18th Century[1]. Before these later enclosures the bulk of the unenclosed land was in tillage, and traces of the Mediaeval ridge and furrow[2] can be seen in

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1. M. W. Beresford. Glebe Terriers and Open Field Leicestershire. Maps p.77. Studies in Leicestershire Agrarian History. Editor W.G.Hoskins. Published by the Leicestershire Archaeological Society.
2. The age and origin of ridge and furrow is highly controversial but in Leicestershire they probably resulted from open field ploughing.

many of the permanent pastures and recently broken fields, where for many years strip ploughing had been practised, The heavy clay loams were considered to be wheat and bean lands, and for a long period the prevalent system of open field agriculture involved a three course rotation of wheat, beans, and fallow with probably also barley and peas and later roots included to a lesser extent[3]. However the open field system does not appear to have been entirely rigid, for, evidence of variations in practice exists. Areas of meadow and of grassland were to be found within the open fields in some districts, for example, near Lutterworth and in the town lands of Market Harborough[4].

In addition it was recorded that in some parts of the county sheep were, by common agreement, fed on winter corn in the open fields[5]. Both of these variations from the strict practice of what is generally accepted as the three field system of agriculture is calculated to facilitate stock farming, suggesting therefore that even in pre-enclosure times stock were becoming of particular importance in the husbandry of the county.

By the time Arthur Young journeyed through Leicestershire in 1770 much of the county had been enclosed and his reports

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3. G. E. Fussell. Four Centuries of Leicestershire Farming. Studies in Leicestershire Agrarian History. P.155.
4. G. E. Fussell. Op.Cit. Pp.155 and 159.
5. G. E. Fussell. Op.Cit. P.162.

provide much of the evidence available concerning the state of agriculture at this time. Although open fields still remained, cultivated under the wheat or barley, beans and fallow system, both Young and Defoe who also travelled through the county earlier in the 18th Century remarked upon the fact that grazing farms occupied "the principal part of the county"[6]. It was also noted that turnips were cultivated in some of the enclosures but Young states that the graziers were foolish not to grow cabbages, a crop suited to the heavy soils and were forced to buy for winter keep. "turnips from near a 100 miles off"[6], a statement which shows the graziers to be at that early date as they were in the 1930's dependent upon outside areas for winter feed supplies. At this time cows were purchased from Lancashire at the age of three, four or five years and fattened in the enclosures from April to November. Sheep were also fattened and it was considered that 100 good acres would fatten 50 cows and 120 sheep each season[6], a relatively low carrying capacity compared with the present standard.

Towards the end of the Century Marshall who had lived for some years in the north west of the county gave what is considered to be a reliable report in his writings on the Rural Economy of the Midland Counties published in 1790. He records that the rotation most common in the enclosures under

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6. G. E. Fussell. Op.Cit. P.164.

tillage involved the cultivation of oats, wheat and barley in successive years with possibly turnips before the barley, after which the land was put down to grass for 6 or 7 years. This is a type of ley farming common in the grazing counties of south west England. Marshall also commented on the fact that turnips were losing popularity on the strong land. The cultivation of these roots does not seem to have met with much success in the county. This would appear to be an instance of the influence of soil type upon the practice of the 'New Norfolk Husbandry' which had been developed in a county of lighter soils and which depended so largely upon the cultivation of the turnip, a light land crop. A further modification mentioned by Marshall was that clover was taking the place of beans. He also noted that the graziers purchased steers from Scotland, Wales and Ireland, areas from which store cattle were brought to the county in the 1930's.

About the agriculture of the county at the beginning of the Nineteenth Century a good deal of information is available. In 1801 crop returns were made for the majority of the parishes by the local clergymen and these have been analysed by W. G. Hoskins[1] who considers them to be reasonably reliable. In addition Pitt's 'General View of the Agriculture of Leicestershire' written for the new Board of

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1. W. G. Hoskins. The Leicestershire crop returns of 1801. Studies in Leicestershire Agrarian History Pp.127-153.

Agriculture in 1807 gives a full picture of the county at this time[8]. Both these sources indicate that there was, in general, a marked decrease in the area of arable land as a result of the enclosures. Pitt states 'It is generally understood and is I believe an unquestionable fact that in consequence of the enclosures which took place in this county, during the latter half of the last century, it does not now nearly find itself in bread, notwithstanding its fertility and though its population is very little higher than that of the average of the kingdom, and it was before then a corn county'[9]. In referring to the Vale of Belvoir in particular, an area which according to Gabriel Plattes[10] in the 17th Century produced the best corn in Europe Pitt writes. "The course of agriculture has been turned topsy-turvy, the richest land in the Vale formerly tillage, has been laid to grass; and the poorer land up the hills and the skirtings of the Vale, formerly a sheep walk, have been brought into tillage ..... rich deep soil is compelled to lay at grass[11]" To give a general picture of the proportion of arable and pasture land in the county Pitt states "the tillage land in Leicestershire is much less in proportion

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8. William Pitt. A General View of the Agriculture of Leicestershire 1807.
9. W. Pitt, Op.Cit. P.79.
10. Quoted in the L.U.S.Report of Leicestershire P.300.
11. W.Pitt. Op.Cit. P.14.

than that of other counties". "In the south-east and middle of the county are many instances of farms and occupations without any tillage land whatever. In the north and west a proportion of each farm is commonly kept in tillage"[12]. He also notes that on the dairy farms, which were becoming numerous in the north, normally each had arable land to produce straw and turnips for winter use, while a remark that those parishes where the land is of inferior quality have a greater proportion of tillage than where the land is richer points to two factors. Of these one is the possibility that the poorer lands with correspondingly poorer pastures could not be profitably utilised under all grass farming, while secondly it appears that pastoral farming was now definitely dominant in the farming economy and therefore commanded the better land. This would appear to contradict any suggestion that the heavy lands passed out of tillage owing to their unsuitability for crop production.

The general statements made by Pitt are largely supported by the 1801 crop returns although these show a lower proportion of arable land than he estimated and also a different order of importance of the various crops[13]. Comments are made on some of the 1801 returns that the arable area has been reduced as a result of the enclosures. About one quarter or less of the land seems to have been under

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12 W. Pitt. Op.Cit. P.87.
13. W.G.Hoskins Op.Cit. P.137.

arable crops in the majority of the enclosed parishes, while in contrast Great Easton parish, unenclosed until 1806 returned as arable the greater part of the 1,376 acres of agricultural land. In view of the contrasting influence of the recent war upon the arable acreage it is of interest that only very small areas of pasture appear to have been ploughed as a result of the Napoleonic wars.

The enclosures of the second half of the 18th Century saw the county transformed from an area of arable open field agriculture probably with considerable emphasis upon stock farming to a predominantly pastoral county, not self sufficient as far as grain crops or winter stock feed were concerned. It became concerned chiefly with dairying especially for cheese production and with breeding and fattening stock. The fattening farms depended as they do at the present time upon outside areas for many of their store animals. They were summer stock while very little stall fattening was carried on.

Other points of interest raised by Pitt are still noticeable at the present time. He mentioned the inconvenience of the layout of many farms owing to the fact that many of the farm buildings were grouped in the villages rather than the midst of the holdings. He also noted the lack of farm buildings, especially sheds for wintering dairy or fattening stock. At this time 150 years ago therefore many features of the agriculture predominating in the 1930's

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could already be distinguished.

At the end of the French wars a great depression in farming occurred. Evidence given before select committees set up to investigate the state of agriculture serve as a source of information about Leicestershire farming during the 19th Century.[14]

Wheat could not be grown on the worn out clay lands, worn out possibly owing to the cultivation of too many exhaustive crops without adequate attention being paid to rotations and manuring. The lighter lands formerly considered too poor to produce good crops were found to give better yields than the old wheat and bean lands. The light lands also owing to greater ease of working permitted economy in labour. Various rotations appear to have been practised. In some districts pastures were ploughed, cropped for a number of years and then allowed to revert to grass-land; the land suffering accordingly. This was however not encouraged after 1836 owing to the relatively low corn prices. Practically the whole county was concerned with purchasing stores and finishing them for the London market where they were sold with only a very small margin of profit. Buildings on many farms were said to be inadequate and stall feeding stock for dairying or fattening was not possible. In addition good land is said to have been thrown out of

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14 G.E. Fussell Op.Cit. P.170-172.

cultivation owing to the exorbitantly high poor rates.

Conditions were aggravated in 1830 by the outbreak of rot among sheep. This was indirectly beneficial as it encouraged extensive drainage and many parts of the county are still drained by the ancient turf and tile drains. Somewhat surprising, in view of the fact that a short time later the pastures of the county were greatly praised, is the statement that much of the grassland could have been improved by reseeding. By 1866 when the first Ministry of Agriculture returns were made three types of stock farming which characterised the county in the 1930's had been firmly established. On the best pasture lands summer fattening farms predominated. Stock were bought in spring from March to May and sold from July to November. Few were wintered although Welsh and Scottish runts were purchased in the autumn to graze down the coarser grasses in winter and promote the growth of better pasture. On the less good pastures farms were concerned with breeding or rearing stores, and about one sixth of the land was usually cropped for the production of straw and roots. Dairying was of increasing importance in the northern half of the county but cheese was still the chief product. Sheep were fattened with cattle and the Leicester breed were giving way to cross-breeds, usually Border Leicesters crossed with Lincoln or Down breeds. The only cattle bred in the county were Shorthorns, the Longhorns bred by Bakewell at Dishley having

disappeared. Stores were bought chiefly from Hereford, Wales, Ireland and Scotland.

Mixed farming with a relatively high proportion of arable land was restricted to the areas of light soil north east of Melton Mowbray, especially to the areas of Lincolnshire Limestone where barley turnip and sheep husbandry predominated.

During the 1870's a number of bad seasons increased the tendency to lay fields down to grass. For example on a 515 acre farm near Bagworth 125 acres were laid to grass between 1871 and 1874. It was possible in this way to increase the number of stock while decreasing the labour bill and also avoiding the necessity of finding labour needed for arable farming where competition for labour, from mining, made this a serious problem.[15]

From 1866 onwards reliable agricultural statistics are available and the continuous decrease in arable acreage in the county can be traced from this year until 1939[16]. It is clear that the downward trend in arable farming in the depression following the 1914-1918 war was only part of a long continued process apparent throughout the period for which statistics are available, and it would appear, merely a continuation of that initiated at the time of the

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15 G. E. Fussell. Op.Cit. P.174.
16. Ministry of Agriculture Statistics quoted in the L.U.S. Report of Leicestershire P.326.

Parliamentary enclosures of the 18th Century ([redacted]). The ploughing up campaign of the latter part of the 1914-1918 war caused only a temporary increase in the arable acreage and by 1929 the downward trend had been fully restored.

A slackening in the pace at which land was laid to grass from the mid 1930's onwards suggests that the maximum area of the county which could be profitably farmed under a grassland system was so farmed and the bulk of the arable land retained was essential for the type of stock farming practised, especially on the poorer lands. The prolonged decrease in arable farming was by no means restricted to Leicestershire. In the east Midlands both the neighbouring counties of Northamptonshire and Nottinghamshire show similar trends but in neither case does the proportion of farm land in arable use fall as low as in Leicestershire and is at all times very much higher in Nottinghamshire. This latter county possesses large areas of poor light lands which, could not owing to their poor nature be profitably farmed under an all grass system. Northamptonshire on the other hand, being more similar to Leicestershire in possessing a higher proportion of good quality pastures usually on the heavier lands, was better suited to grassland farming. It was with this latter county that Leicestershire shared its outstanding position as the area of the county in which permanent grassland farming was most highly developed.

Since the 1870's economic factors making arable

farming generally unprofitable and natural factors which rendered much of Leicestershire well suited to all grass farming combined to bring about the type of farming which characterised the county in the 1930's. The drastic changes resulting from the 1939-1945 war more than compensated for the decline of arable farming of the preceding 75 years. In 1944 the arable acreage represented over 50% of the total agricultural land[17].

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17 Ministry of Agriculture statistics England and Wales Part I, 1939-1944.

ENGLAND AND WALES.

The Percentage of Farm Land Under Permanent Grass. 1940.

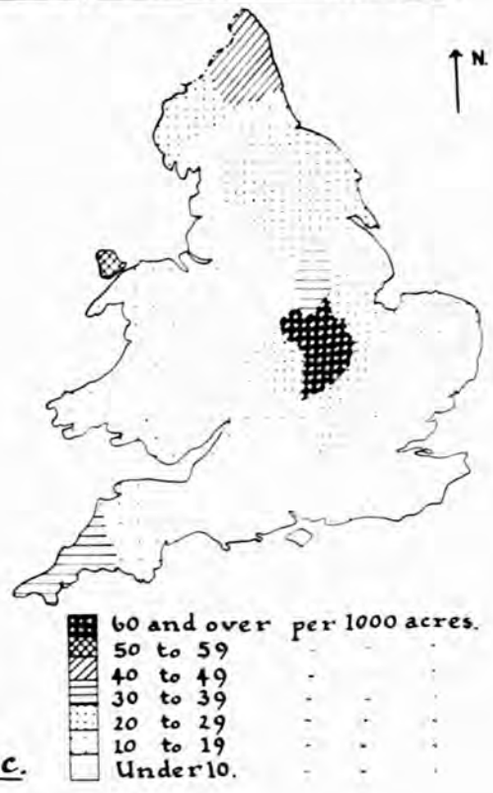
Figure 6a.

Dairy Cattle per 1000 acres of Total Crops & Grass. 1940

6b.

Scale Miles.
0 120.

Bullocks Aged 2 years and over per 1000 acres of Total Crops and Grass. June 1940.



6c.

CHAPTER III

LEICESTERSHIRE AGRICULTURE IN THE NINETEEN THIRTIES

In England and Wales in 1940 the counties with over 70% of the total area of crops and grass under permanent pasture (Figure 6a) fell into two main groups. Those of Wales and the north of England contained large areas of upland country. Although the rough grazing land excluded from the total area of crops and grass occupied much of the mountains, nevertheless a large acreage of the agricultural land is steeply sloping hill country frequently with poor shallow soils. In addition the uplands without exception received a mean annual rainfall of over 40 inches, and in some cases over 80 inches. Coupled with this the associated heavy cloud cover and lack of sunshine militates against the production of the major arable crops. Natural factors over which man can exercise the minimum control renders these counties generally unfavourable for arable farming.

In England roughly south of the Pennines and east of the western uplands, on the other hand, the grassland counties are lowlands with a mean annual rainfall below 40 inches. All however, include within their boundaries large areas of low lying land, in many cases ill-drained, or areas floored by impermeable clays or marls giving rise to heavy clay soils which are expensive and difficult to till.

The alluvial 'fen' country of Somerset, the Weald clay vales of east Sussex and the clay lands of the Midlands, all, in the 1930's, areas largely under permanent grass caused the counties in which they occur to rank among those in which grassland farming predominated to a very marked degree. (Fig 6a) Leicestershire, the lowland county with the highest proportion of land, 78% of the total area under permanent grass, fell into this latter group. In these lowland counties, in contrast to those of the uplands, certain of the natural factors which militated against arable farming in the 1930's can now be overcome with comparative ease. However, considerable additional expenditure is necessary and this is likely to be undertaken only if it appears that it will be justified by greater future returns from the land.

The extent to which the counties specialised in the different types of stock farming is indicated by the numbers of the different groups of dairy, store or fattening stock. Although the largest single group of cattle was dairy stock, Leicestershire ranked as one of the lesser dairying counties, with an average density of this type of cattle considerably below that obtaining in the west of England, especially the south-west and in Cheshire and the neighbouring counties (Figure 6b). Similarly the density of store cattle was below that of the rearing counties of the Welsh borderland, while the numbers of sheep were not above the average of the Midland counties. The one group of stock particularly numerous was that comprising bullocks

Figure 7. The Land Use Regions of Leicestershire.

From R. M. Auty, L.U.S. Report of Leicestershire.

over 2 years old (Figure 6c). The density of these cattle shows that as a stock fattening county it was unsurpassed by any in the country although closely followed by Northamptonshire and Rutland. Outstanding in this one respect, it was nevertheless essentially a mixed stock farming area.

Although the agriculture of almost the whole county was based upon grassland farming the degree to which the grassland dominated varied from area to area. In the Land Utilisation Survey Report nine land use regions were distinguished (Figure 7), but these depend in some instances upon variations only in details of the system of farming. In general four main regions stand out with comparative clarity.

In the east of the county occupying the bulk of the land east of the Soar a great expanse of grassland, broken only by occasional arable fields, indicated the true grassland farming region. It included the greater part of the Vale of Belvoir, the Wold country north of Leicester, the larger river valleys and the bulk of the land underlain by the Lias Clays whether exposed or covered by boulder clay.

Standing out clearly in contrast to this area, towards the north-east of the county a mixed farming region associated with the outcrop of Middle Lias Marlstone occurred in the parishes of Eaton and Croxton Kerrial. Farther to the north-east the only area in the county which could truly be termed 'arable' occupied the outcrop of the Inferior Oolite

Beds. South of Leicester and west of the Soar roughly corresponding with the outcrop of the Trias and older formations an area of mixed arable and grassland farming had developed.

The grassland area to the east of the county with over 90% of the total farm area under permanent grass (Figure 20a) was mainly concerned with stock rearing and fattening, although dairying was not unimportant and over part of the area, especially in the north, dairy cattle represented between one third and one half of the total cattle. In the Vale of Belvoir and near Leicester it was the dominant activity. In the extreme south where the first class pastures occur, the true grazing industry, concerned primarily with finishing beef cattle for market on summer grass, reached its maximum development. Sheep were also numerous and finishing of store sheep and rearing fat lambs was an important part of the farm economy.

Where the few scattered areas of arable land occurred they almost always occupied areas of lighter soils: those derived from the glacial gravels, or older alluvial terraces. The heavy clay loams derived from the boulder clays and Lias clays were almost entirely under permanent grass, as were the low lying ill-drained riverside areas. As was pointed out in the Land Utilisation Survey Report, these heavy clays with their greater demands on labour discouraged arable farming in this time of low prices. This was

especially the case since they provided good quality summer pasture and winter feeding stuffs were relatively cheap. The arable fields were chiefly under fodder crops especially on the dairy farms and cash crop farming was virtually absent.

In the north-eastern areas of lighter soils cash crops became of importance in the farm economy both of the Marlstone areas and the arable Inferior Oolite district. In the former Wheat, barley and potatoes were grown for sale on the dairy and general stock farms. In the latter arable areas the light soils were farmed under the barley and wheat, turnip and sheep system, and cattle were of smaller importance than elsewhere.

In the western part of the county dairying was the chief activity. Few other cattle were reared but bull calves were normally sold to graziers in other districts. Wheat was cultivated for sale on some farms but only a small area was under this crop compared with the amount grown in the area during the 1870's when cereal production was more profitable. The bulk of the arable land was under fodder crops. The Triassic and older formations gave larger areas of lighter free working soil than did the clay lands of the east of the county.

Charnwood Forest, an area with a lower area of arable land and poorer quality pastures, was shown to have a farming economy which differed very little from that of the

neighbouring areas. Most of the poorer land under woodland heath or rough pasture was excluded from the agricultural land under crops and grass. Smaller quantities of cereals were grown however in this area with somewhat lower temperatures and higher rainfall than the surrounding lowlands.

At this time two main factors appeared to govern the use of the land. The distribution of the arable land followed closely the occurrence of lighter more free working soils. The incidence of stock fattening and the higher densities of stock were closely related to the occurrence of the better pastures of the river flood plains and of the clay lands, especially those of the south-east. Economic considerations on the other hand, appeared to cause the greater concentration upon dairying near the urban markets.

Thus natural factors appeared to exert the strongest influence upon the distributions of arable land, stock and types of farming in the county at this time of agricultural depression. Such natural 'controls' however exerted their influence indirectly, through economic factors. The heavy land was not more unsuitable for crop production than the lighter land but it was more expensive to till and the returns obtainable did not warrant the extra expenditure. Similarly the light lands in tillage in the north east of the county gave rise to poor pastures which could not be farmed economically under an all grass system and the retention of arable land was therefore necessitated.

CHAPTER IV

CHANGES IN BRITISH AGRICULTURE WHICH HAVE TAKEN PLACE BETWEEN THE PRE-WAR PERIOD AND THE PRESENT DAY

During the time between the pre-war and present day periods the economic position of the individual farmer and technical farming matters have changed to such an extent that it has been virtually a time of agrarian revolution. It is necessary to examine the present day agriculture of Leicestershire in the light of these changes if the recent developments are to be understood.

At the end of the 1920's and during the 30's there was overproduction and overstocking of agricultural commodities in the world in view of the lack of available purchasing power in many consumer countries. Prices of imported produce were consequently low and it was essential that costs of production in Britain should be reduced if the products were to be able to compete in the home market.

In general the labour bill constituted the largest single item in the total cost of production. Agricultural wages rose after the 1914-1918 war, as a result of the rising cost of living and after considerable fluctuations they had by about 1930 reached approximately 30/- per week, an increase of nearly 100% over the average of 15/8d a week in 1914. A further disadvantage for farmers in years of bad weather and poor harvests was the fact that new

Table IV

Changes in the Percentage of Arable, Mixed and Pasture Holdings according to the Ministry of Agriculture Classification. 1924 and 1930.

% of Total Holdings over 20 acres in area.

	1924	1930
Arable	18%	17%
Mixed	34%	30%
Pasture	48%	53%

Reference. Agricultural Statistics 1931. Journal of the Royal Agricultural Society of England 1931 P. 283.

legislation enforced the payment of a full week's wage whether or not it had been possible for the labourer to be fully employed[1]. This rise in wages and consequently in production costs took place in a time of depression and falling agricultural prices, and outweighed any financial assistance granted to farmers. Arable farming with its greater labour force was most seriously affected and as it has already been noticed, after the ploughing campaign of the war the policy of turning over to grassland farming with its lower labour requirements was resumed with renewed vigour (Table IV). From 1924 to 1930 over one million acres were converted to pasture in England and Wales[2]. In Leicestershire alone, a few years earlier, namely from 1920 to 1924 land was laid to grass at the rate of 6,000 acres a year. Stock farming for beef or mutton production also suffered at this time, but not to so great an extent as arable farming, in those areas like the Welland Valley district where first class pastures made possible a specialised production of high grade meat[3]. It was the lower grades of meat which bore the brunt of the competition from imported chilled or foreign products. It was stated

1 Journal of the Royal Agricultural Society of England 1931. A century of Wages and Earnings in Agriculture. C.S. Orwin & I.S. Felton. p.249.

2 Journal of the Royal Agricultural Society of England ~~& Wales~~ 1931. T. Hacking. The Making of Pastures. The Better Midland Areas. p.93.

3 L.U.S. Report of Leicestershire . p.286

in the Land Utilisation Survey Report that the beef fattening districts suffered from the reduction in the demand for large joints[4]. A survey carried out in the better Midland areas, however, indicated that the catering trades provided a sufficient market to absorb the good quality products from these areas[5].

The only type of farming, apart from specialised market gardening, which was relatively free from overseas competition was dairying for liquid milk production. The cheapness of imported feeding stuffs facilitated the expansion of this type of farming mainly on a grassland basis although a small proportion of the land, especially in poorer areas was retained for the cultivation of roots or other bulky fodder crops. The development of efficient transport for the collection of milk from remote areas lacking a local market likewise encouraged the expansion of this type of farming. Exacting labour conditions were the only real disadvantage.

It was apparent that under existing conditions the only way in which British agriculture would be enabled to recover from depression and to compete in the market would be to apply large scale 'factory' methods to the system of farming and, by mechanisation to reduce the expensive labour

[4]L.U.S. Report of Leicestershire P. 296

[5]University of Oxford Agricultural Economics Research Institute. Midlands Grazing Industry. A study of the relative economic advantages of grazing young or old cattle. A. Bridges and A. Jones. P. 40.

force employed. As early as 1928 experiments had been carried out to assess the relative costs of ploughing with horse and tractor drawn ploughs. According to a German experiment the cost per acre was reduced from 11/4d or 16/6d with a two horse plough to 11/- with a tractor. In England the cost was reduced by between 6/- and 4/3d per acre; horse ploughing costing from 14/- to 20/- per acre and tractor ploughing from 8/- to 15/9d[6]. An experiment carried out in mechanisation in 1930-31 on a large 1,000 acre arable farm in Norfolk, specialising in cereal, mainly wheat production, reduced the labour bill from £4,000 to £700 per annum[7]. Fields averaged 50 acres in size and therefore facilitated the use of large scale machinery, and soil and relief were also regarded as favourable. A grain drying plant was installed for use in seasons when otherwise grain harvested by combines would have been spoilt by moisture. This mechanisation involved capital expenditure far exceeding that which could be undertaken by an average farmer. The typical farm of England, which is a relatively small holding with fields about 10 acres or less in area, is very different from this experimental farm. The most numerous single size group in Leicestershire for example is that of

[6] Agricultural Research in 1928. Royal Agricultural Society of England. J. Owen. Agricultural Engineering. P. 83, 84.

[7] Journal of the Royal Agricultural Society of England, 1932. H.G. Robinson, S.E. & J.F. Alley's Mechanised Farming. P. 165.

holdings between 50 and 100 acres in area.

A further factor, which provided an insurmountable obstacle to mechanisation in the time of depression when it was so badly needed, was the lack of capital available for investment. Few but the "gentlemen farmers", deriving incomes from other sources, could afford either to obtain additional land in order to make their farms a more economic size for mechanisation or undertake the initial expense of equiping their holdings with sufficient power machinery.

As a result, in 1939, the horse still provided the chief source of power on the majority of holdings; hence partially at least the tendency for the lighter land to be selected for arable use. In 1928 in Midland England tractors were insignificant on farms with less than 100 acres of arable land, but of the farms with between 300 and 400 acres under the plough over 50% used tractors. This result was obtained by a survey of 886 farms[8], and it indicates that the average Leicestershire mixed farm with an area of between 50 and 100 acres of which not more than 25 or 30% was arable land, was at this time entirely dependent upon horse power.

The 1939-1945 war had a three fold effect upon farming in Britain. The demand for home produced foods substantially increased prices obtained by the farmer either from the consumer or from Government subsidies. The food production

[8] C.S. Orwin. Agricultural Economies. Agricultural Research in 1928. P. 64.

campaign had been initiated in 1939 with the introduction of a £2 per acre subsidy for ploughed pasture. This had caused only a slight increase in the arable area but facilitated the organisation of agriculture for wartime food production. Before the war it was estimated that only 35% to 40% of the food stuffs consumed in Britain were home produced, but by 1945 this proportion had risen to 75%[9] an increase of approximately 100%.

The increased profits from farming made capital available and although certain improvements, the provision of new buildings or of water supply systems, for example, were not possible farmers were able to carry out mechanisation. The need for this had been further increased by the shortage of labour. Many types of machines had by this time been adapted for use on small farms, a factor of particular importance. Concessions in taxation were made to assist farmers in obtaining machinery or alternatively the War Agricultural Executive Committees undertook contract work on farms without necessary equipment. An indication of the speed and extent of mechanisation is the fact that between 1942 and 1944 the number of tractors in use on farms in England and Wales nearly doubled, having increased from 94,740 to 168,860. There was also a corresponding increase in other power machinery especially in implements which

[9] L.D. Stamp. The Land of Britain. Wartime Changes in Land Use. 1939-1945.

economised labour. Combine harvesters for example increased in number from 790 to 2,920 in the same period[10]. In various parts of the country grain drying plants have been set up facilitating the use of combines in years with unfavourable weather. In an attempt to ensure that the machinery was used to its best advantage trained instructors were appointed by the Ministry of Agriculture in each county in 1942.

The third major effect of the war was that the compulsory ploughing enforced in all areas, where natural conditions would in any way permit it, brought back into cultivation the lowland grasslands, especially those of the Midlands which had been permanent pastures for so many years. In England and Wales the arable acreage increased from 28% to 60% of the total agricultural land between 1939 and 1944[10], the latter being the year of maximum war time ploughing. The emphasis was placed on the production of 'human' foods especially wheat and potatoes, while the cultivation of increased quantities of animal feeding stuffs was necessary in order to replace the former imports of concentrates. Imports of animal feeding stuffs decreased from 5,114,000 tons in 1938 to 711,000 tons in 1945[11]; a reduction of

[10] Ministry of Agriculture Statistics, 1939-1944. United Kingdom. Part I.

[11] R.G. Stapledon. Farming and Mechanised Agriculture. Journal of the Royal Agricultural Society 1946.

approximately 86%. The production of winter feed was particularly important in order to maintain and increase the production of milk and other dairy produce owing to the loss of Continental supplies. Dairy farming which had expanded in pre-war days gained still more ground.

Throughout the lowlands of England and Wales where formerly grassland farms with only a very small area of arable land had been the typical holdings, there developed a system of mechanised mixed farming specialising in cash crop production and a largely self supporting type of dairying. Other types of farming gave way to those considered more necessary in the war-time economy.

A variety of other changes in agriculture took place. For example, in order to overcome the difficulty of grain losses through laid crops supplies of seed of the stronger strawed varieties of wheat were made available. Cheap supplies of lime were also obtainable. In the districts of the Midlands with heavy or medium clay loams such factors were of particular value. In the grazing areas also the tenants agreements which forbade the ploughing of pastures without the landlord's consent were made invalid.

It was inevitable that the concentration upon arable farming and the reduction in pasture should bring about the reduction of stock. Cattle increased by approximately 6% but sheep decreased by 30% and pigs by 58%[10]. Experiments

[10] Ministry of Agriculture Statistics 1939-1944, United Kingdom. Part I.

were carried out to discover whether or not the reduction of stock must necessarily accompany an increase in crop land at the expense of pasture. These experiments showed that a reduction could be avoided if ley farming were adopted but in fact such a system of farming was frequently impracticable owing to a variety of problems on individual holdings.

The changes enforced by the economy of the war were so great in the Midlands especially in Leicestershire that even with the relaxation of controls and when compulsory ploughing is no longer enforced the war-time system of farming still persists.

In contrast to the general depression and lack of effective demand for home produced food which occurred after the earlier war there is at the present time a world wide lack of food stuffs. The need to reduce expenditure on imports has led to the prolongation of agricultural prosperity in Britain. Legislation has been brought into force to help to maintain the output of produce from the land. The 1947 Agriculture Act has given guaranteed prices for the staple farm products, grain, milk and meat. Although these may be varied at will by the Ministry of Agriculture it has given a much higher degree of security to the farmer and encouraged, through giving confidence in the future, the investment of capital in farm improvements. A further incentive to improve the condition of the land and of farm equipment and buildings has been the fact that

the Ministry of Agriculture will pay part of the cost of certain of these. Thus 50% of the cost of tile or mole drainage, or of the installation of a private water supply will be borne by the Ministry[12].

The inspection of farms, their classification and the power of the Ministry to take over land which is not well farmed have also helped to raise the general standard of farming in the country as have the various advisory services of the Ministry and the National Farmers Union.

Wages in agriculture still, as in the pre-war period constitute the largest single item in the cost of production; in 1951 the average wage of a farm labourer had risen to about £6 a week. In contrast to the pre-war period however this is a time of agricultural prosperity with rising or stable prices of produce. There is a shortage of labour but the mechanisation of agriculture partially compensates for this. On heavy lands where it was necessary to plough two or three times in order to obtain a good tilth with a horse plough, a single operation, using a medium powered tractor of 18 to 20 draw bar horse power which permits deep ploughing will frequently suffice. The time taken to prepare the land has been greatly reduced with consequent saving of 'man hours' and expense. Animal feeding stuffs

[12] The prices of products and the amount of costs of improvements borne by the Ministry can be varied from year to year.

Table XV

Cost of Feeding Stuffs 1939-1951.

Food	Basic Price per Ton.								
	1939			1949			1951		
	£	s.	d.	£	s.	d.	£	s.	d.
Flaked Maize	7	7	0	12	0	0	32	12	6
Maize and Meal	6	15	0	10	17	6	31	10	0
Decorticated Groundnut Cake Meal	7	5	0	9	2	6	34	0	0
Soya Bean Meal	9	0	0	11	17	6	34	5	0
Balanced Dairy Cake	7	15	0	24	0	0	35	10	0

Reference . Journal of the Ministry of Agriculture
Dec. 1951 P. 406.

continue to be scarce and a further factor to encourage the maintenance of arable land on stock farms has been the sharp rise in price of concentrated feeding stuffs. Formerly costing about £8 per ton in 1939 they have now risen to over £30 per ton (Table V).

In 1951, therefore, six years after the end of the war, many of the economic conditions which influence farming are the reverse of those obtaining in the corresponding period following the 1914-1918 war. The economic forces leading to the decrease in arable farming no longer hold sway and the war-time system of farming in the areas concerned chiefly with livestock production has been more firmly established. In similar times of farming prosperity or national emergency in Britain the high prices and chances of profit have led to the tillage of heavy lands which are difficult to work. Never before, however, has the farmer been armed with such powerful equipment with which to overcome the particular problems of tilling the heavy clay loams such as occur in the Midlands.

THE PROPORTION OF FARM LAND IN ARABLE USE.

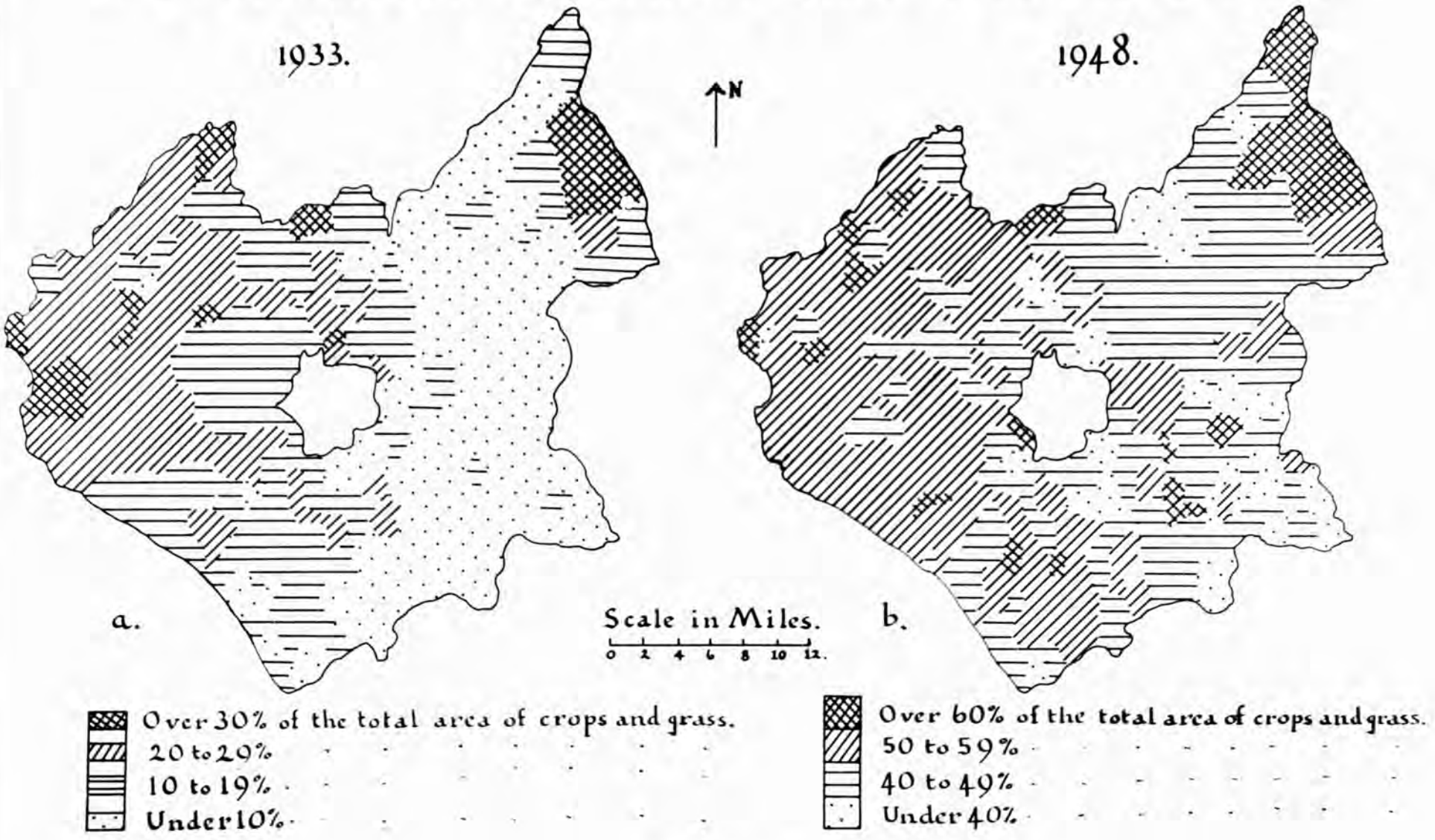


Figure 8.

CHAPTER V

CHANGES IN DISTRIBUTIONS IN THE COUNTY FROM 1933 TO 1948

Section a)

Distributions of Crops

The distribution maps have been constructed on a parish basis from Ministry of Agriculture Statistics. Owing to the variation within small areas of conditions of relief, soil and drainage, and the large size of the present parishes in parts of the county where a number of smaller older parishes have been combined these statistics give a rather generalised picture of the county. Nevertheless it is possible to trace the main changes in distributions and to distinguish the characteristic features of the post-war system of agriculture which has developed in the different parts of the county.

The most striking features of the distribution of arable land in 1933 were its almost complete absence from the east of the county and the low density and comparative uniformity of distribution of the west. In the extreme north-east alone was there any marked concentration and this was restricted to a very limited area (Figure 8a). It was pointed out in the Land Utilisation Survey Report[1] that the

[1] L.U.S. Report of Leicestershire . p.201

western part of the county formed a transitional grassland-with-arable region between the mixed farming areas of Staffordshire and Warwickshire on the one hand and the pastoral eastern part of Leicestershire on the other.

The percentage of the total area of crops and grass under tillage became progressively lower from west to east across the county. In figure 8a the western area with approximately 30% of the land under arable crops and the central area to which it gives place where the proportion falls to about 20% together comprise the pre-war grassland-with-arable region of the Land Utilisation Report. Beyond this extended the eastern grasslands where less than 10% of the agricultural land was under the plough, and indeed in many parishes in this area no arable land was recorded.

This general distribution can be correlated with geology and soils. The area with less than 10% of the land in tillage corresponds comparatively closely with the out-crops of the Lias Clays and the thick more continuous layer of chalky boulder clay, with their associated heavy, tenacious clay loams. The parishes of the Marlstone dipslope towards the north-east where over a large part of their area the bed is exposed and lighter loamy soils result, and the parish of Bottesford in the Vale of Belvoir with areas of lighter alluvial soil show higher proportions of arable land. Similarly the area with the maximum percent-age of arable land is restricted to those parishes of the

extreme north-east in which occur the light free-working soils of the Inferior Oolite (c.f. Figures 2 and 8a).

In the west of the county as a whole areas of lighter soil are more numerous. The parishes which are shown to have a proportion of arable land considerably above the average for the area are likewise those underlain almost entirely by beds which give rise to the lighter soils. Chilcote near the Staffordshire border is entirely situated on the Keuper sandstones; in Heather and Ravenstone and Snibstone further east glacial gravels and Keuper sandstones occur. Twycross, to the south-west is characterised by the skerry-beds of the Keuper Marls which also underlie part of the north-western parish of Lockington and Hemington where also alluvial terraces of the Trent occupy a considerable area. The close relationship between the occurrence of lighter soils and the distribution of arable land was, in the Land Utilisation Survey Report[2], largely attributed to their free-working nature making them economical of labour rather than to any inherent quality of the soil favourable to crop production. It is likely that an important consideration was also the fact that owing to the general poorness and infertility of some of these, especially those of the Inferior Oolite area, they could not be profitably

[2] L.U.S. Report of Leicestershire. p.309

farmed as could the heavier but often more fertile clays, under a system of all grass farming.

In the 1948 distribution (Figure 8b) certain features of that existing in 1933 can still be traced. The north-eastern area of the county continues to show the highest percentage of arable land. However the parish returning the highest single acreage was Bottesford in the Vale of Belvoir. Likewise, Eaton on the dip slope of the Marlstone escarpment, with 60% of the farm land under crops, ranks equally with Sproxton and Croxton Kerrial, the parishes of the Inferior Oolite outcrop which before the war returned percentages of arable land almost twice as great as that recorded for Eaton. In addition Garthorpe and Buckminster, adjoining Sproxton on the south, underlain almost entirely by boulder clay or Lias Clays, closely follow the light land parishes with respectively 56% and 54% of the land under tillage.

In general the western part of the county continues to show a proportion of arable land higher than that of the east but differences are not great and a high degree of uniformity exists over the bulk of the county. The progressive increase in grassland from west to east across the area is much less clearly apparent.

When in addition to the change in distribution, that of the actual proportions of land under permanent pasture and under arable crops is considered, it can be realised how

THE PROPORTION OF FARM LAND UNDER CEREAL CROPS.

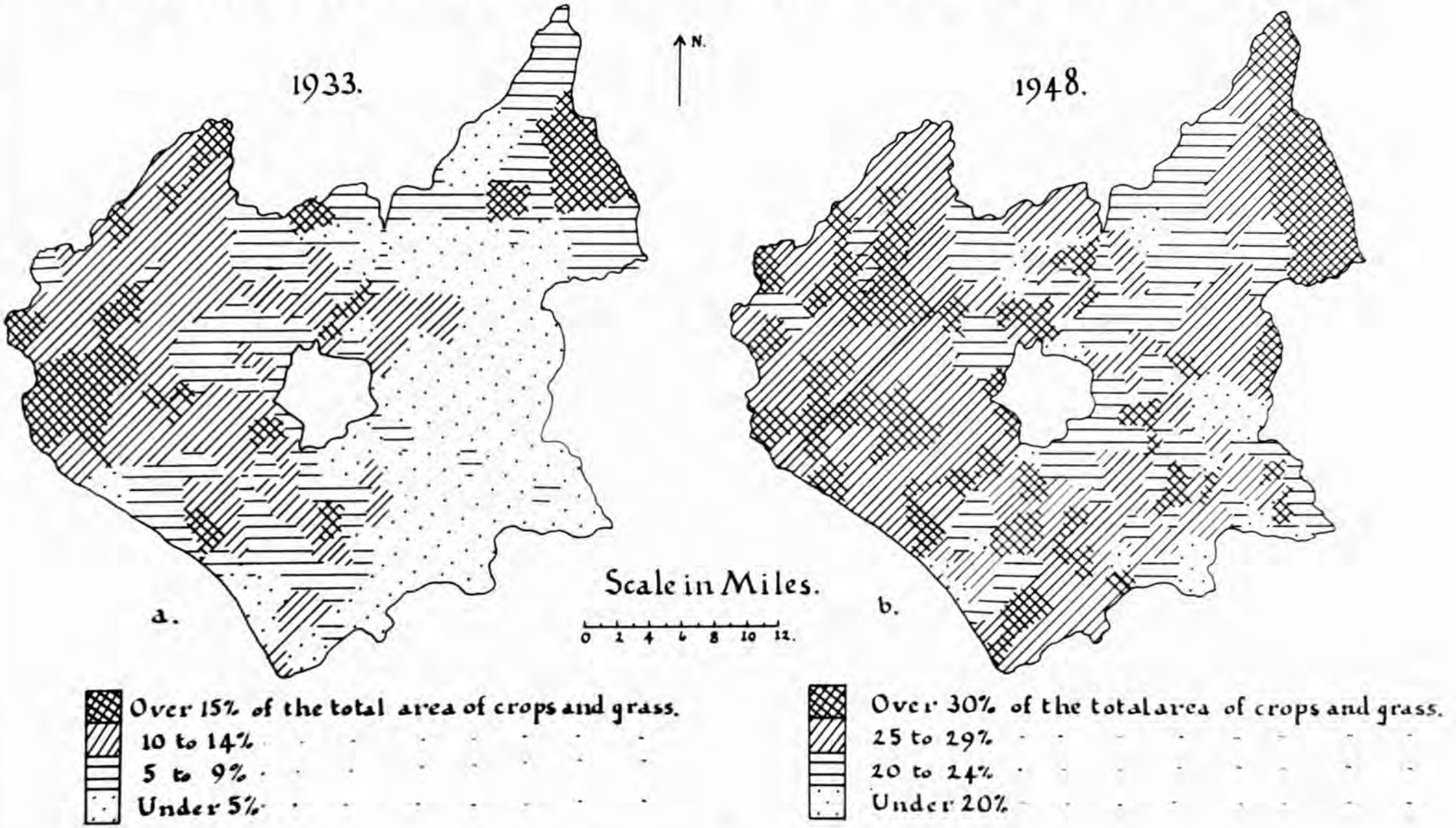


Figure 9.

great a change in land use has taken place. The average proportion of arable to permanent grass-land in 1948, in the west of the county represented between 50% and 60% of the total agricultural land, an increase of approximately 100% above that of 1933. In the eastern area with formerly less than 10% of the farm land under the plough the 1948 average of between 40% and 50% represents an increase of 400% to 500%, and gives a decrease in permanent grassland of approximately 50%. Few parishes even in the south-east, the area of first grade pastures, returned in 1948 an area of arable land representing less than 30% of the area of total crops and grass, and the unbroken expanse of grassland formerly so characteristic of the east of the county has been completely destroyed.

The distribution of arable land no longer shows a close relationship to the occurrence of the areas of lighter soils, and parishes in which light or heavy soils predominate show similar proportions of land under tillage. Thus the natural factor appearing to exercise the strongest control upon land use in the pre-war period has become of insignificant importance today.

Cereals occupy by far the largest acreage of any group of crops in the county in both 1933 and 1948. Their distribution follows very closely that of the total arable land (Figures 9a & b).

In both years the area under cereals in all parts of the

WHEAT.

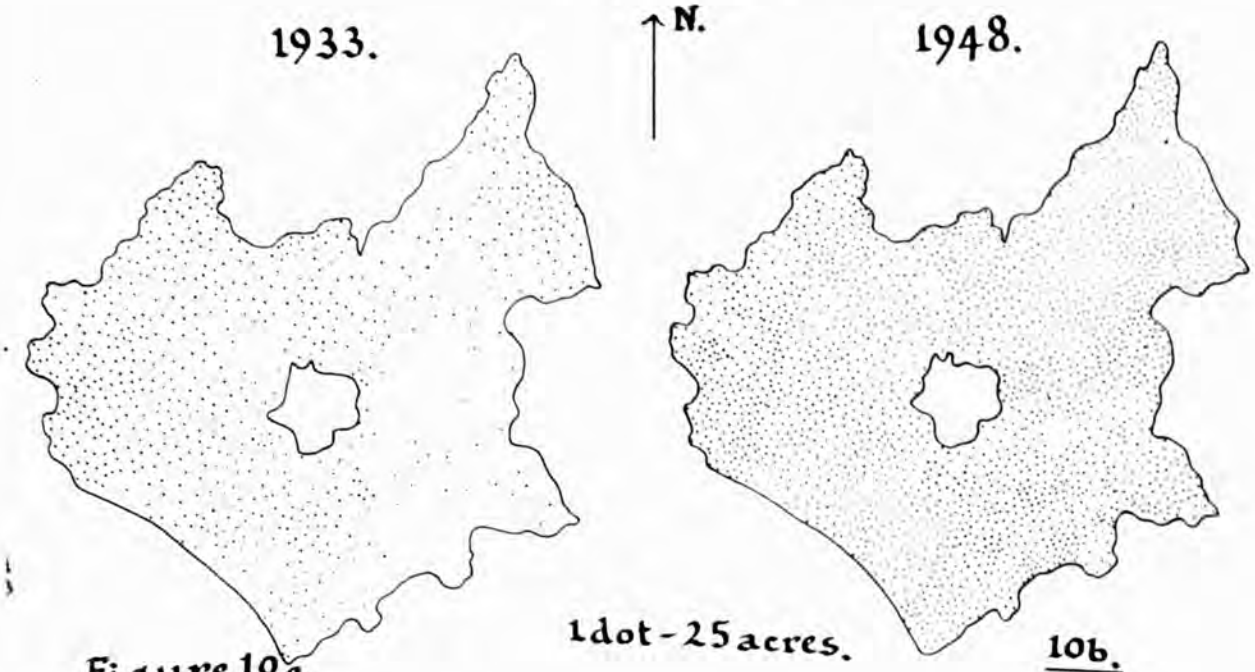


Figure 10a. 10b.

BARLEY

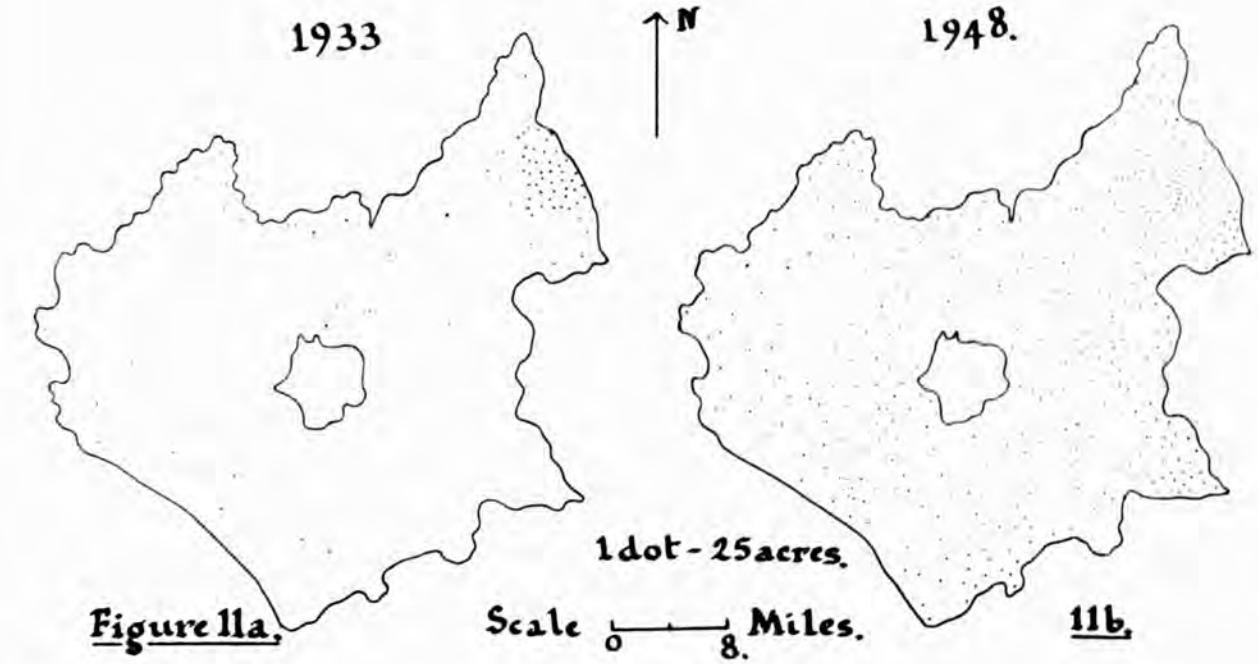


Figure 11a. 11b.

county represented approximately half the arable acreage. In 1933 two particular concentrations occurred, in the north-east and the south-west of the county. In 1948 the high degree of uniformity of the distribution is most marked. The few areas with relatively lower acreages of cereal crops are areas with less arable land, namely the main river valley parishes of the east, the Vale of Belvoir and the dissected upland area of the south-eastern part of the county associated with the outcrop of the Upper Lias Clays. Otherwise the distribution shows no clear adjustment to any natural features.

Of the individual cereals the largest single acreage in the county as a whole in 1933 and 1948 was that under wheat. The distributions in both years therefore follow very closely that of the total cereals (Figures 10a & b) with however one notable contrast occurring in the later year. The cultivation of this cereal has spread over the former grasslands of the east and is largely responsible for the general uniformity of distribution of the cereals as a group. A relatively lower density appears in the distribution however towards the eastern borders of the county in the area of the dissected Upper Lias Clay uplands.

The most marked contrast between the wheat distributions for the two years occurs in the north-eastern part of the county. In the parishes of this area of lighter soils and a correspondingly greater arable acreage a concentration appears in the distribution of wheat in 1933 (Figure 10a)

but in the same area in 1948 on the contrary a relatively low acreage under this crop is recorded (Figure 10b). The actual wheat area has increased and the apparently lower density results from the relatively greater increase in acreage which has taken place in the neighbouring areas.

Barley, the second cash crop cereal occupies a far smaller acreage of land in both the selected years. The area under this crop has extended considerably by 1948 but unlike that of wheat in this year as in 1933 there appears still to be a distinct correlation between the cultivation of this crop and the occurrence of lighter soils (Figures 11a & b). The belts of greater concentration to the north-west and north-east of Leicester occur in those parishes where there are areas of lighter soil associated with the river terraces and in the former area with the Keuper Marls. Some of the scattered parishes of the east, likewise, Houghton and Skeffington for example east of the city of Leicester, are characterised by areas of lighter land derived from glacial gravels.

The north-east of the county however is the area of greatest concentration on barley production in both years and in 1948 the area has extended to include the marlstone area where barley rivals wheat in acreage. In the light land Oolite parishes in both years the barley acreage exceeds that under wheat. These two crops are the major cash crops of the county and if their distributions are

OATS

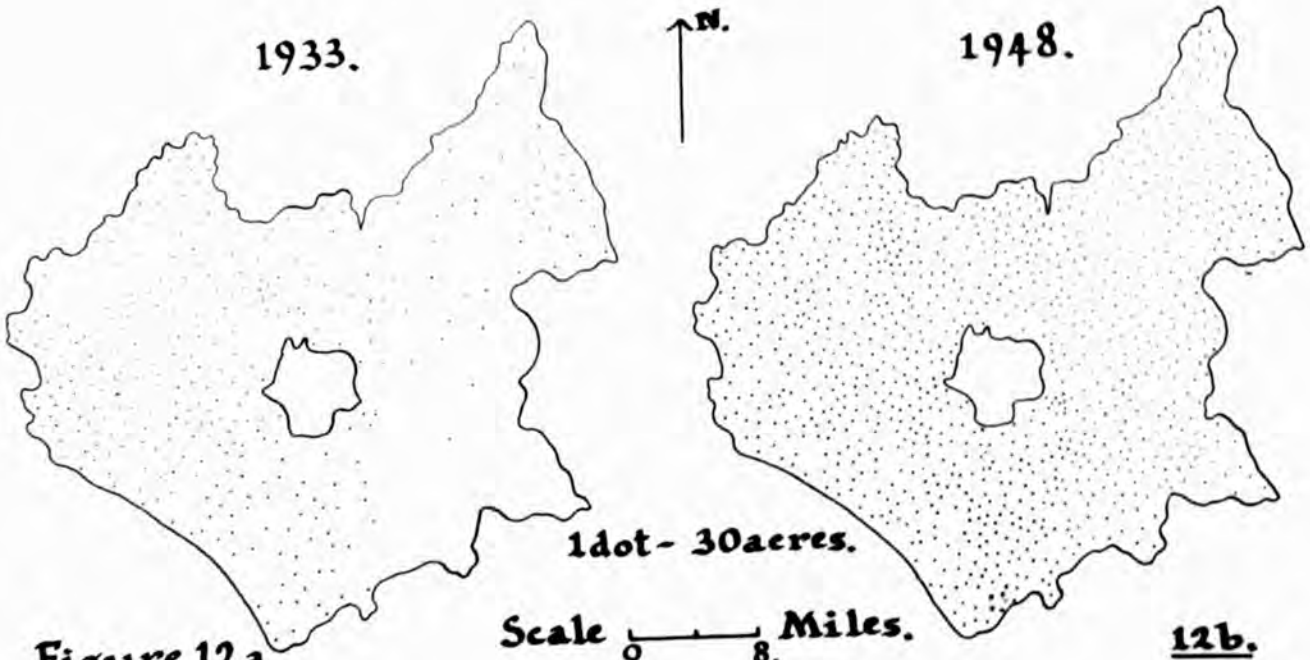


Figure 12a

considered together it can be seen that although a considerable area in all parts of the county is devoted to their production only in the north-east is there any very marked concentration upon cereal cash crop farming (Figures 10a & b and 11a & b).

On the basis of the total acreage, Oats is the second crop of Leicestershire in 1933 and 1948 and in both years the distribution is similar to that of wheat (Figures 12a & b). It is the major feed grain of the county grown in all areas in 1948. In this year, however, relatively less was grown in the parishes of the north-east, the uplands of the south-east with smaller areas of arable land, and the area bordering the Welland Valley. In other respects the distribution is remarkably uniform.

The remaining cereal crop, mixed corn, consisting usually of peas, beans and oats, shows a more varied distribution. A negligible area was under this crop in 1933 but in 1948 it occupied a similar total acreage to that under barley. Grown as a feed crop, in some cases for silage, it replaces concentrated cattle feed and occupies the largest acreages in the dairying areas of the west of the county and is of considerable importance towards the north-east of Leicester City where dairying is also one of the chief farming activities (Figure 13). The small area under this crop in the Vale of Belvoir, also a specialised dairying district, is rather surprising. The parishes in

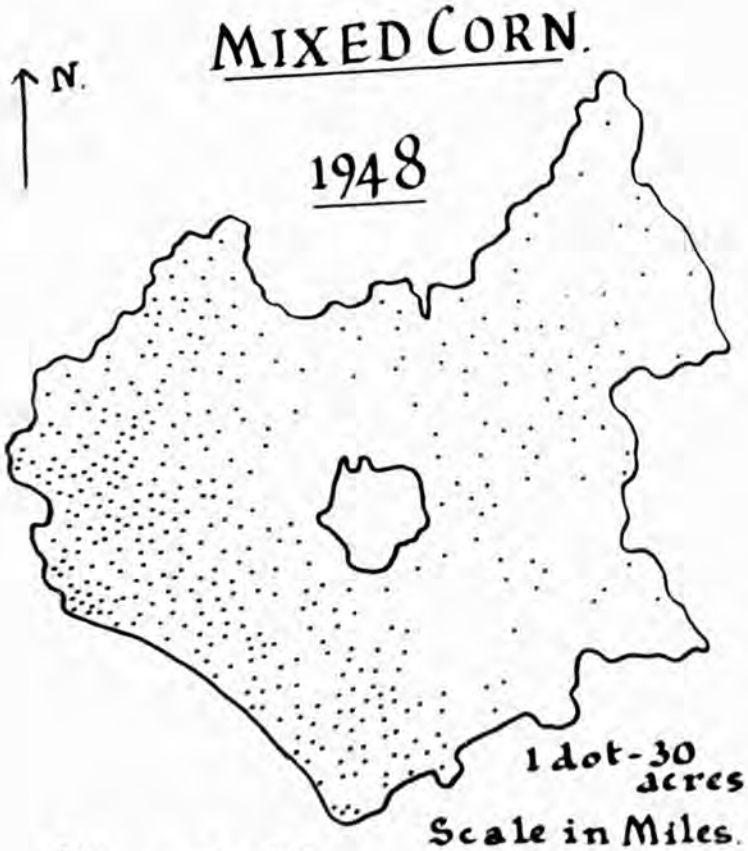


Figure 13.

which the smallest acreages are grown are those of the south-eastern cattle fattening district and the cash crop cereal area of the north-east of the county.

Other grain crops: rye, and peas or beans to be harvested separately as grain occupy negligible areas in both the years considered.

Potatoes, roots and green fodder such as cabbages, kale, peas and beans together form a second group, the cleaning crops in the rotation. None however occupies a large area in the county either in 1933 or 1948.

Early and main crop potatoes have been mapped together although for the post-war year separate figures are available. The first earlies are grown in negligible quantities and only in four parishes do they occupy an area even half as great as that under the main crop and second earlies. This appears to be accounted for by the lateness of spring in the county and the frequent occurrence of frosts at this season. Climatic influences coupled with the cold, heavy nature of the soils were probably the chief factors limiting the cultivation of both types of potatoes in the pre-war period. The total acreage represented in 1933 only approximately 2·5% of the total arable land and in many parishes with small areas under crops none was recorded. It is clear that the 1933 distribution (Figure 14a) closely follows those areas where the lighter usually deeper soils, chiefly those of the river terraces, the Keuper Marls and

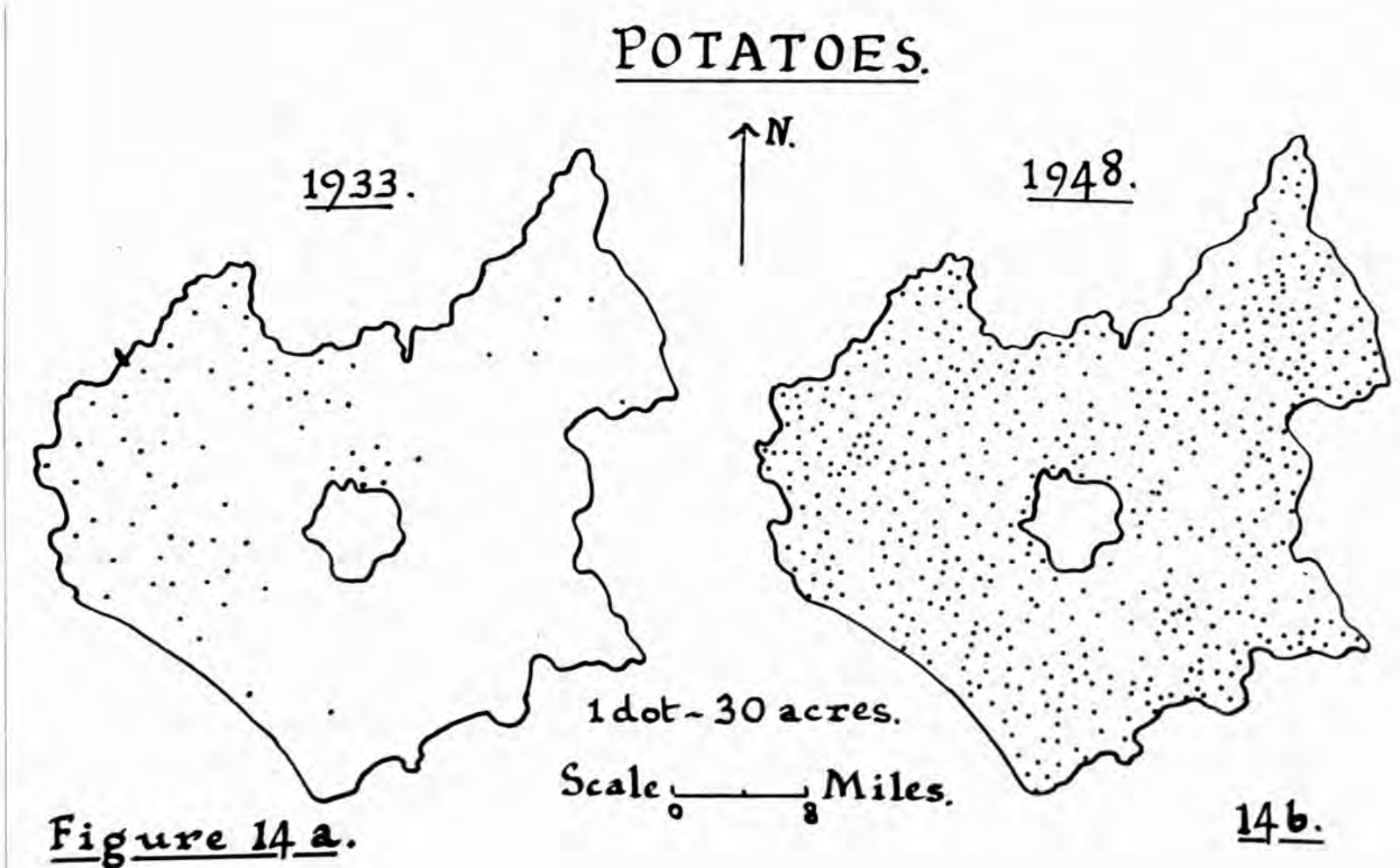


Figure 14a.

the Middle Lias Marlstone occur. In the areas of shallow soils, on the ancient beds in Charnwood, and the Inferior Oolite outcrop, and the cold heavy clays of the east they are almost completely absent.

The 1948 distribution (Figure 14b) on the other hand shows the influence of the war-time demand for this crop and every parish in the county produced at least a small quantity. In few, however, did the area represent as much as 10% of the total arable land. The areas returning the larger acreages in 1933 continued in 1948 to show the greatest concentrations in the distribution, but equally high acreages were returned by a large number of the parishes of the south and east of the county particularly those bordering the Wreak and the Welland. Nowhere, however does this crop appear to be especially important. Eaton parish on the Marlstone, an area of deep loams, returns one of the highest acreages but this represents only 15% of the arable land. Neither the heavier nor the shallow soils are favourable for potato production and the heavy demands upon labour for the harvest cause it to be one of the less economic crops unless natural conditions are particularly suitable.

Root crops form the only group which has declined in total area in the county between 1933 and 1948 and the decline is most marked in the north-eastern arable parishes and those of the south-west border of the county. Turnips,

THE PROPORTION OF FARM LAND UNDER ROOT CROPS.

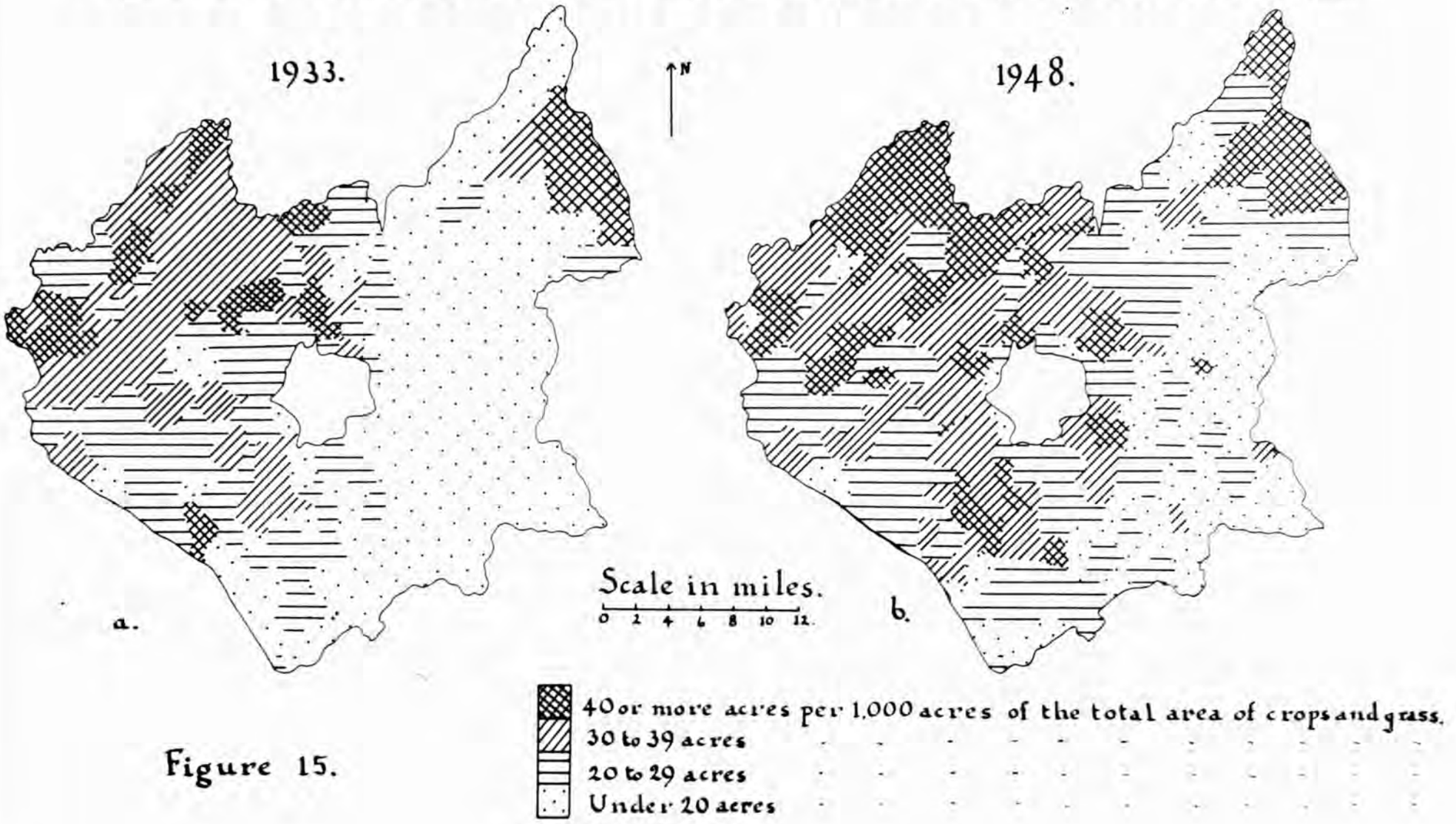


Figure 15.

the chief root crop in the nineteenth century although the fourth crop of the county[3] according to the 1801 returns did not occupy a large area, and in one third of the parishes negligible quantities were recorded. At the present time likewise roots do not figure prominently in the normal rotations practised. A relatively small area of about 5 or 10 acres will suffice on the most usual Leicestershire dairy farm of between 50 and 100 acres, and with between 12 and 20 cattle in milk. As a cleaning crop they are often replaced by kale or cabbages, equally useful fodder crops which are better suited to heavier soils. In 1933 the largest acreages were grown in the dairying areas of the west and the light soil areas of the north-east where the four-course Norfolk rotation was practised and sheep winter folded on roots (Figure 15a). The 1948 distribution continues to show a contrast between the dairying areas of the west and the eastern part of the county with fewer dairy stock and heavier soils (Figure 15b).

Of the individual root crops mangolds occupy the largest acreage and have suffered least decline. They yield a larger quantity of dry matter for winter feed than do turnips and are generally better suited to heavier soils. The former factor is particularly important owing to the war-time and post-war need to produce the maximum fodder on

[3] ~~B.U.S. Report of Leicestershire P. 286~~
G.E. Fussell. Op. Cit. P.141.

TURNIPS AND SWEDES.

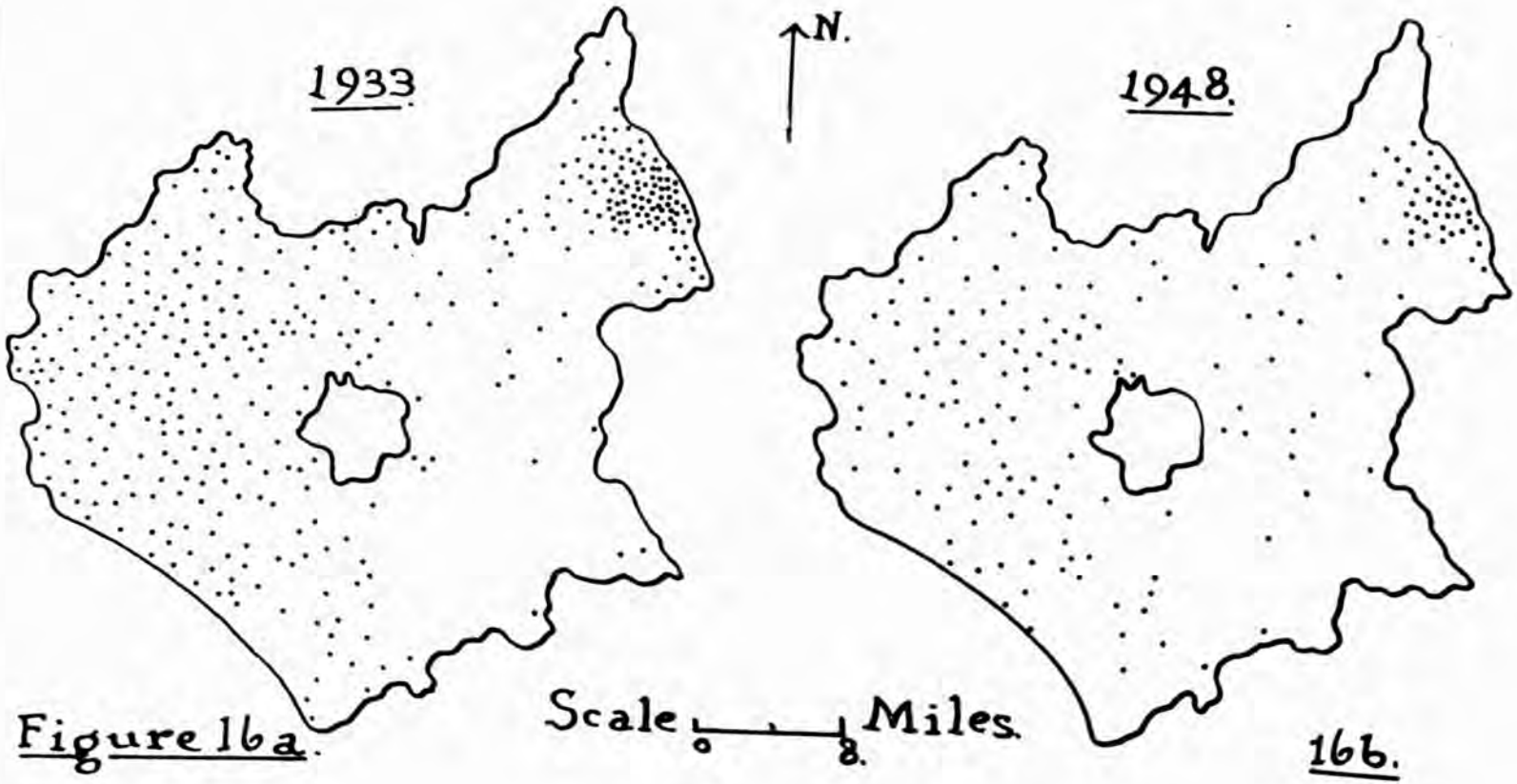


Figure 16a.

16b.

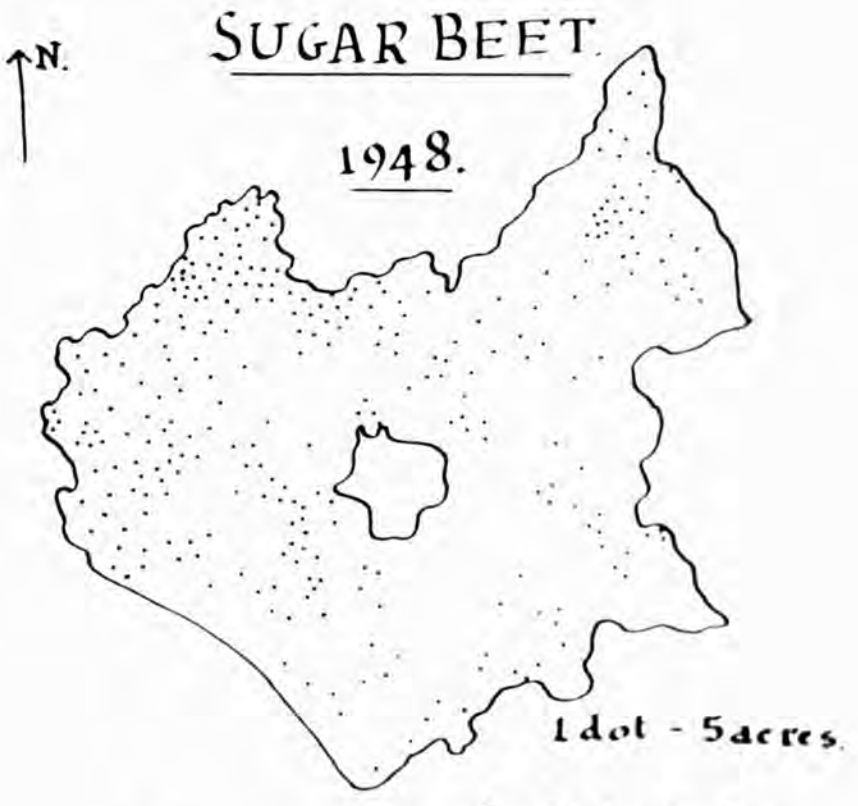


Figure 17.

the stock farms and avoid the use of expensive concentrated feed. Turnips and Swedes show a very similar distribution in both 1933 and 1948 (Figures 16a & b) but in all areas a decline has taken place, especially in the north-east where the barley, sheep and turnip husbandry has lost ground to cash crop grain production. The crop has not spread onto the heavier lands more recently ploughed.

Sugar beet is of only very small importance in the county. The total acreage under the crop in both 1933 and 1948 represented only about 1% of the total arable land. The relatively high returns to be obtained for this crop both in cash and winter feed from the tops, and pulp returned from the factory, have not brought about its establishment as a major crop in the county as has been the case in the counties of East Anglia. The 1948 distribution (Figure 17) shows that its cultivation has spread into the southern part of the county but only in a few parishes where there occur deeper loamy soils derived from the Middle Lias Marlstone or those of the relatively drift free exposures of Keuper Marls, does it occupy a significant area. A variety of factors add to the problems of producing this crop in the county. The most favourable soils are deep friable loams of which only limited areas occur. A large labour force is required for lifting the crop at a time of the year when much other farm work must be done, while in addition there are problems of loading the beet and transporting it either to Colwick or Peterborough factories.

THE PROPORTION OF FARM LAND UNDER GREEN FODDER CROPS.

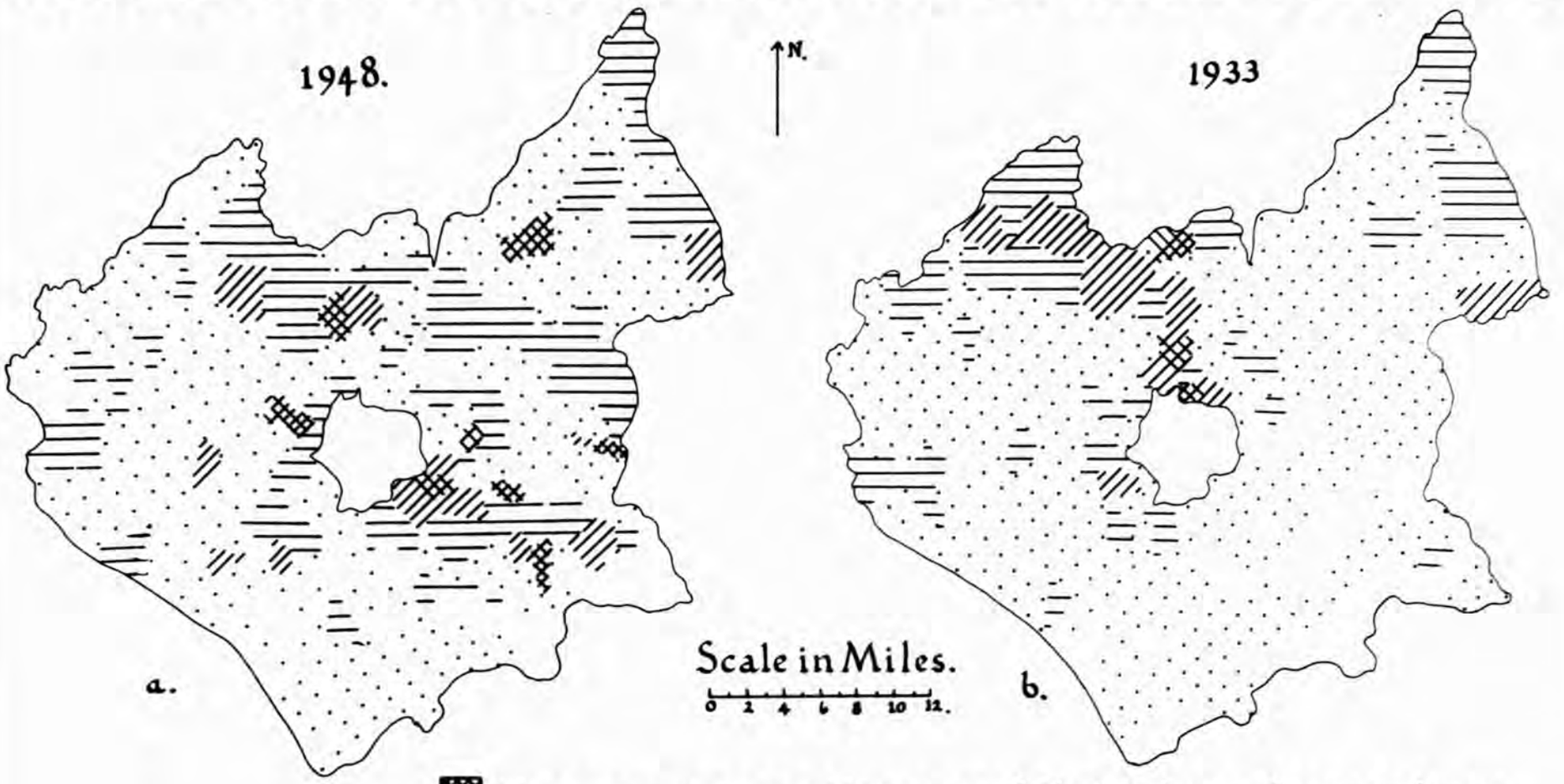


Figure 18.

Note:- Green fodder crops include cabbages kale etc. and peas and beans for stock feeding.

Green fodder crops, chiefly cabbages, kale and beans, occupied about 4% of the arable land in pre-war days compared with 9% under roots for fodder. The post-war proportions in 1948 were 4% and 6% respectively, the cultivation of green crops having spread over the eastern part of the county (Figures 18a & b). The chief feature of the distribution in this latter area is the correlation with the distribution of dairying as an important farm activity. The highest acreages occur in the dairying districts to the south-east of Leicester and between Leicester and Melton Mowbray while they are least prominent in the Welland Valley parishes. Roots and green fodder crops together show a uniform distribution over the whole county with the exception of the Welland district (c.f. Figures 15 & 18). Similar in their function as feed crops and cleaning crops in the rotation the former are associated with the rather lighter lands of the west, while the latter have become of greater importance on the heavier lands of the Lias Clays and Boulder Clays of the east.

Apart from small acreages under a variety of other crops, flax, vegetables for human consumption or fruit, grown in scattered areas not in any particular part of the county, the only remaining crops of importance are clover, lucerne and rotation grasses. These occupied in 1933, about one fifth of the arable land. Grown chiefly to rest the arable land rather than for the provision of pasture and

THE PROPORTION OF FARM LAND UNDER TEMPORARY GRASS.

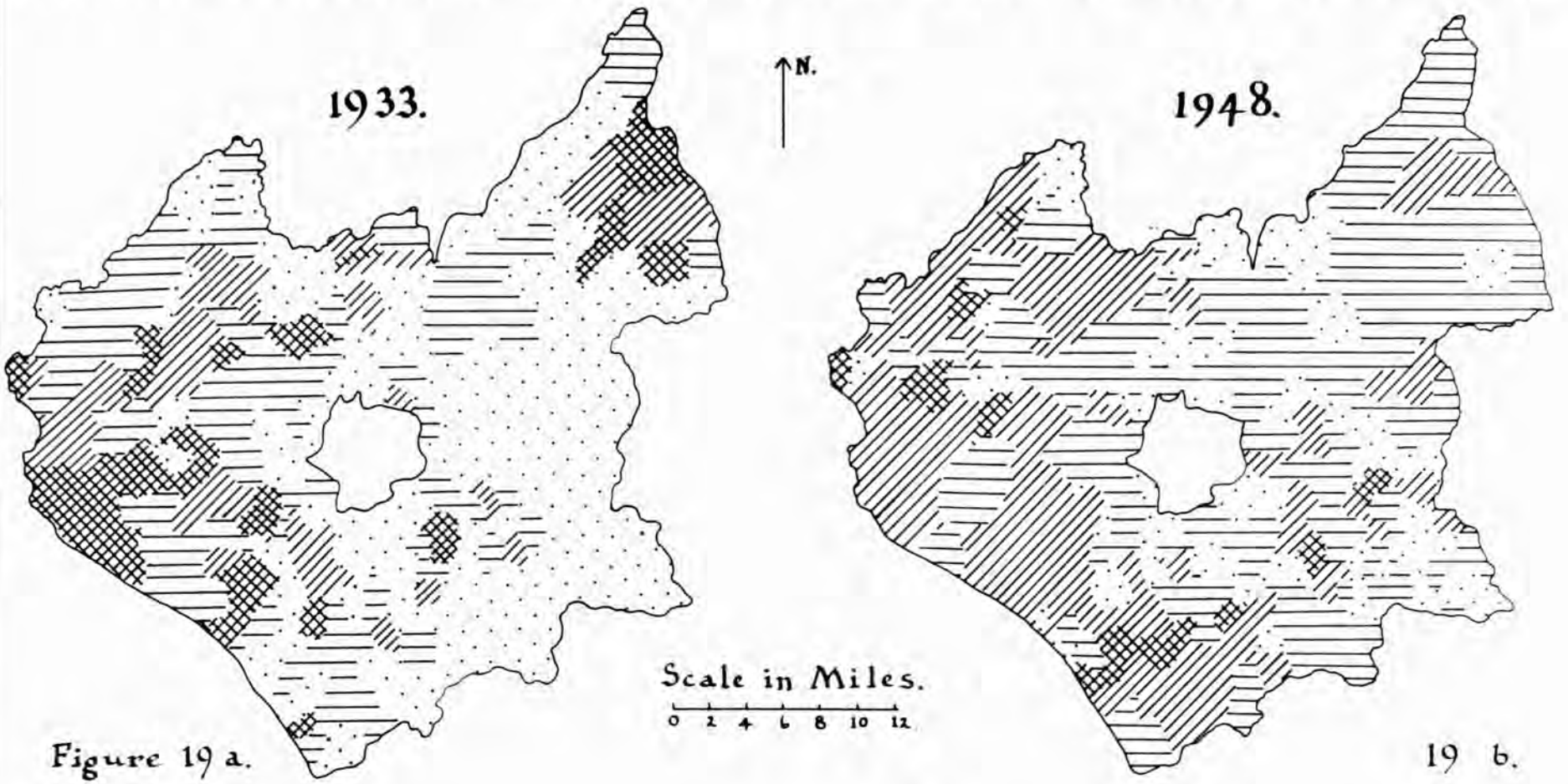


Figure 19 a. 19 b.

Over 75 acres per 1000 acres of total crops and grass.
50 to 75
25 to 49
Under 25

Over 200 acres per 1000 acres of total crops and grass.
150 to 199
100 to 149
Under 100

THE PROPORTION OF FARM LAND UNDER PERMANENT GRASS.

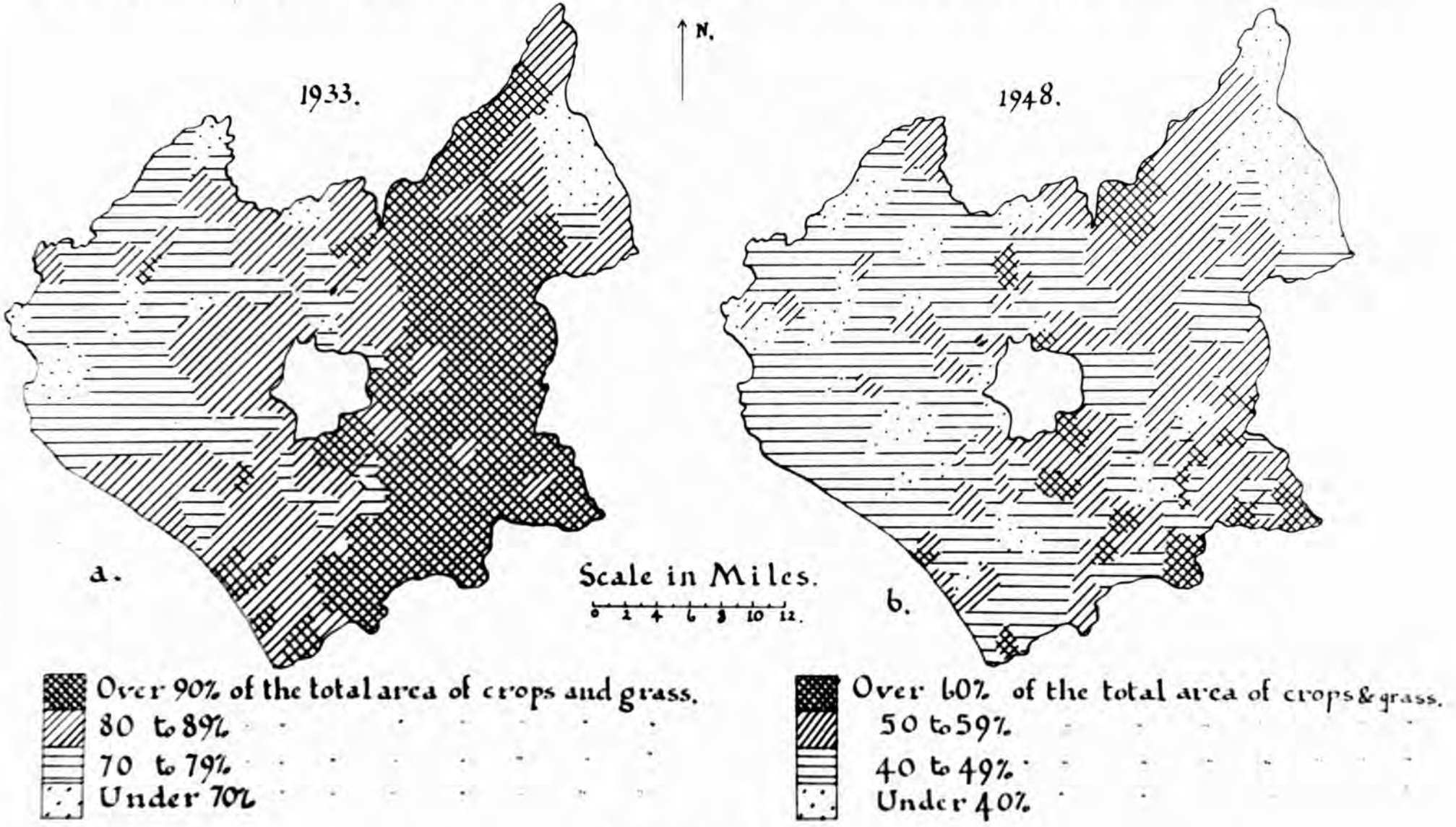


Figure 20.

hay, their distribution corresponded with that of the total arable land with the largest acreages occurring in the north-east and south-west (Figure 19a).

The 1948 distribution (Figure 19b) similarly corresponds closely with that of total arable land, an indication that these crops continue to be grown primarily as a course in the rotations rather than in a system of true ley farming. The proportion of arable land under these crops has however increased and now represents about one quarter of the total area. In the west of the county the average area of farm land under these crops is relatively high, being one fifth of the total. The generally higher acreage is probably to be related to two factors, the general increase in arable farming and the need for temporary pastures and meadows to replace the permanent grassland. Leys of varying length are used. In the grazing districts there is a tendency for land intended for a four or five year ley to be left down to grass as long as the pasture remains good and such pastures may become virtually permanent. As a result the area returned as temporary grassland may be rather higher than it would be if the leys of one to five years alone were recorded.

The distribution of permanent grassland is merely the reverse of that of total arable land (Figure 20a & b). The unbroken expanse of grassland in the east in 1933 is emphasised and also the extent to which in 1948 this had been invaded by arable farming. In the pre-war year about one

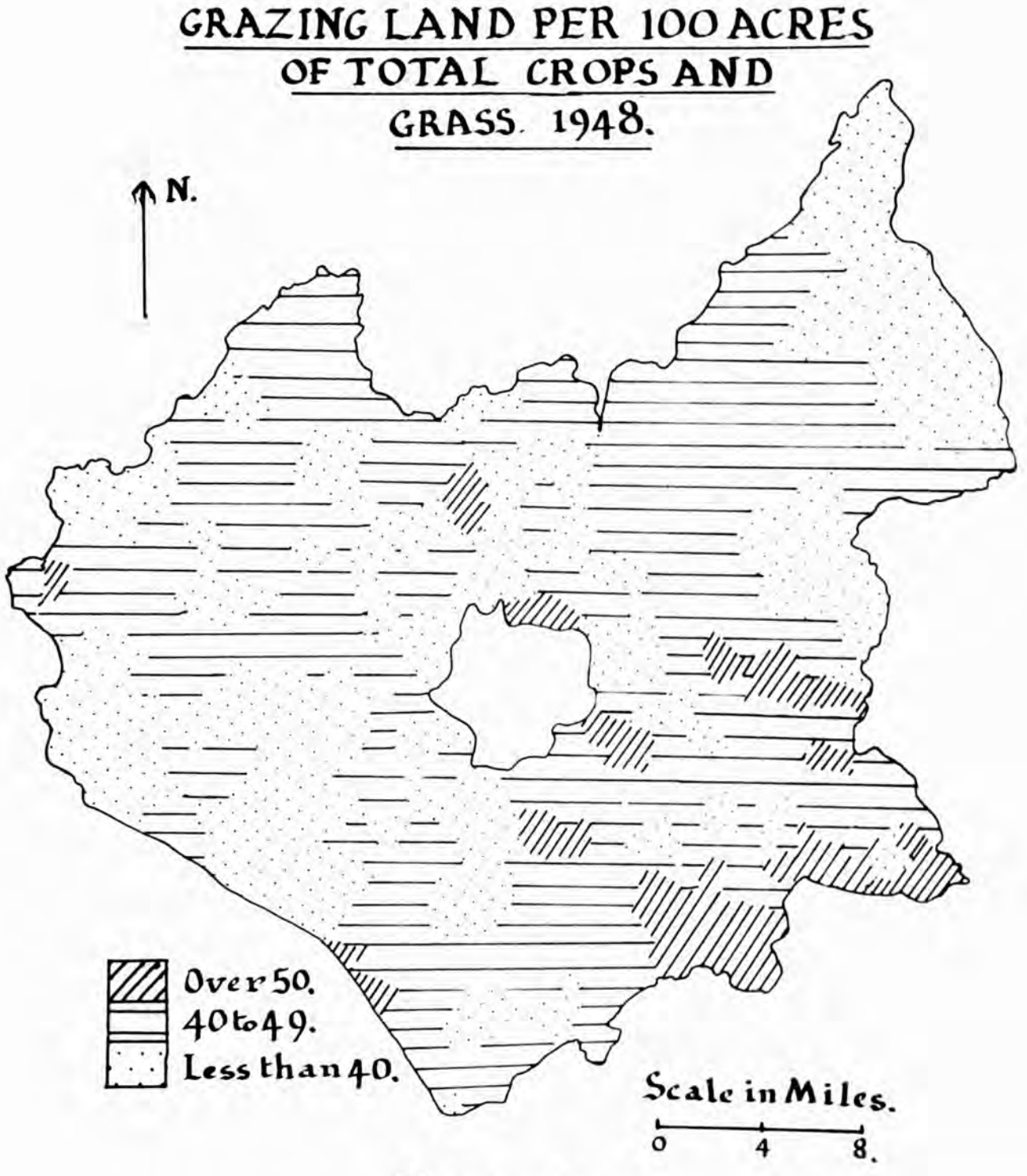

GRAZING LAND PER 100 ACRES
OF TOTAL CROPS AND
GRASS. 1948.
N.
Over 50.
40 to 49.
Less than 40.
Scale in Miles.
0
4
8.

Figure 21.

third of the permanent grass area was cut for hay except in the fattening district of the south-east where few stock were wintered and the area for mowing represented only about one fifth of the total permanent grassland. With the increase in temporary grassland and reduction in permanent pasture a smaller proportion of the latter was in 1948 cut for hay. As figure 21 indicates there is still in 1948 a higher proportion of grazing land in the south-eastern part of the county although there is a relatively high degree of uniformity. The Welland district with over 50% of the total farm area set aside for grazing shows this part of the county still to be the chief summer grazing district.

The general farm crops already discussed individually, fall into two main groups according to the uses to which the products are put. From the evidence obtained from specimen farms, it may be concluded that wheat, barley, potatoes and sugar beet are the chief crops sold off the farm and thus to be classed as cash crops. The remainder with the exception of small acreages of specialised crops grown for seed or for human consumption are used for fodder on the farms where they are produced. With these, clover, lucerne and rotation grasses whether for hay or for grazing, have been included as they represent areas of arable land devoted entirely to stock feeding, and the products do not enter into commerce except for a very small proportion dried for the production of cattle cake.

THE PROPORTION OF FARM LAND UNDER FODDER & CASH CROPS.

1933.

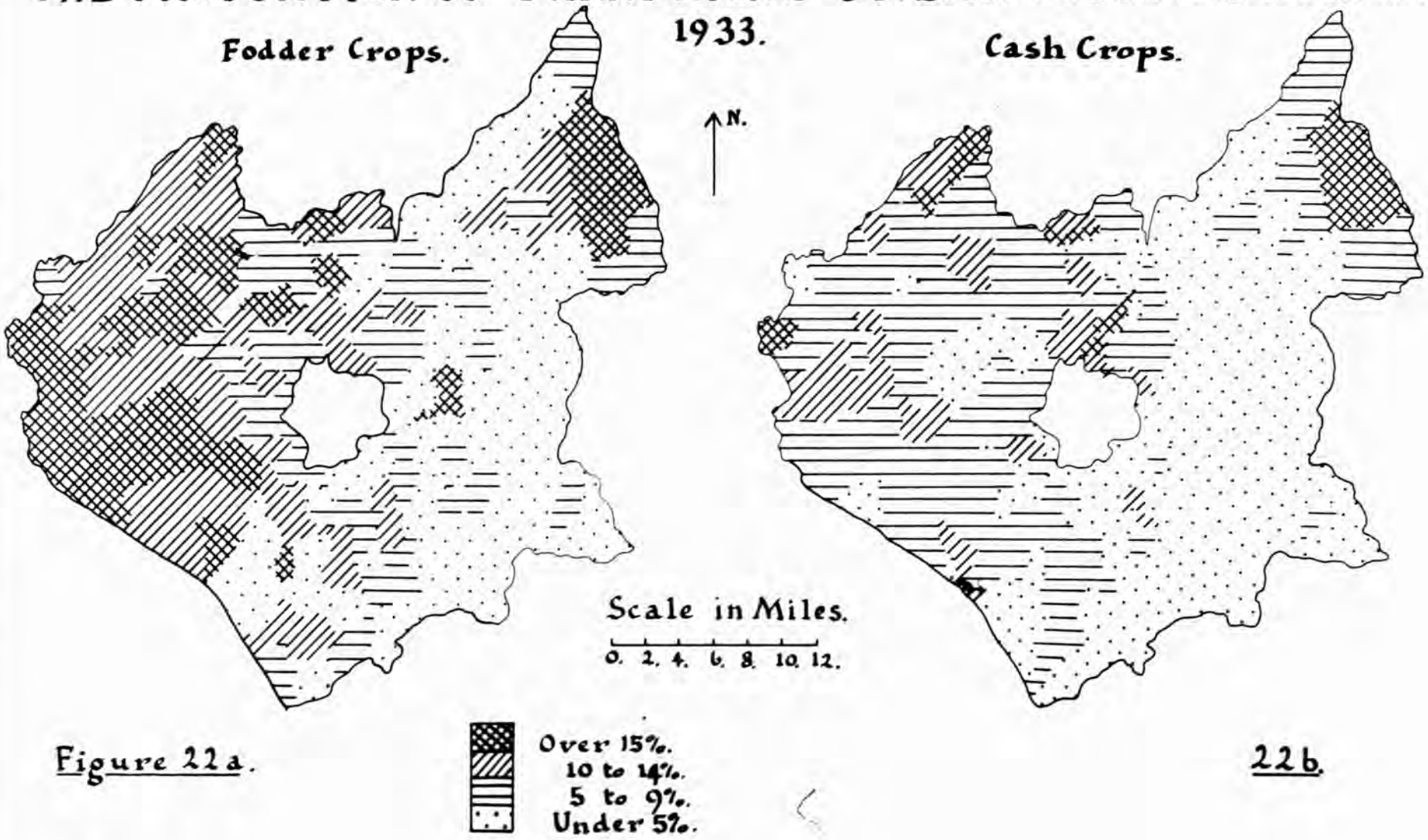


Figure 22a.

22b.

In 1933 the distributions of both fodder and cash crops (Figures 22a & b) were closely related to that of the total arable land, indicating that in all those districts where arable farming was practised cash crop production formed a part of the general farm economy. The small acreages recorded, however, suggest that on many individual farms they were either absent or of negligible importance. The emphasis was definitely upon fodder crops and over most of the area where arable farming was practised they occupied between 10 and 20% of the total farm land while the corresponding proportion under cash crops was more usually between 5 and 10%, half or less than half the fodder crop area. Only in a relatively few parishes where the returns show an acreage of arable land considerably above the average did the percentage of land under cash crops even approach that devoted to fodder production. These parishes were situated in the north-east, the extreme west and north-west and bordering the Trent and Lower Soar Valley, i.e. the light land areas (Figure 22b). In these, approximately 16% of the total farm area was under cash crops, a high average for the county but representing only about four fifths of the fodder crop area. Lockington and Hemington, Thurcaston, Cossington, Cotes and Wanlip, all north of Leicester were the only parishes in which the acreage under cash crops exceeded that under fodder.

By 1948 the cultivation of both groups of crops had

THE PROPORTION OF FARM LAND UNDER FODDER & CASH CROPS.
1948.

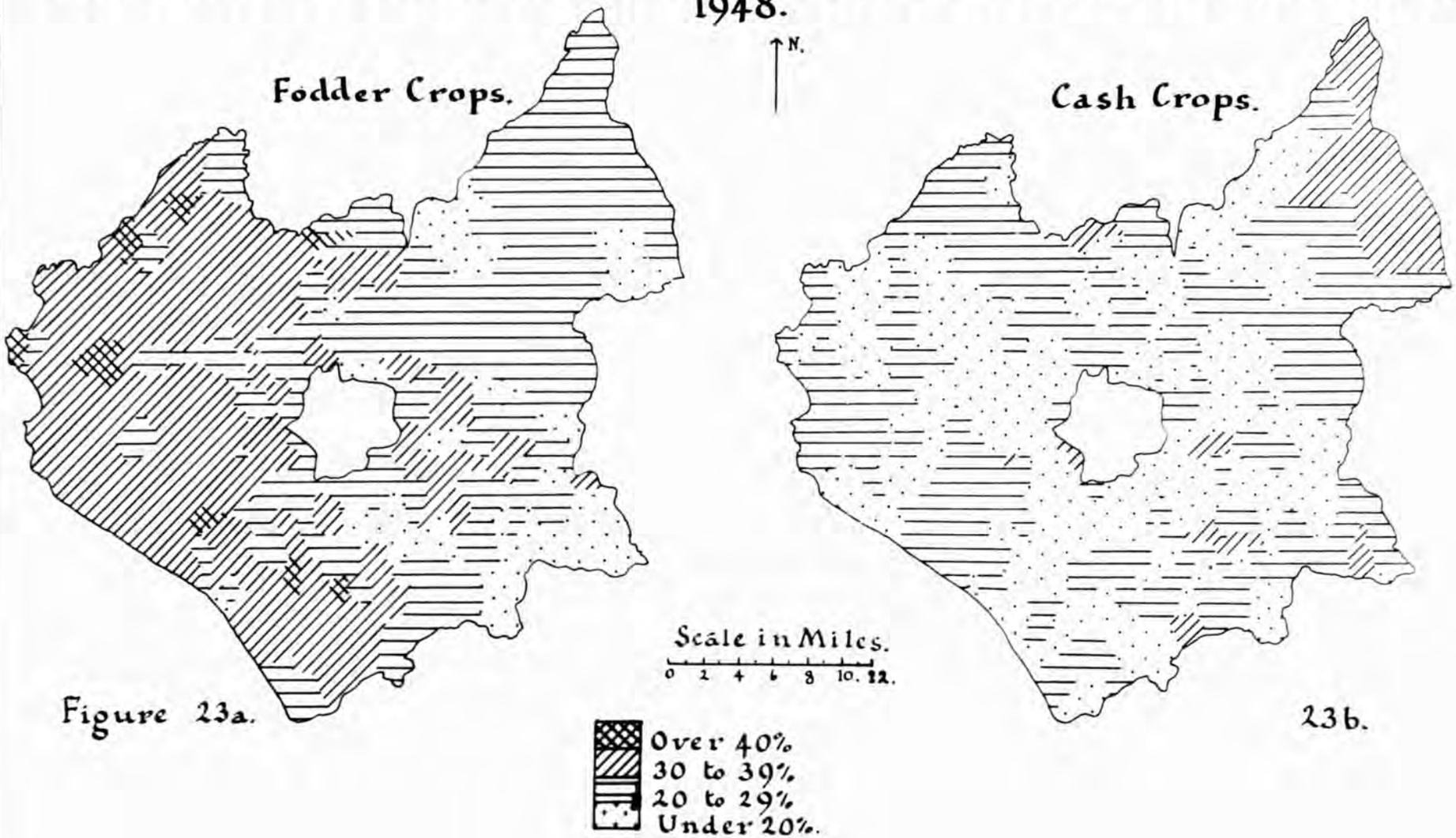


Figure 23a.

23b.

spread across the former grasslands of the east. The acreage of the cash crops having increased to the greater extent, both groups occupied much more nearly comparable areas. The increase in this latter group was largely the result of the war-time demand for wheat and potatoes and of the marked increase in prices to be obtained for these and the other main cash crop barley. In the former grasslands of the east, fodder and cash crops occupy comparable areas of the total farm land. In the former grassland with arable areas of the west, fodder crops are of relatively greater importance although the percentage of the total farm land under cash crops is approximately equal to that of the eastern areas (Figures 23a & b).

The distributions of these two groups of crops reflect variations in the character of the farming practised in different parts of the county. Only in the north-east is there any real emphasis on cash crop arable farming (Figure 23b). The areas of the west and south of the county and that lying to the east of the county borough where fodder crops occupy a particularly large acreage are the chief dairying areas with the exception of the Vale of Belvoir (Figure 23a). The need for the more nutritious types of feed crops to replace scarce and expensive concentrate is therefore particularly great in these areas. In the extreme south-east of the county on the other hand where few stock are wintered and these are for the most part stores

requiring less of the nutritious feeding stuffs, the arable acreage and area under fodder crops are correspondingly lower. The greater part of the east of the county judging from the relative acreages under fodder crops, permanent pasture and cash crops is characterised by a type of farming intermediate between the dairying of the west and specialised summer fattening of the south-eastern area.

GRAZING STOCK PER 100 ACRES OF TOTAL CROPS AND GRASS.

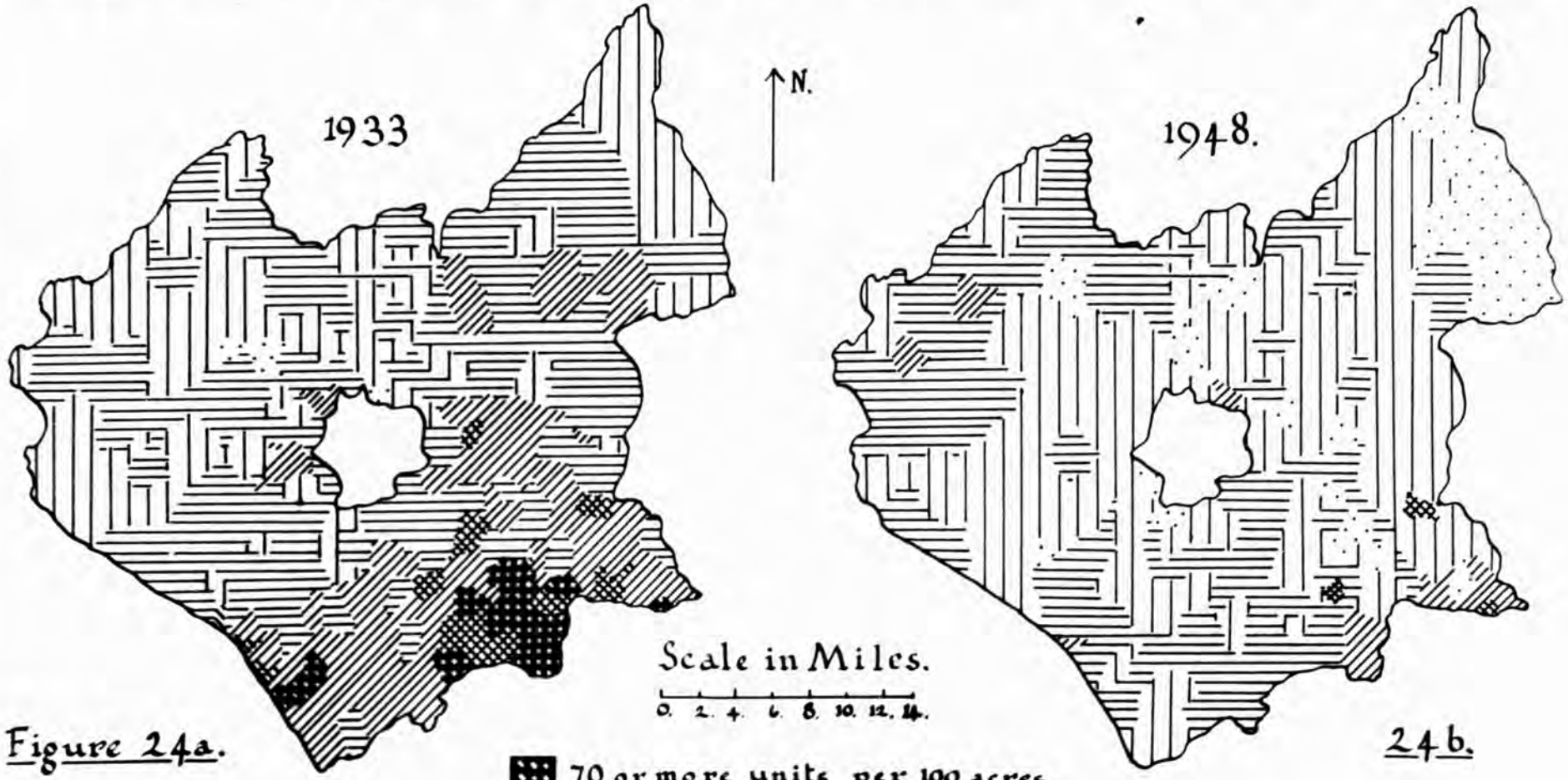


Figure 24a.

24b.

Note. Cattle of all ages each equal 1 unit.
7 sheep equal 1 unit

Section b)

Distributions of Stock

In general the number of stock per 100 acres of total crops and grass became progressively greater from north-west to south-east across the county in 1933 (Figure 24a) The particularly low density recorded in the parishes of the north-east, those near the south-west border and some north of Leicester can be accounted for in part by the fact that these were the areas with the higher acreages under cash crops. If allowance is made for this it is apparent that the density of stock in these areas does not differ greatly from that of adjacent districts. The relatively low density of stock in the mining district north-west of Leicester resulted from the small number of sheep kept in this urban area.

To a certain extent the distribution may be correlated with the various grades of pasture distinguished in the survey of 1940 (Figure 5). The most heavily stocked parishes of the south-east, where more than 70 stock per 100 acres were recorded in June 1933, contain large areas of first grade pastures with a high percentage of rye grass and wild white clover. The area with between 50 and 60 stock units per 100 acres shows some relationship with the area of second grade pasture in the east of the county. Along the lower Soar Valley also occurred higher grade

pastures and a higher density of stock than was found in neighbouring areas. On the other hand rather lower densities of stock and lower grade pastures were together associated with the coalfield area and the central part of the eastern borderland of the county. In each case except the first however the relationship is not close. The boundaries of the areas of better grade pastures and higher stock densities do not coincide sufficiently closely to make the correlation convincing, and it appears no closer when stock are mapped against permanent grazing land. In this case the greatest stock densities occur in the south-west and west of the county rather than in the areas of better grade pastures.

The distribution seems to be most closely related to the different systems of farming characteristic of the various parts of the county. Apart from those areas with larger areas of land under cash crops and a consequently smaller number of stock, these parts of the north and west of the county showing a density of fewer than 50 stock units per 100 acres of total farm land were those in which dairying was the chief farming activity. The numbers of stock was therefore comparatively stable throughout the year and even with the use of additional concentrates the farm land was utilised to supply these stock not only with summer grazing but with hay and roots or green fodder for winter feed.

To the south and east of this area a more mixed type

of stock farming predominated and although dairying was of first importance on some farms many were concerned also with rearing stores or fattening cattle. Summer grazing was of prime importance, little land being devoted to the production of winter feed and in this season stock were considerably reduced. On some farms it was customary to send cattle for wintering to the yards of Lincolnshire for a fixed payment per head after which they were returned to Leicestershire for summer grazing. Similarly sheep bought in spring were sold fat or as stores in summer and autumn. The distribution map constructed from the June Ministry of Agriculture returns therefore shows the maximum number of stock for the year in these areas, and not, like that of the more exclusively dairying areas, an average number. Thus the lower summer density of stock in the dairying districts does not imply that the stock carrying capacity of the land is lower than that of the grazing areas.

In a similar manner the numbers of stock on the pastures of the south-east where densities of over 60 or 70 units per 100 acres were recorded, were far above the average for the whole year. Here the vast majority of stock were advanced store cattle and sheep bought in spring and sold fat during the summer. Some were kept for a winter and second summer but the total winter stock was far below that in the summer. The farm lands of this area therefore supported throughout the year a number of stock much below

that which appears on the June distribution map.

In view of the fact that in the Welland district on the first grade pastures cattle could be finished for market entirely, or almost entirely, without additional feed and at the rate of more than one bullock per acre, the particularly high carrying capacity of these pastures can not be denied. They formed part of the chief bullock fattening region of the whole of Britain.

The 1948 distribution of stock in the county shows the influence of war-time and post-war ploughing (Figure 24b). Only between Twycross and Chilcote and the Soar Valley in the west of the county is there any extensive area where the number of stock per hundred acres of farm land has increased. As might be expected the decrease has been greatest in those south-eastern parishes where summer grazing on permanent pasture was the chief farming activity. Thus a marked decrease in the area with formerly the higher densities and an increase in the western area of lower density has resulted in a remarkably uniform distribution throughout the whole county. The only large area with a particularly low density, less than 30 stock units per 100 acres, corresponds for the most part with those areas of the north-east where more than two thirds of the land was under arable crops and of this a high proportion was under cash crop cereals. The formerly heavily stocked Welland district, though discernible, is much less clearly marked.

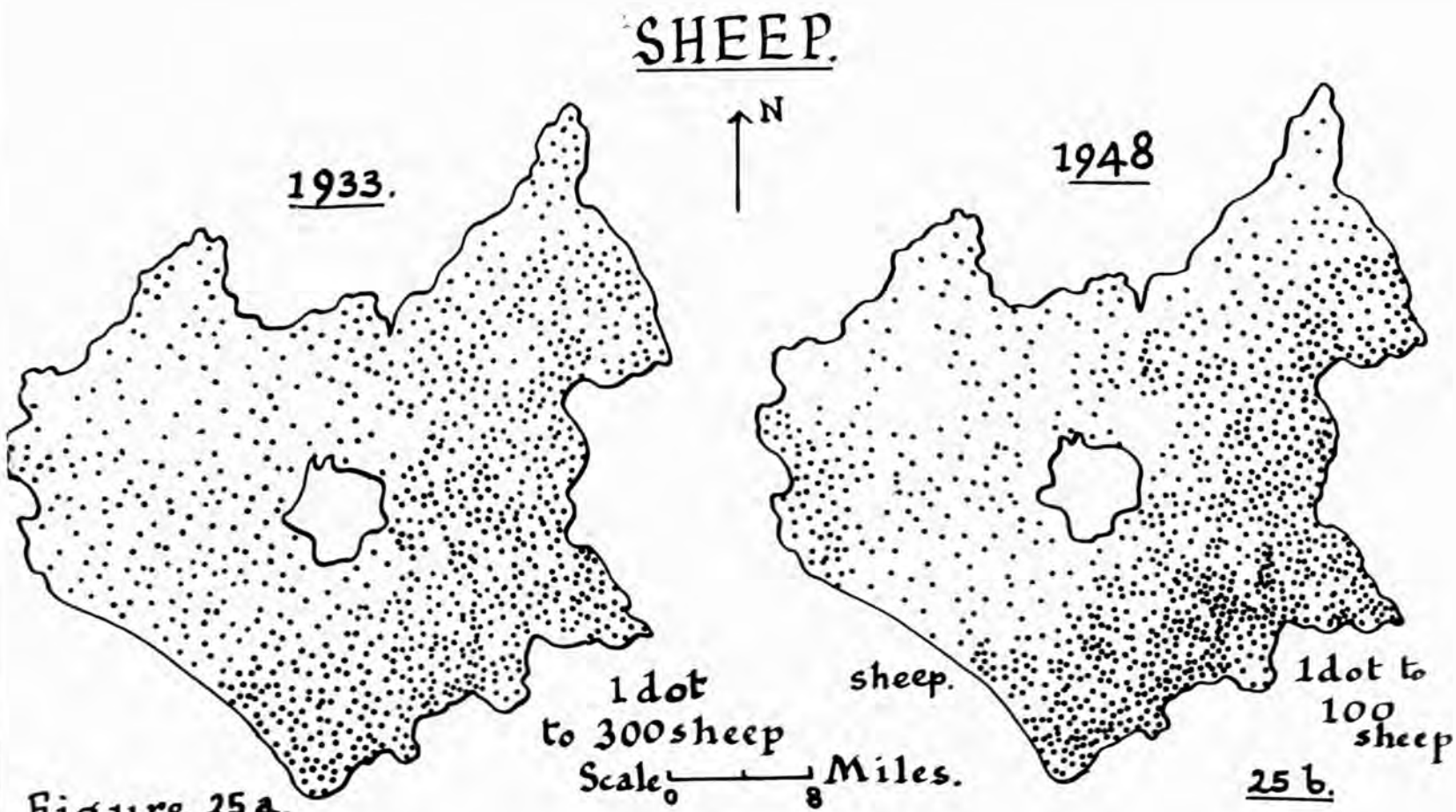

SHEEP.
N
1933.
1948
1 dot to 300 sheep
1 dot to 100 sheep
Scale 0 8 Miles.
25 b.

Figure 25 a.

CATTLE PER 100 ACRES OF TOTAL CROPS AND GRASS.

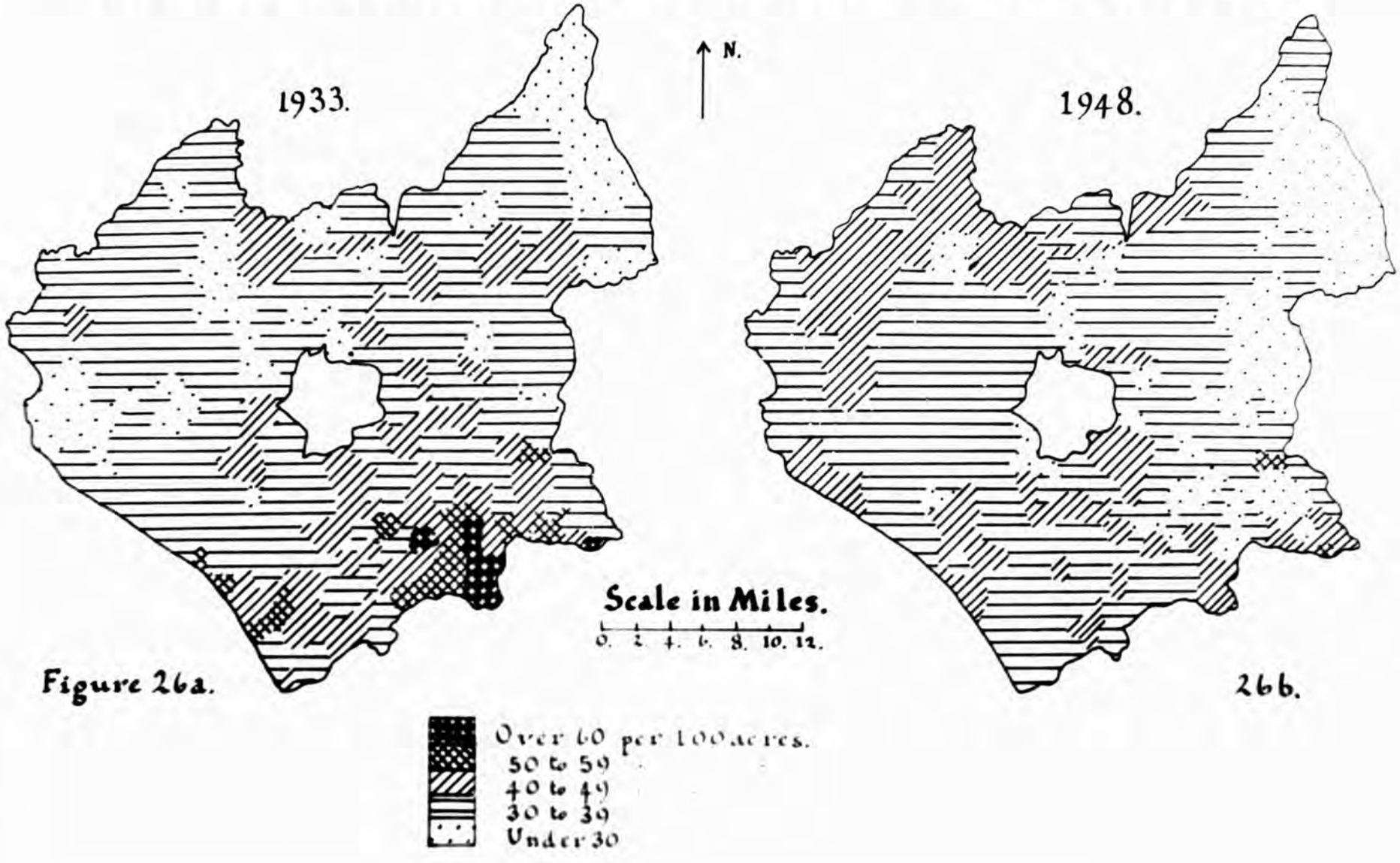


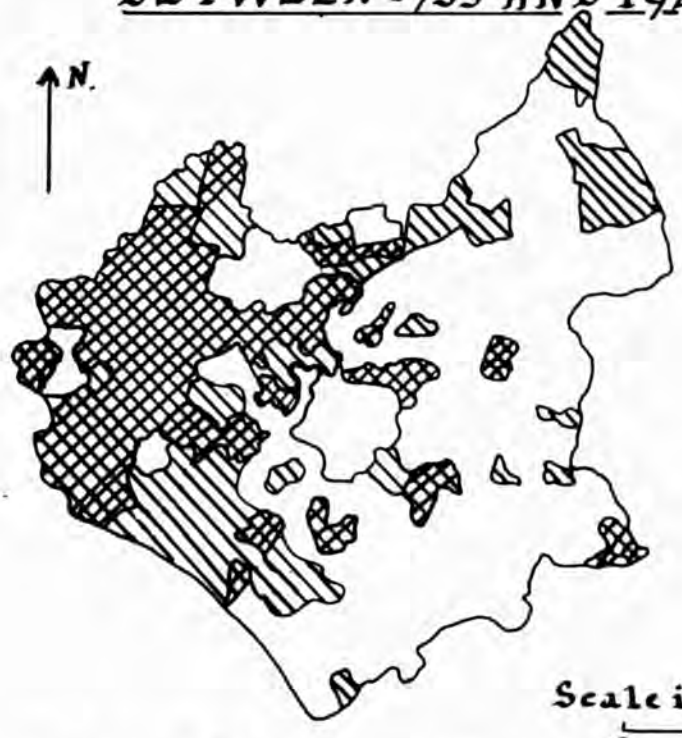
Figure 26a.

26b.

The reduction of total stock has been caused in the eastern part of the county by a decrease in both sheep and cattle. Although the former have decreased in the western areas also, this has been outweighed by the increase in total cattle. The distribution of sheep (Figure 25) has changed very little as a result of the general decline in numbers between 1933 and 1948, a decline which had been in progress since the nineteenth century. The decrease has however been particularly marked in the northern parts of the county, the Vale of Belvoir and the Wolds north of Leicester where the greater part of the pasture is required for dairy stock.

The distribution of total cattle in 1933 (Figure 26a) follows closely that of total stock except for the greater uniformity of distribution in the west where lower densities of total stock units on the coalfield and the urban areas on the outskirts of Leicester resulted from the small number of sheep. The most striking changes in the distribution of cattle between 1933 and 1948 have been the swing of the largest area of highest density from the south-east to the north-west of the county, the almost complete disappearance of areas with fewer than 30 cattle per 100 acres from the west and the extension of the north-eastern area of low density. In addition fresh areas with low densities have appeared in the former eastern grasslands. (Figure 26b). A relatively high density exists in some of

AREAS WHERE NUMBERS OF GRAZING STOCK INCREASED BETWEEN 1933 AND 1949.



Scale in Miles.
0 10.

Figure 27.

Increase in stock units per 100 acres of farm land.

Increase in cattle.

Note. Cattle each equal 1 unit.
7 sheep equal 1 unit.

the Welland Valley parishes but the area is far more restricted than in the earlier year and in only one parish, Bringhurst, is the density greater than that recorded for the whole belt from Sutton Cheney north-westwards to the Soar Valley; a belt which crosses the area of the poorest quality pastures graded in the county in the 1940 grassland survey.

Over most of the west of the county the number of cattle per 100 acres of farm land has either increased or remained stable. Although scattered parishes in the east and south-east have also shown an increase, they are isolated examples in extensive areas where a decided decline in numbers has taken place (Figure 27). This decline can be attributed to the decrease in permanent grassland. However, although the increase in ~~pasture~~ arable land and decrease in grassland has appeared to be most striking in the east of the county where formerly arable land was largely absent, the actual decrease in permanent pasture has been as great in the western parishes where stock have increased.

It seems that ploughing the rather poorer pastures of the west for the production of fodder crops, and the use of leys has generally increased the stock carrying capacity of the land. In the east on the other hand the quality of the permanent pasture was already considerably higher and its carrying capacity less likely to be increased by reseeding. In addition the actual acreage of good quality

permanent pasture for summer grazing plays in the latter area a much more important role in the farming economy, determining the number of stock which may be carried.

The changes in distribution of the various types of cattle in the county give a clear indication of the changes in the areas where particular types are dominant, and thus of the chief trends taking place in the different types of stock farming practised. The largest single group of cattle in the county was in both 1933 and 1948 that of dairy stock, those included in the Ministry of Agriculture returns under the heading of cows and heifers in milk or in calf. The total number in the county has increased between 1939 and 1948 from 37% to 43% of the total cattle. This increase has been the result of a twofold change in the numbers of stock in the various groups. An actual increase in the number of dairy stock has taken place coupled with a decrease in other types, particularly of other cattle over two years old. This is reflected by the changes in the distributions of total stock, the increased densities occurring in the dairying districts of the west and the greatest decrease in the south-eastern fattening area.

Over the greater part of the county dairy cattle have increased numerically or remained stable. The majority of the parishes in which an actual decrease has taken place lie towards the east and in them other types of cattle have similarly declined in number. It is in only a few scattered

DAIRY CATTLE

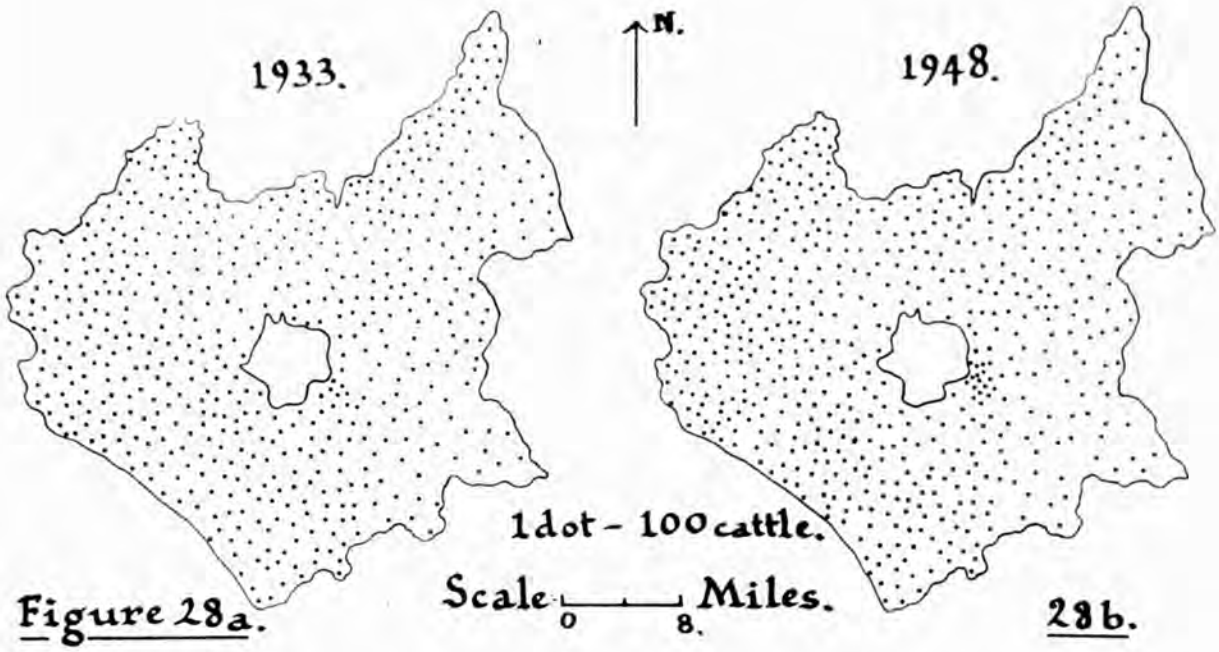


Figure 28a. 28b.

DAIRY CATTLE AS A PERCENTAGE OF TOTAL CATTLE.

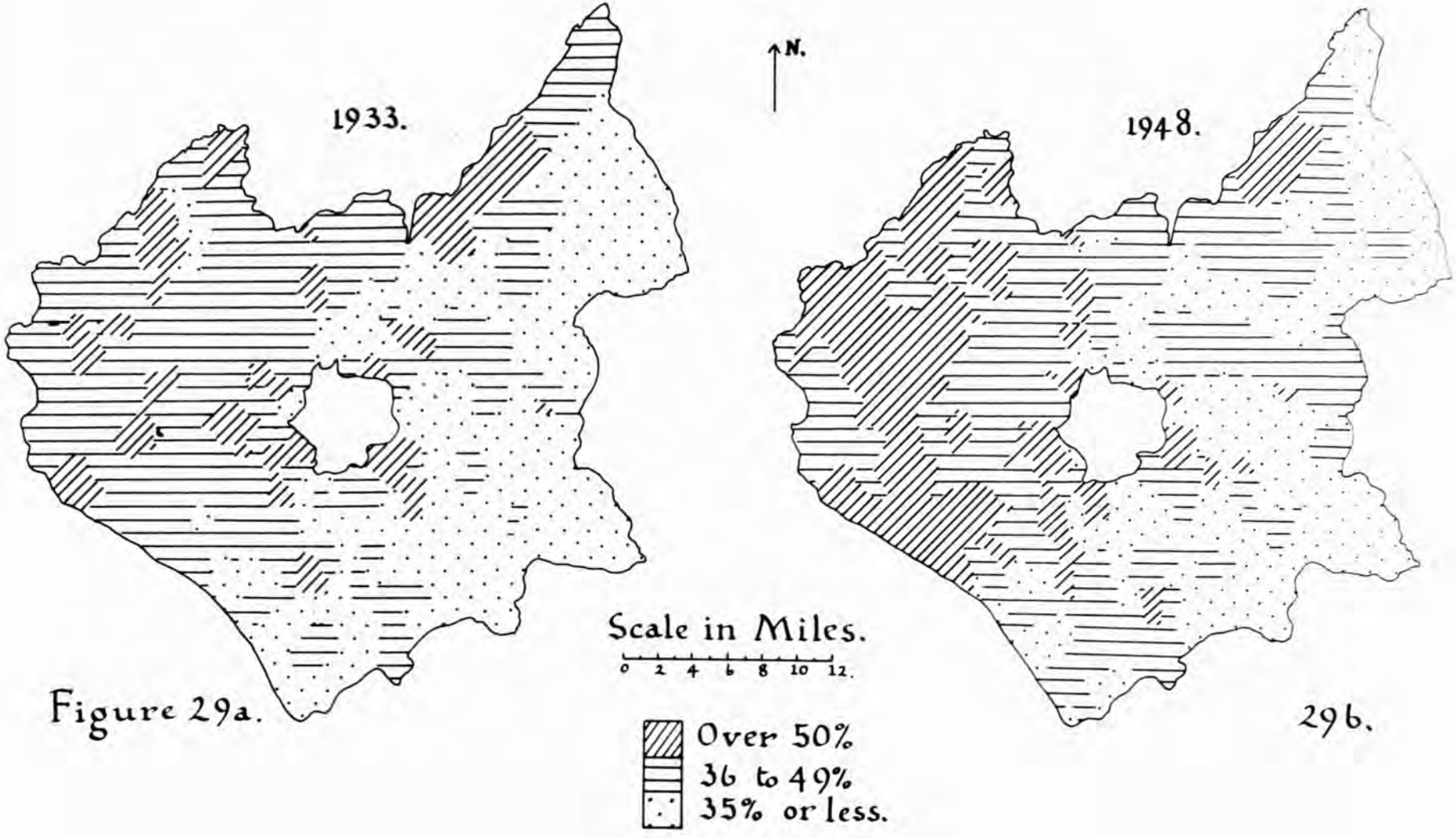


Figure 29a.

29b.

parishes that dairy cattle have decreased to a greater extent than the other types and in the majority they form, in 1948, a higher percentage of the total cattle than was the case in 1939. The distribution of dairy cattle therefore has shown little change between these two years (Figures 28a & b). The concentrations near Leicester and in the west of the county have become more marked owing to the increase in actual numbers being rather greater in these areas.

A clearer indication of the expansion of this type of farming is the greater proportion of total cattle formed by the dairy group in a large area of the county in 1948 (Figures 29a & b). In a far greater area of the west of the county dairy cattle represent more than 50% of the total cattle, while the extension of the areas with between one third and one half of the total in this group in the south and east of the county is clearly apparent. In many of the other areas also the dairy stock have become relatively more important but to a lesser degree. Even in a number of the Welland parishes, Thorpe Langton, Tur Langton, Bringhurst, Drayton, Market Harborough and Lubenham, for example, the proportion of dairy cattle has increased although this group remains far less important than that of the fattening stock. This area remains one of the lesser dairying districts. Similarly the parishes bordering the Wreak where high grade fattening pastures occur show a lower proportion of dairy stock than do the neighbouring

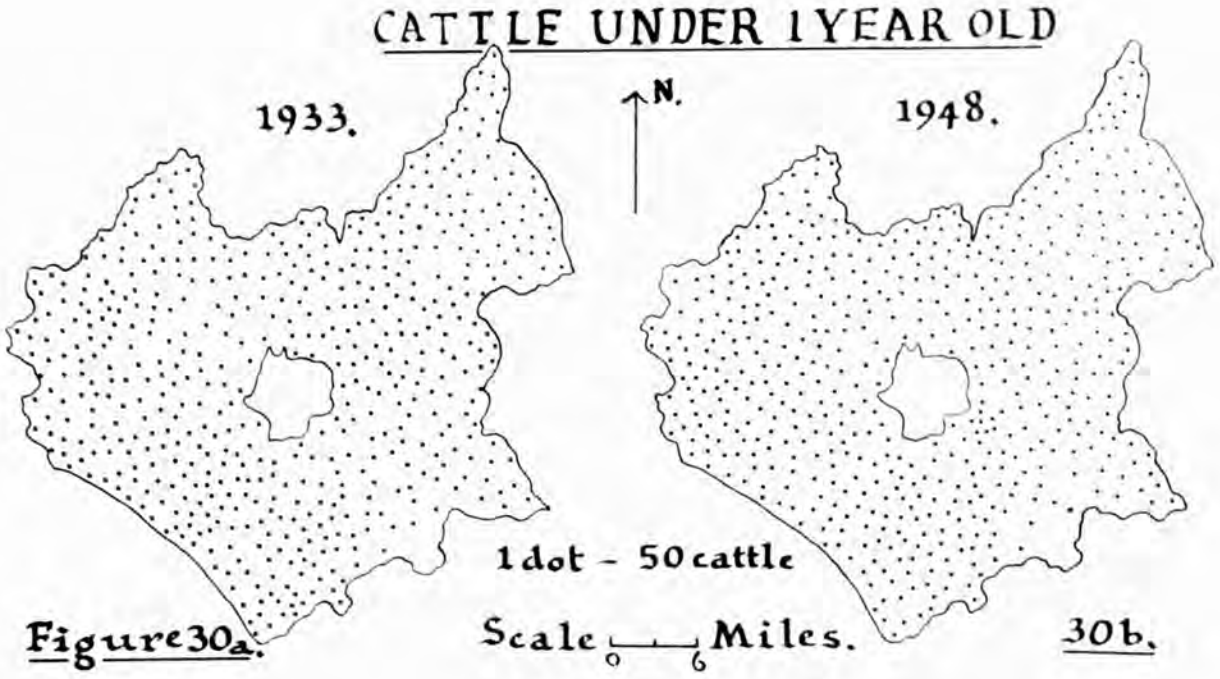


Figure 30a. 30b.

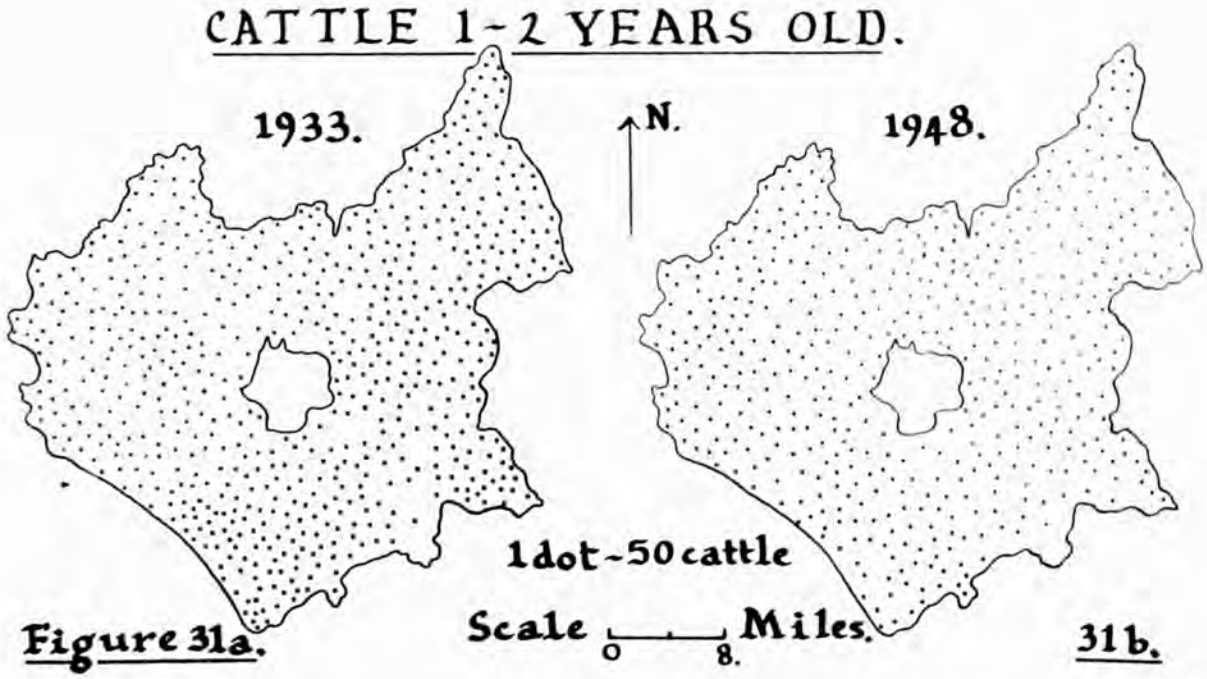


Figure 31a. 31b.

areas. In spite of the general expansion of the area where dairy cattle are the most numerous single group of stock, there remain in the east of the county considerable areas where dairying dominates the stock farming economy to a far lesser extent than in the western and northern districts.

The cattle returned to the Ministry of Agriculture under the heading of 'other cattle' fall into two main groups, those under 2 years old which represent store cattle being reared either for replenishing the dairy herds or to be subsequently fattened for beef, and those over two years old, advanced stores being finished for slaughter. This grouping is not completely accurate for the latter group includes also dry dairy cows which will be returned to the herds, while in addition some store cattle do not pass to the finishing farms until they are two and a half or three years old. Of the younger stock grouped as stores some are bull calves slaughtered when a few weeks old while a small number of others are slaughtered for 'baby beef' at the age of approximately 18 months. However the statistics do not allow a more accurate grouping and the error is not so great as to prevent the chief areas concerned with different types of stock farming from being distinguished.

Cattle under one year and between one and two years of age are uniformly distributed over the greater part of the county in both 1933 and 1948 (Figures 30a & b & 31a & b). The rather lower density of Charnwood Forest north-west of

CATTLE OVER 2 YEARS OLD.

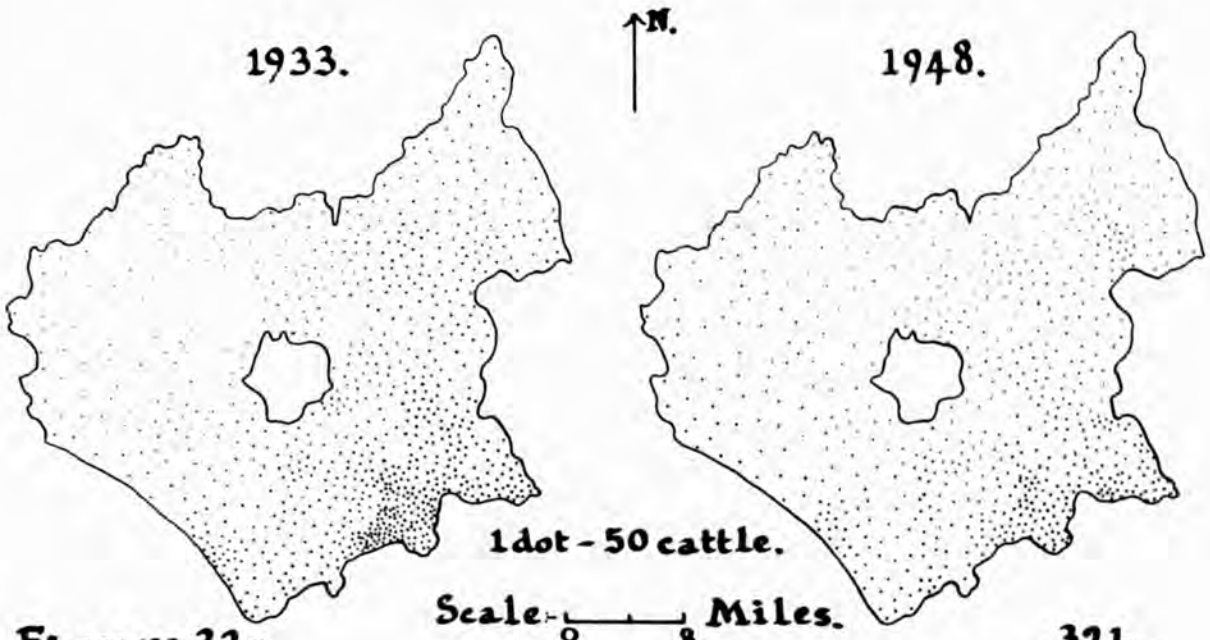


Figure 32a. 32b.

Leicester appearing on the dot distribution maps is to be accounted for by the larger areas of woodland and heath in this area. Otherwise the only district with a noticeably low density is the extreme south-east, the Welland district of first class pastures. Neither the distribution nor the density of these cattle has changed to any great extent between the two years considered, and the Welland district remains the only part of the county in which store cattle either for beef or dairy herds are not reared in considerable numbers. The distribution suggests that, with the exception of this area, the rearing of stores was an integral part of the farming economy whether the chief enterprise was dairying or rearing advanced stores for beef production.

The distribution of older 'other cattle' over two years old, chiefly fattening bullocks and heifers, shows how specialised finishing of beef cattle was particularly associated with the eastern and especially the south-eastern part of the county where high grade pastures occur (Figures 32a & b). In both 1933 and 1948 the higher densities occurred in the parishes bordering the larger river valleys where there are water meadows with a high percentage of nutritious grasses and a rather longer growing season than is usual on the upland pastures. The Welland district is particularly outstanding with regard to both density of stock and the extent of the area. The valley of the Wreak

MALE CATTLE AS A PERCENTAGE OF TOTAL CATTLE

1948.

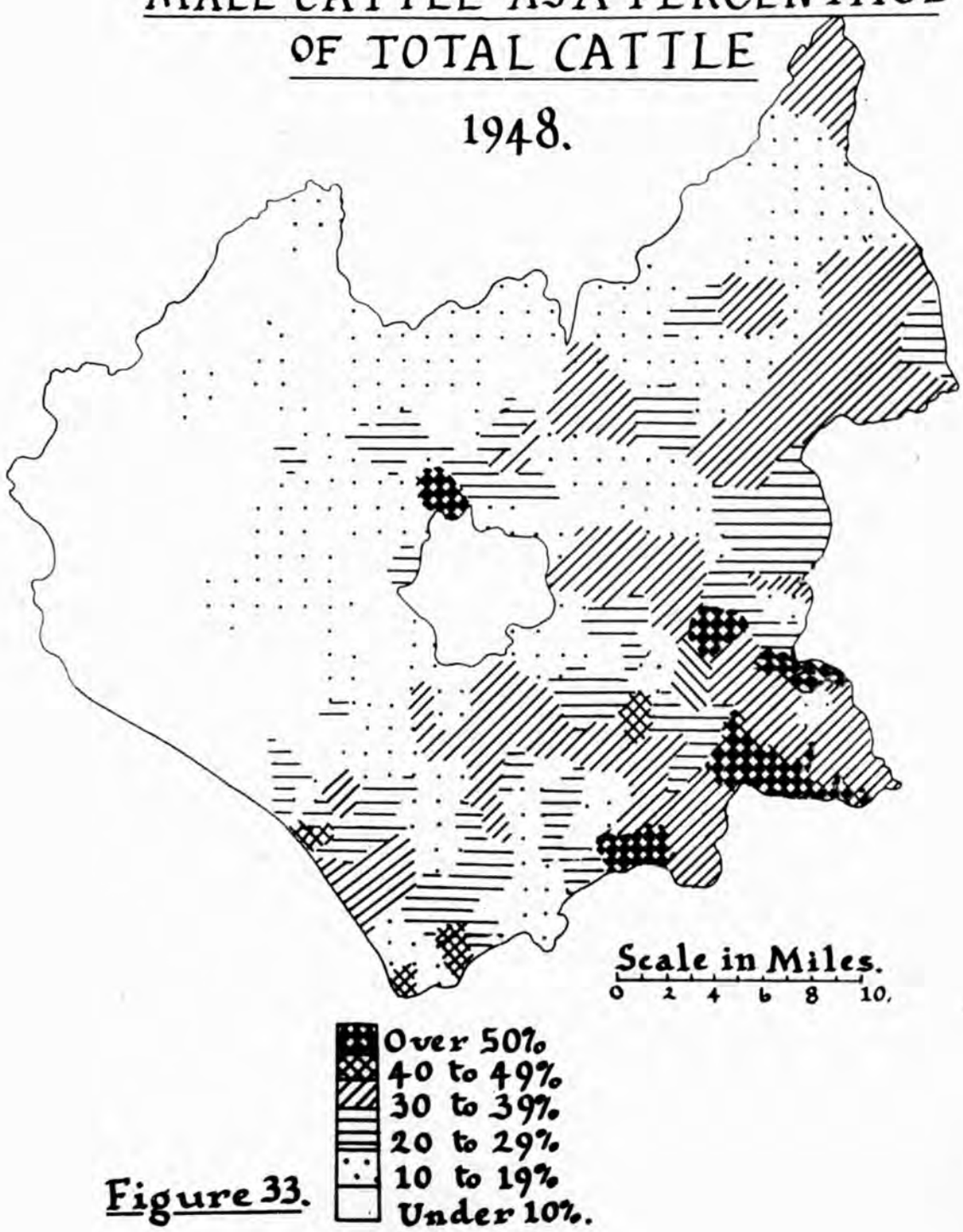


Figure 33.

age in 1948. The majority of these are however females probably either dry cows or the older stock culled from the dairy herds and the increase is therefore to be associated with the general expansion of dairying, with a greater emphasis on winter milk production rather than with any real increase in specialised stock fattening.

In 1948 the three groups of other cattle in the Ministry of Agriculture returns were subdivided into males and females. Although comparison with pre-war statistics is not possible, as these subdivisions were introduced during the war, nevertheless the more detailed distributions throw further light on the character of the farming practised in different parts of the county in 1948. Bullocks of all ages mapped as a percentage of total cattle indicate clearly how mixed stock farming in which beef stores or fattening bullocks form an important element in the total cattle is restricted to the east, especially the south-east of the county (Figure 33). In the dairying districts of the west and north they form an insignificant percentage of the total cattle and are only of slightly greater importance in the areas to the south of Leicester and near the eastern boundary of the county where dairying has been encroaching upon the more mixed type of stock farming.

The largest single group of bullocks comprises those over two years old. The concentrations in their distribution in the areas of higher grade pastures is most marked

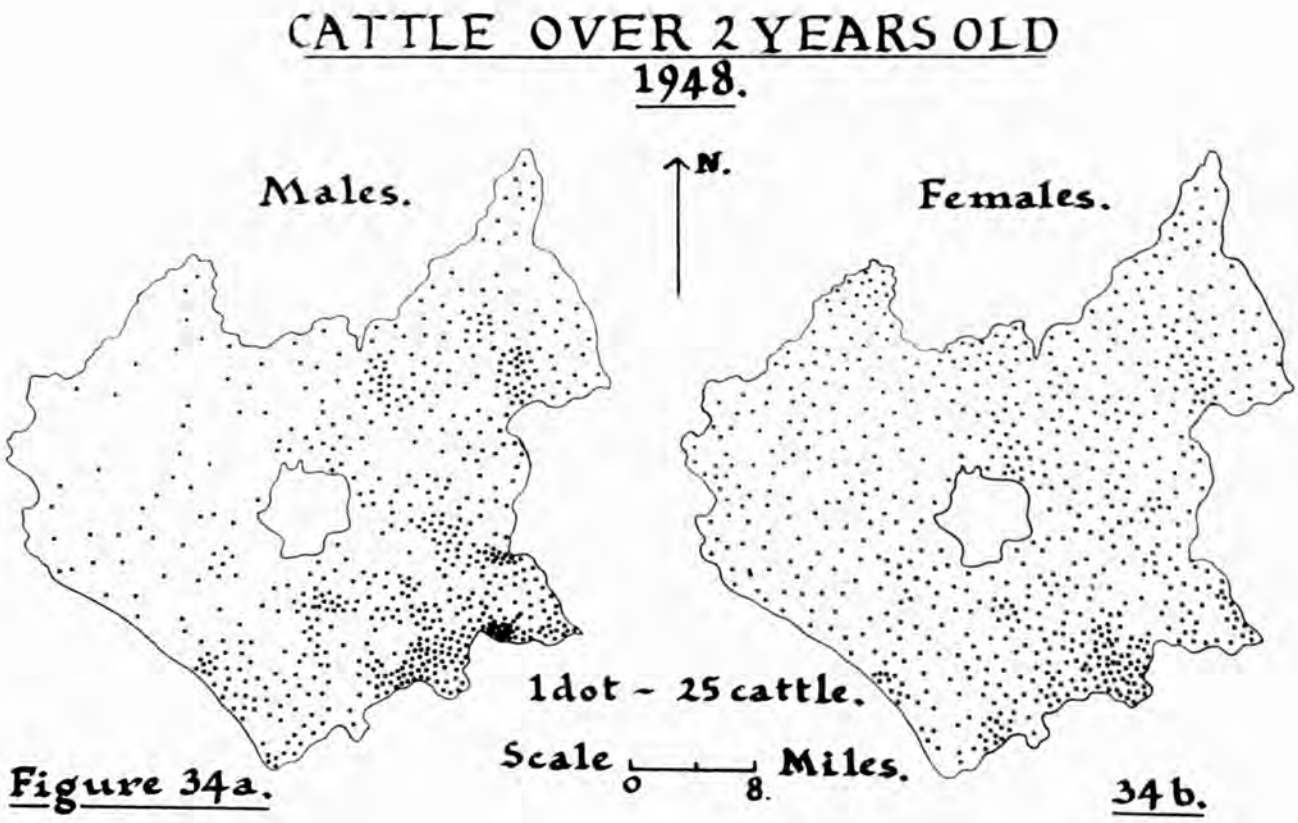


Figure 34a. 34b.

CATTLE 1-2 YEARS OLD 1948.

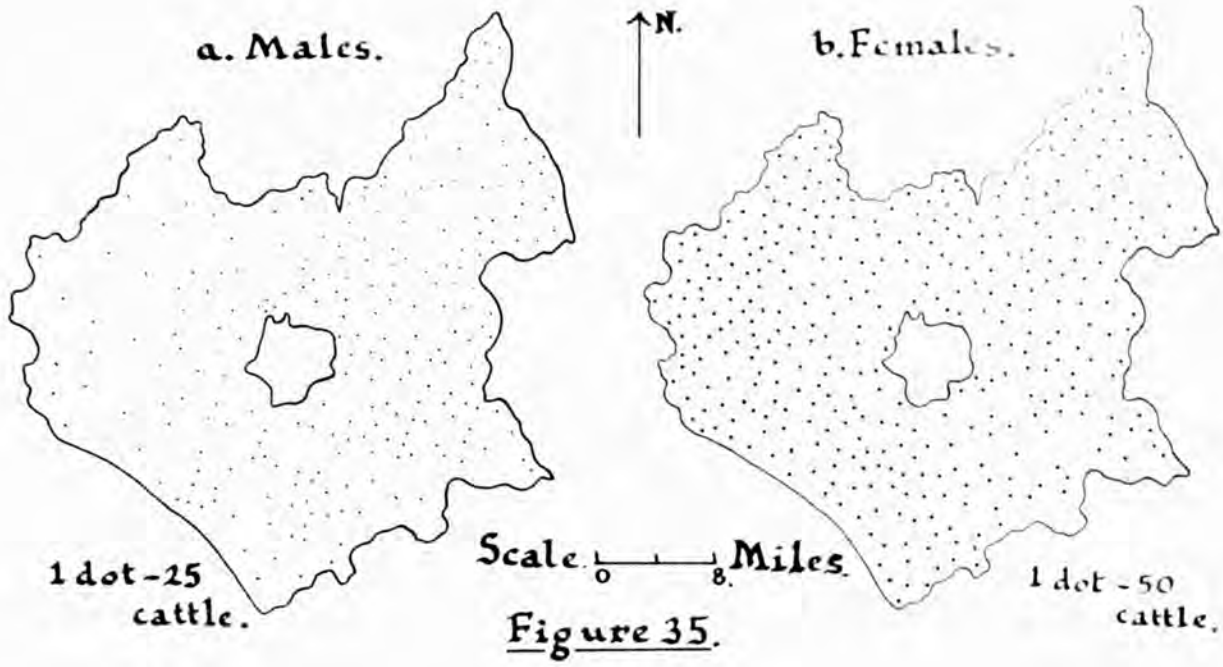


Figure 35.

CATTLE UNDER 1 YEAR OLD 1948.

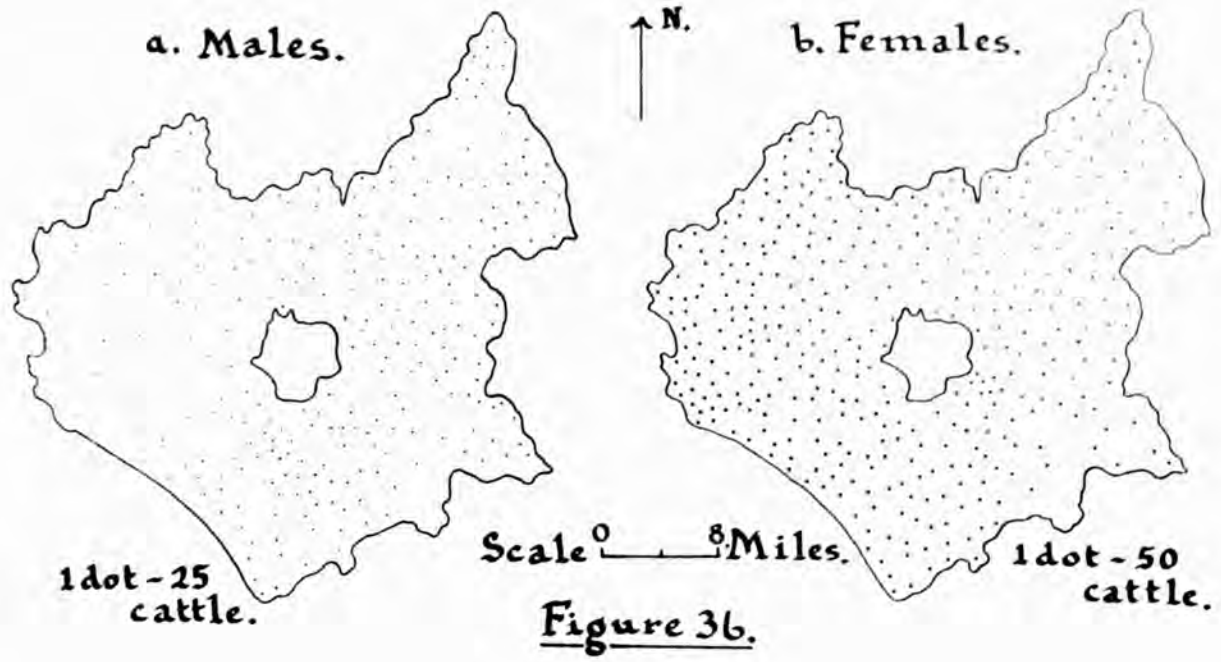


Figure 36.

(Figure 34a). The distribution of cows and heifers in this age group is similar, showing that these also form a significant element of the stock in the fattening areas. They are however definitely fewer in the most specialised fattening districts and their distribution is generally more uniform than that of the bullocks. Unlike the latter many of these are not reared primarily for beef production but are the older cattle of the dairying districts, hence their greater number in the west of the county (Figure 34b).

The one to two year old bullocks show a more uniform distribution than the older group but there is a decidedly greater number in the eastern parts of the county than in the specialised dairying areas of the west. There are also remarkably few of this age group in the south-east fattening area which shows no tendency to become self-supporting as far as the demand for advanced stores is concerned (Figure 35a). The female cattle of this age group similarly are largely absent from the Welland district but their general distribution is more uniform that that of the bullocks. However, as is to be expected, they are most numerous in the chief dairying districts (Figure 35b).

The female cattle under one year old, also lacking from the Welland district, show a distribution very similar to that of the older group (Figure 36b). The youngest group of bullocks on the other hand are much more uniformly distributed than the corresponding older group, apart from the Welland

area, and a relatively larger number are recorded in the dairying districts of the west and north (Figure 36a). This can be accounted for by the fact that in the summer months, especially May and June when many of the dairy herds calve, considerable numbers of bull calves are for short periods on the dairy farms and are recorded in the June returns. On the specialised dairy farms, however, with the exception of a very few to be reared for service, after about two weeks they are sold either to the rearing farms as stores or to the Ministry of Food for slaughter. They are not as a rule kept for veal production owing to the high demand for milk.

From this study of the distributions of stock of different types it can be seen that the contrast noted in the pre-war Land Use Report between the stock farming characteristic of the west and of the eastern districts of the county still persists. The west is essentially a specialised dairying area and this is also true of the Vale of Belvoir and the Wolds north of Leicester. In these areas stock which are not either true dairy stock or stores for the dairy herds are few in number. In the eastern areas on the other hand, in spite of the increase in dairying and the occurrence of specialised dairy farms, the stock farming remains essentially mixed. Rearing and fattening store cattle continue to be characteristic features of the farming economy. The south-eastern fattening areas although

contracting continue to retain their essential features as summer grassland stock finishing areas, dealing primarily with stores brought into the area either from the northern parts of the county or from more distant rearing districts. All types of stock farming have not been similarly affected by the war-time changes in agriculture. Dairying has continued to expand. The numbers of stock have increased and the dairying areas have extended. On the contrary mixed farming concerned chiefly with rearing stores and fattening beef cattle has contracted, both with regard to numbers of stock and the area in which this type of farming is dominant. The latter type of farming is that most dependent upon summer grassland and consequently more seriously affected by the ploughing of permanent pasture.

CHAPTER VI

LEICESTERSHIRE AGRICULTURE IN 1948

The 1948 distributions of both crops and stock show that everywhere in the county there has developed a system of mixed arable and stock farming. Nowhere does the purely grassland stock farming, so prevalent in the eastern part of the county in pre-war days, now remain. In many respects a high degree of uniformity appears to exist but variations in the particular type of farming practised from one area to another can be distinguished. However in most cases changes take place gradually by slow transitions, and clear cut boundaries giving rise to distinct agricultural or land use regions seldom occur.

Distinct differences between the farming practised in the east and the west remain, with regard to both stock and crop production. The west shows a marked specialisation in dairying as in the pre-war period but now with a large acreage under fodder crops. More than half the farm land is under crops and of this crop area considerably more than half is under fodder. The proportion of dairy cattle has increased. Over a large part of the area this group represents more than 50% of the total and in the remainder between 35% and 50% while the other cattle are almost entirely young dairy stores. Cash crops are not insignificant but, as in the pre-war period, their production is a lesser part of the farm economy. Over much of the area total cattle have increased during the war period in contrast to

the general trend in much of the remainder of the county. Sheep, always less numerous than in the east, have been reduced in numbers and the statistics give no indication of any real interest in the other types of stock farming.

In the east of the county farming while retaining rather more of its former grassland character in other respects appears to have changed to a greater extent than that of the west. The arable land represents less than half the total farm area and cash crops and fodder crops occupy comparable areas. Dairying, as was the case before the war, is of lesser importance than in the west and in very few parishes do dairy stock represent over half of the total cattle and in a large part of the south east the proportion represented by this group is less than one third. There has been however a definite expansion of this type of stock farming throughout the mixed stock area, particularly towards the west and the north and near to Leicester.

Stock of all types are well represented over the greater part of the eastern areas although in the Welland District other types give way to advanced fattening stock and in the Vale of Belvoir dairy cattle are by far the most numerous group. Total cattle have declined in numbers in the whole area, in contrast to the western areas, the decline being greatest among the 'other cattle'.

The relatively greater importance of mixed stock, cash crops and permanent grassland shows the farming economy to be

distinct from that of the west. Summer grazing of stores and fattening stock is still an important activity. Stores may be wintered in yards largely on hay or cereal straw, hence the smaller acreage under the more nutritious winter feed crops necessary for wintering dairy cattle, and the relatively greater acreage of cash crops introduced during the war.

To the north distinct variations occur. In the Vale of Belvoir dairying is shown by the statistics to be the chief specialised farming activity as it was in pre-war days. It differs from that of the west owing to the smaller area devoted to fodder crops and a greater area under permanent grass. In the Vale and in a limited area beyond the Belvoir Escarpment much of the milk is collected by the Stilton dairies for re-distribution as liquid milk or for the manufacture of cheese when the quantity of surplus milk allows.

In the extreme south-east finishing store cattle on summer grass remains the dominant activity but in this area also substantial acreages are under arable crops. Cash crops are relatively more important than fodder and few cattle are wintered in the area, which remains a distinct agricultural region with a specialised type of farming differing significantly from that of the neighbouring areas.

A further agricultural region less distinct but differing in certain important respects from that of the bulk of the east occurs near the eastern border of the county on the dissected upper Lias Clay Uplands, an area of more marked relief. The

system of cropping shows little variation from that of the other eastern districts but a far higher acreage of permanent grassland remains and the number of stock per hundred acres of farm land is rather lower than the average for the eastern part of the county.

The extreme north east of the county continues to be the only part in which cash crop production is one of the chief farming activities. The proportion of the arable land under cash crops has become much greater than in pre-war days and the area of the county especially concerned with their production has also expanded. This area stands out rather more distinctly than the remaining agricultural regions and there appears to be still a definite connection between the type of farming practised and the natural conditions of the area. The crop production reaches its maximum development in those parishes where the Inferior Oolite occurs and here owing to the relatively lower number of stock it appears to be the chief farming activity.

CHAPTER VII

POST-WAR AGRICULTURAL REGIONS OF LEICESTERSHIRE

Section a) The Former Grassland Area of the East

The area to be discussed in this section corresponds approximately with that in which 90% or more of the total farm area was in 1933 under permanent grass (Figure 20a). This area continues to show a certain degree of unity in land use in that the permanent grass area is still, in the post-war period, greater than that in the west of the county while a correspondingly smaller acreage of the arable land is used for the production of fodder crops and rotation grasses. The boundaries are indistinct but with the exception of two areas it includes the whole of the county east of the longitude of Leicester County Borough. The larger of the excepted areas is that of the arable north-east comprising those parishes largely underlain by the Middle Lias Marlstone and the Inferior Oolite, together with Bottesford in the Vale of Belvoir and Garthorpe on the boulder clay. The second is the ill-defined area to the south-east of the County Borough where rather more dairy stock and a higher acreage of arable land, of which a greater proportion is under fodder crops, indicate that the type of agriculture practised resembles more nearly that characteristic of the west of the county. To both north and south of the County Borough the area regarded as eastern Leicestershire merges through a transitional zone into that where the type of agriculture characteristic of the western part of the county becomes dominant.

In addition to showing the characteristics of land use noted above, eastern Leicestershire is an area of mixed stock farming as it was before the war. Although this area possesses a certain degree of unity as a result of similarity in general land use and stock farming, four additional regions lying towards the margins of the main area can nevertheless be distinguished. Their agriculture shows specialised features resulting from variations in either economic or natural conditions. These areas are the Vale of Belvoir, the Wreak and Welland Valleys and the higher part of the uplands of eastern Leicestershire associated with the occurrence of the Upper Lias Clays (Figure 3). First the features of the agriculture of the main area, and subsequently the special features of these four additional regions will be considered.

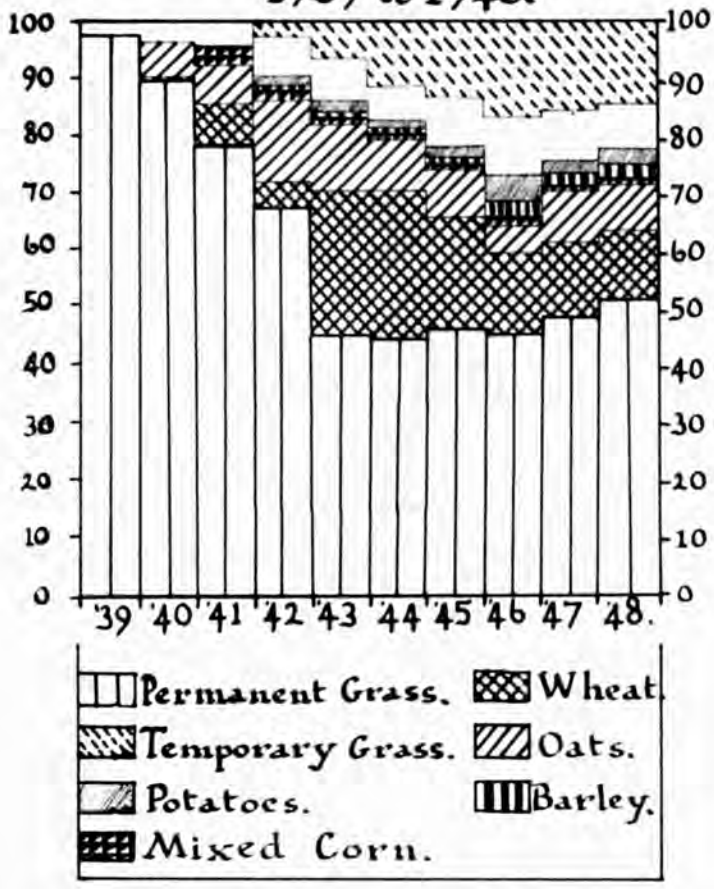
i) The main area of eastern Leicestershire

Eastern Leicestershire, underlain for the most part by Liassic Beds which are largely masked by glacial drift, is an area of gently rolling relief. The only outstanding feature is the Marlstone escarpment and few slopes have a sufficiently steep gradient to present real difficulties to modern arable farming. Soils are for the most part heavy clay loams, but on the glacial drift they are variable, and irregular scattered patches of lighter soils occur. Loamy soils are associated with the Middle Lias Marlstone but the outcrops of this bed are not extensive. Numerous streams cross the area but these are mostly the small tributaries of the Wreak and the Welland and have not developed wide alluvial flood plains. Natural drainage is not good. The water stands on the level land and underdrainage is essential for arable farming. Much of the land has been drained by old tile or turf drains and the clay soils are well suited for mole drainage, the cheapest modern method which remains effective for about three years.

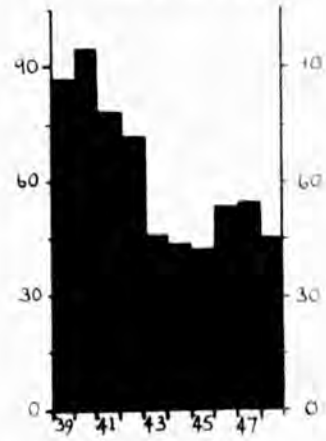
The settlements which characterise the area are small villages consisting chiefly of groups of farms. Many are linear in form, the farm buildings extending along the main road. Farms situated in the villages form a large proportion of the total number although isolated farms of the homestead type are also found in all parts of the area. Main roads are few and cart tracks and minor roads, many of which are gated, leave considerable areas of land inaccessible to tractor drawn

BILLESDON PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS 1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS. 1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS. 1939 to 1948.

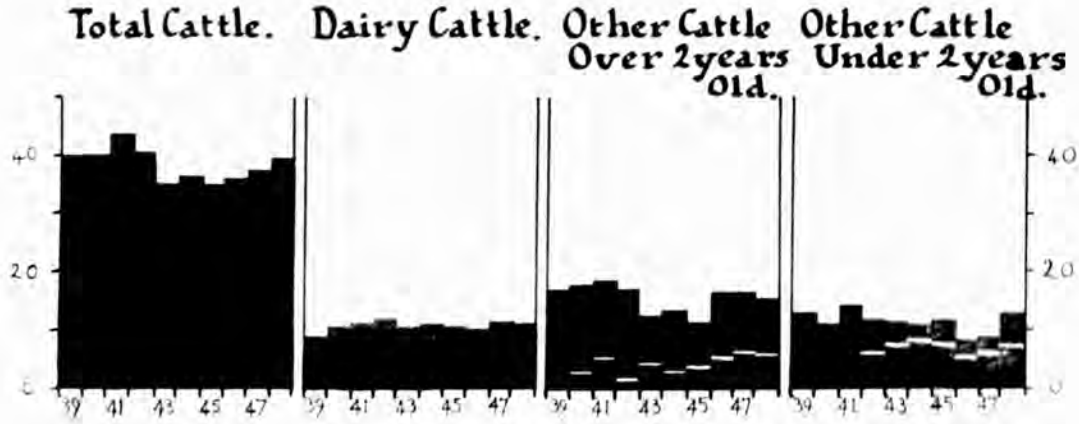


Figure 37.

Note. The upper part of subdivided columns represents bullocks the lower part cows and heifers

machinery or vehicles.

Billesdon parish has been selected as a typical area of Eastern Leicestershire. Judging from the distributions for both 1933 and 1948 it does not appear to differ in any marked way from the majority of the parishes in the area under discussion. Owing to its position, extending across the Marlstone escarpment, within its boundaries are included areas underlain by both the Lower and Middle Lias Clays, the Middle Lias Marlstone and glacial drift deposits, with their associated varying features of relief and soils.

In the 1930's approximately 98% of this parish was permanent grassland. Only three small arable fields were shown on the Land Utilisation Survey Map situated on patches of glacial gravels in the south of the parish. In 1948 the permanent grassland area had fallen to 52% of the total area of crops and grass. The changes in the percentages of total crops and grass under the various crops and permanent grassland, and the changes in numbers of stock of the different types between 1939 and 1948 are shown in figure 37. The steady decline in permanent grassland resulting from the war-time compulsory ploughing continued until 1943 when 55% of the farm area was returned as arable land. This decrease in permanent grassland caused a corresponding reduction in total stock. The number of sheep per 100 acres of farm land was nearly halved while total cattle showed a lesser but clearly marked decline of approximately 10% to 35 per 100 acres in 1943. The acreage of arable land after

1943 remained almost constant until the year following the end of the war and from that time to 1948 has shown only a small decrease to 48% of the total area of farm land.

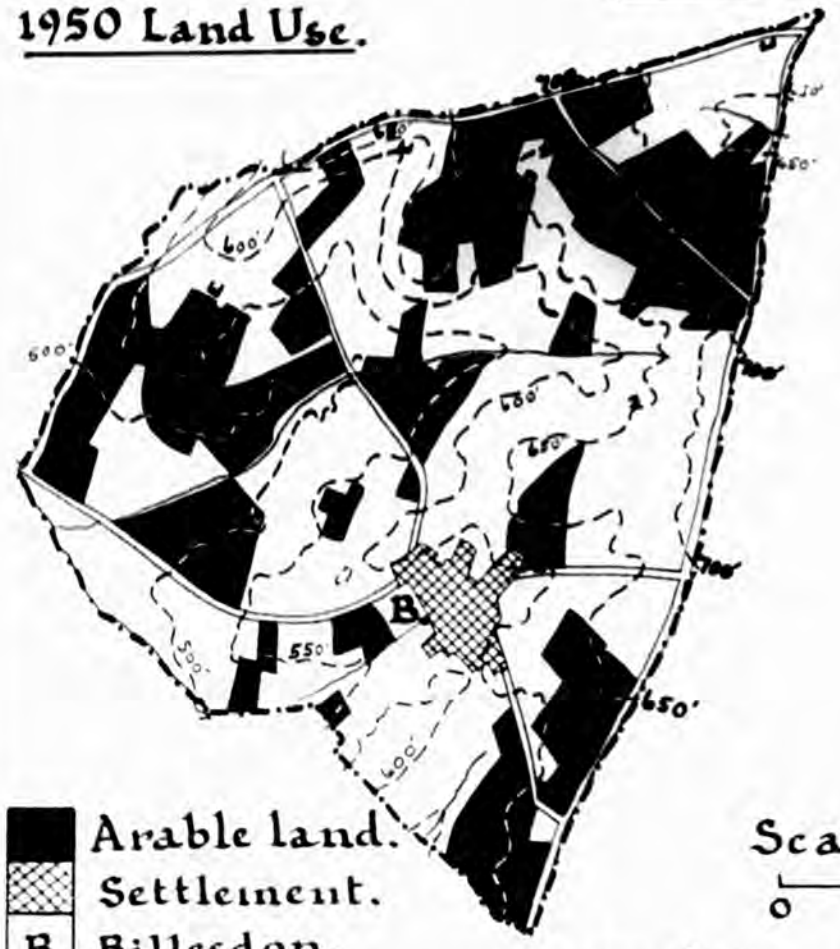
Although sheep declined markedly as early as 1941 (Figure 37b) it was not until 1943, when the arable area was increased by an acreage representing 28% of the farm area, that cattle were substantially reduced (Figure 37c). In the earlier years of the war the greater part of the arable land was under feed crops principally oats and mixed corn which would assist in maintaining numbers of stock but in 1943 almost the whole of the additional arable land was under wheat, a cash crop, which became the chief farm crop occupying nearly 50% of the total arable land. Oats has been maintained as a comparatively stable crop but no other single crop occupies a significant percentage of the farm land apart from clover, lucerne and rotation grasses. The area under the latter increased steadily from 1942 to 1946 after which year they have continued to occupy approximately 14% of the total farm area. It can be seen (Figure 37a and c) how in 1946 when a marked decrease in the wheat acreage occurred coupled with the increase in temporary grassland and some land was seeded down to permanent grass numbers of stock began to show a corresponding rise. The second fall in total sheep occurring in 1948 and reducing the number almost to the war-time level after an increase in 1946 and 1947 may be related to the fact that 1947 was a year of particularly severe winter weather and consequent high losses in the hill sheep country from which the majority of the young

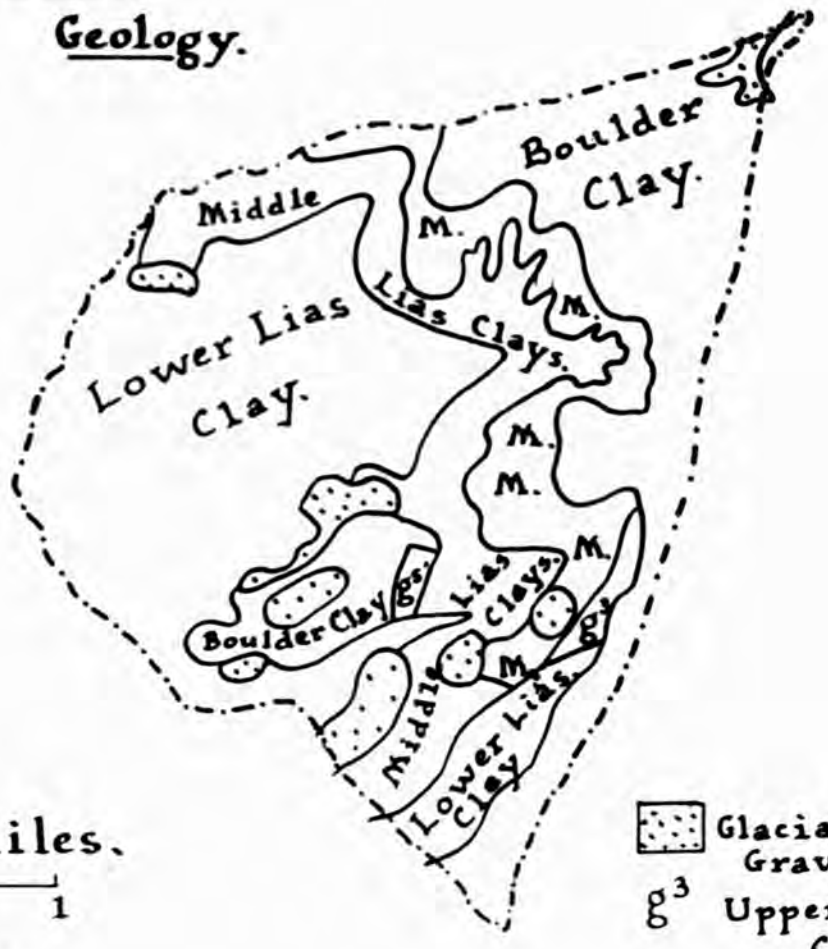
stores for replenishing the flocks of Leicestershire are normally obtained. The number of total cattle suffered no such set-back and a steady rise restored the number per 100 acres of farm land almost to that recorded in 1939.

Of the different types of cattle those classed in the dairy group have shown least fluctuation and a gradual increase has taken place. Although the 1948 total is only two per hundred acres more than the number for 1939 this represents an increase of rather more than 20% of the total dairy stock (Figure 37c). The number of young stock has fluctuated considerably but the young female stock, chiefly stores for the dairy herds, have remained more stable and show an increase in more recent years. The group of female stock over 2 years of age, beef heifers, dry cows and former dairy stock, has shown similar variations. Most striking, however, are the changes which have taken place in the numbers of older bullocks, the advanced stores and fattening stock. The influence of the war time reduction of permanent grassland is most marked. Although this group also increased with the post-war increase in permanent and temporary grassland the number recorded in 1948 represents only nine per 100 acres of farm land, compared with 14 in 1939, or two thirds of the pre-war number (Figure 37c).

Throughout the period under consideration this parish has maintained its essential character as a mixed stock farming area. Arable farming virtually absent before the war has been firmly established. Wheat and oats have been introduced as

BILLESDON PARISH.





Scale in Miles.

0 ½ 1

Figure 38.

the chief cereal crops for sale and for feed and in spite of a decrease from the maximum acreages of the war years had retained their prominent position in 1948. The restoration of permanent grassland has not been extensive but a substantial acreage of clover lucerne and rotation grasses has partially replaced ploughed permanent pasture.

In spite of the occurrence of lighter land on the Middle Lias Marlstone outcrop acreages of potatoes, roots, and barley have at all times remained small. Dairying has gained ground continuously while the stock much more dependent upon summer grazing, the advanced store cattle and sheep have been reduced in conjunction with the decrease in permanent grass area and although showing signs of recovery remained in 1948 substantially below the pre-war number. In contrast to the sudden and drastic changes of land use in the early war years the acreages under the various crops have remained comparatively stable during the last few years for which statistics are available.

A survey of the land use carried out in 1950 indicates that during the years between 1948 and this later year little change in the area under crops and permanent grass has occurred. The distribution of arable land has been correlated with various natural factors in an attempt to determine how far natural conditions have influenced the land use pattern which has developed as a result of the recent agricultural changes (Figure 38).

The two most extensive outcrops which occur in the parish are those of the Lower Lias Clays and the Boulder Clay while the

two Middle Lias deposits the Clays and the Marlstone are also represented (Figure 38b). The land use survey shows that of the boulder clay area approximately 53% is arable land while 43% of the Lower Lias was also under the plough. The lowest proportion of 17% occurred on the Middle Lias Clays. On the Marlstone, the outcrop giving rise to the lightest most free-working soil the arable area was far below the average for the parish representing only 26% of the total outcrop. These results provide sufficient evidence to show that lightness of soil alone, a factor considered to be of prime importance in the pre-war period, is not any longer a strong control of the distribution of arable land. The two outcrops showing the higher percentages of arable land are those which give rise, for the most part, to stiff medium to heavy clay loams.

The distribution of arable land appears to be much more closely related to relief. The greater part of the arable land is situated on the gently rolling or relatively level land either below or on the dip slope of the Marlstone escarpment. The two outcrops upon which little arable land is to be found are those which are exposed either on the steep face of the escarpment or in the valleys deeply incised into the dip slope. Part of the Marlstone area has been rendered useless for arable farming owing to old iron stone workings and stone pits.

The remaining factors which appear to influence the distribution of arable fields are concerned chiefly with the convenience of working the land. It is clear that the majority of the

arable fields are accessible from hard roads while the greater part of the less accessible land has been retained as permanent pasture. A further notable feature of the land use pattern is the lack of arable land near Billesdon village (Figure 38). In common with many of the villages of eastern Leicestershire Billesdon contains a number of small farms, usually less than 50 acres in area and laid out in narrow strips of land extending from the farm buildings in the village.

During the war many small holdings were dependent upon the War Agricultural Executive Committee for the work of arable farming and were not sufficiently well laid out to make it seem worth while for the individual holdings to be equipped with the necessary expensive machinery. With the discontinuation of work by the Committee many of these farms have been largely reseeded and only a small acreage which could be worked with small scale equipment, often horse drawn, retained in tillage. Many of such farms in the county are chiefly concerned with small scale dairying and the arable fields are usually those most distant from the farm buildings. The prime consideration controlling the use of the land is the need to retain pasture land on which the milking herd may be grazed, or wintered if no other accommodation is available, as near to the buildings as possible. Thus waste of time and labour in collecting the herd and carting additional feed is avoided. Even on the larger farms with this strip layout especially if dairying is a major activity, the same pattern of land use prevails. As a result the majority of the

PART OF BURTON OVERY, CARLTON CURLIEU AND GLEN MAGNA PARISHES 1951.

Arable land.
Settlement.

B. Burton Overy.
C. Carlton Curlieu.
GM. Glen Magna.

Scale in Miles.

0. ½. 1.

Figure 39.

villages consisting chiefly of groups of farms are more or less surrounded by an area of permanent pasture. Similarly on the more compact 'homestead' type of farm permanent pastures are usually to be found near the farm buildings.

The land use pattern characteristic of the gently rolling ridges and valleys of eastern Leicestershire is also illustrated by the survey of parts of the parishes of Great Glen, Burton Overy and Carlton Curlieu (Figure 39). Areas of permanent grass occur near the farms in the villages while the arable fields are chiefly those accessible from roads. Much of the riverside land in the eastern part of the county is under permanent grass but, as the survey of this sample area shows, a considerable number of fields bordering streams are also under the plough and no real correlation between the occurrence of river valleys and the general distribution of arable land can be distinguished. In some areas the streams are liable to flood and true water meadows result. This is true of the land beside the stream south-west of Carlton Curlieu for example. In many cases however the land, which owing either to flooding or to the occurrence of a high water table is rendered useless for arable farming, is limited to a narrow strip a few yards wide near the stream itself. In other valleys the streams are sharply incised and the gradients of the bordering land particularly steep as in the case of the valley west of Burton Overy. Such land is usually of necessity retained as permanent grassland. Apart from the occurrence of such local features influencing only

small areas it is noticeable that permanent grass and arable land are to be found in similar adjoining fields, leading to the conclusion that it is not a natural factor which directly influences the use of riverside land. As has been noticed previously, Leicestershire is deficient in water bearing beds and local supplies can be derived from few sources apart from the Marlstone, where this may be tapped, or from glacial gravels. Main supplies are available only in limited areas and few farms especially in the east of the county have piped supplies to the fields. The farms depend chiefly for supplies for stock upon pits and streams. Retaining the fields bordering reliable streams as pastures obviates the expense of providing an alternative supply, or of carting water in dry periods when pits are more liable to fail.

It appears from the study of the land use pattern that in very few cases is the distribution of arable land determined by natural factors. Gradient appears to exercise considerable control but slopes sufficiently steep to cause real difficulty in arable farming, in which modern power driven machinery is used, are few, and occur in only small areas. Similarly areas liable to serious flooding are limited in extent. The pattern of land use depends primarily on the lay out of the farms and the way in which the individual farmers choose to arrange the pasture and arable fields on their holdings for convenience and economy in working them.

The following information was obtained from a farm typical

of many of the relatively small holdings associated with the villages. The present occupier has farmed the holding since before the war. Totalling 40 acres in area the land is about threequarters of a mile from the farm house which is located in the village. Although less inconvenient than many of the small strip farms radiating from the villages this arrangement of buildings and land is a definite disadvantage. The buildings on the holding itself comprise only one barn, a small implement shed and accommodation for wintering only four cattle indoors. The land crossed by a road is reasonably accessible and slopes gently down to a brook which forms one boundary. The soil is heavy clay developed on the Lower Lias and Boulder Clay, the depth being approximately six inches. Although underdrained by pipe drains these are old, deep, and not really effective. The equipment necessary for mole draining is not possessed by the occupier and the expense of having the work done by contract is considered too great. Before the war this was an all-grass holding concerned with rearing young store cattle and sheep which were normally bought in spring although a small number were wintered on the holding being fed on bought feeding stuffs. During the war the greater part of the holding was ploughed, the arable work being carried out by the Agricultural Executive Committee. Two fields were retained under permanent pasture, one near the buildings and giving access to the road, and the second bordered by the brook, the only reliable source of water for stock in dry years when the pits in other fields are liable to

fail. Various crops including wheat, oats, potatoes and green fodder crops were grown. Wheat and green crops yielded well but potatoes were poor.

The number of stock, particularly of sheep, was reduced and dairying became of equal importance with rearing store animals. By 1951 all but one field of eight acres had been reseeded as permanent pasture and the only crop grown was oats or an alternative feed crop. Seven dairy cattle in milk were kept and 20 young store cattle 14 of which had been wintered on the holding were being reared as stores to be sold in Leicester. The milk, less than ten gallons a day, is picked up by a Leicester dairy. The number of sheep had been increased and a breeding flock of 22 ewes kept and lambs were normally sold in summer either fat or as stores. Owing to the rise in the price of wool in 1951 the farmer was considering keeping the lambs for clipping the following spring.

The arable work since the war has been carried out with horse drawn implements owing to lack of capital or of the inclination to equip the holding with power machinery which would be in use for only a small part of the year. The heavy land is extremely difficult to work either after prolonged wet or dry weather when the plough merely slides over the surface. Many other problems confront the farmer. Winter feed is extremely expensive, and the lack of buildings prevents the indoor wintering of the whole dairy herd or of store stock. The milk yield is therefore reduced and hay and straw lost through trampling in

the pastures.

The two major problems of the holding are lack of capital and equipment coupled with uneconomic size and layout of the farm which make it ill-suited for running as a mixed stock and arable farm. These factors are chiefly responsible for its return as near as possible to the pre-war grassland type of farming.

Holdings of this type, although numerous and occurring near many of the villages, occupy a much smaller total area than the more usual east Leicestershire farm of about 100 acres or more in area. Farms of this size are sufficiently large to be economically organised as mixed arable and stock farms. The larger area allows the necessary power driven machinery to be more fully used while the larger returns obtained make possible greater capital investment in additional buildings and equipment which leads to more efficient farming. Although rather above the average size a 250 acre mixed stock farm from which the following particulars were obtained is representative of this group illustrating the general farm practice.

Situated outside Burton Overy but less than a mile from the village the farm extends across an area of gently undulating boulder clay but includes a small patch of glacial gravels and near a stream a strip of the Lower Lias. The soils, although generally heavy, are variable and light sandy land occurs on the glacial gravels. The farm buildings include barns and adequate implement sheds as well as a stock yard and sheds for housing dairy stock. The holding is compact and roads along two sides

give easy access to a large proportion of the fields.

Before the war it was an all grass farm, concerned chiefly with rearing and fattening stock, although a small number of dairy cattle were maintained and milk collected by a Leicester dairy. All additional winter feed apart from hay was bought. During the war more than half the farm land was ploughed and wheat became the chief crop, although oats potatoes and fodder crops were also grown in order to make the farm as self supporting as possible. Rearing and fattening stock, especially sheep, were reduced and dairying became the chief farming activity.

At the present time the arable land represents between one third and one half of the total farm area, and although wheat is the chief crop grown for sale the area has been reduced and feed crops are still grown in sufficient quantities to make the farm almost self supporting for winter feed. A herd of 25 dairy cattle is maintained but store stock, both for dairy replacements and for fattening stock, are reared in order to give as much stability as possible to the enterprise. A flock of breeding sheep is also kept. Crossbred stores are bought in spring from the north of England and fat lambs and store sheep sold in summer.

Temporary grassland is incorporated in the cropping system, both one or two year and longer seven or eight year leys. It is considered that the periodic reseeding of the pastures after cropping has increased their stock carrying capacity and the number of stock on the farm, in spite of the relatively high

proportion of land under arable crops, approximates to that of pre-war days. The best pastures which will finish bullocks well have been maintained as permanent grassland and true ley farming, involving ploughing all land for reseeding, is not practised.

Although the variation in soil type is recognised, no regard is paid to this in cropping the land. The farmer considered that the manuring, fertilising and general care of the land are responsible for its productivity and outweigh any natural variations. With the equipment available the work of preparing and drilling the heavy land can be completed in the working season available. In 1951, a particularly late year owing to a wet autumn in 1950 followed by a wet spring, all the land was sown but some spring cereals were substituted where it had been originally intended to grow winter wheat.

No fixed rotation is observed but as a rule not more than two grain crops are taken in succession. Roots and green fodder crops are not grown in sufficient quantities to allow their inclusion in a fixed rotation. These make the greatest demands upon farmyard manure the type of fertiliser considered to be most beneficial for the land but not available in sufficient quantities to permit a regular dressing to be given to all arable land. They are therefore moved round the farm in order that all land shall be cleaned and manured as frequently as the farm economy, determined by the requirements of the stock rather than the arable farming, shall allow. A similar consideration on a farm with distinct areas of light and heavy soil caused the roots

better suited to the light land to be grown as frequently on the heavy soils, in order that they, too, should be cleaned and manured.

The farm is equipped with all necessary tractor drawn machinery to permit the arable work, including threshing, to be completed without employing contractors. Consequently the expense of hiring contractors' machinery is avoided, and the work may be carried out when it is most convenient for the efficient organisation of the farm. In this respect the farm is unusual for the county. The majority depend on contractors for such work as threshing or baling hay or straw.

Although this farm is in many respects representative of a large number of those in the east of the county, as the parish statistics suggest, nevertheless considerable variety in the organisation and degree of specialisation in the different farming activities also occurs. Additional cash crops such as sugar beet are produced on some farms while on others a different emphasis is placed on the various stock farming activities or one or more are absent. On farms which do not possess first class pastures, for example, bullocks are usually sold as stores at about two and a half years of age, although some are finished in yards or on leys.

There appears to be a close correlation between the distribution of farms concerned chiefly with finishing beasts for slaughter and the occurrence of permanent grassland recognised as first class feeding land. This factor is illustrated, apart

from the distribution of bullocks already considered, by the economy of two farms run as one enterprise, one near Beeby and the second on stronger land near Lowesby. Each is approximately 220 acres in area but on the former nearly 70% of the land is under the plough while on the latter on the better stronger land, although nearly half was arable during the war, about 80% is now permanent grassland. The crops include wheat and barley, both sold off the farm, together with oats, roots, green fodder and grass leys for stock feed. The land on both farms is medium to heavy clay loam developed on the Boulder or Lower Lias Clays but no account is taken of variation in type in the cropping. On the poorer farm dairy cattle and young stock are reared from a herd of dual purpose Lincoln Red Shorthorns. Milk is collected by a Leicester dairy and young steers are reared, yard-fed in winter, and summer grazed on leys and permanent pasture until about 3 years old, when they are transferred for finishing to the second farm on the higher grade permanent pastures. On this latter farm sheep are also fattened for slaughter during the summer.

Farms specialising primarily in one aspect of stock farming do not differ greatly in the general land use and farm organisation from the more mixed type. The following details refer to a specialised dairy farm (Farm C in Table VII) extending across the Marlstone escarpment including land developed on the Lower and Middle Lias Clays, the Marlstone and Boulder Clay. The soils are for the most part medium to heavy clays but on the

Marlstone loamy free working soil occurs. The land above and below the escarpment is relatively level but the scarp slope of the Marlstone has been exaggerated by small scale quarrying.

About 40% of the land is in arable use. Apart from the usual feed crops, wheat, barley and a small quantity of potatoes are produced for sale. The latter cereal is grown on the light soils of the Marlstone and wheat on the heavier clays. A mixed herd of Ayrshires and British Friesians, both specialised dairy breeds, is maintained and milk collected by a Leicester dairy. Heifers are reared for the herd but bull calves are usually sold to the Ministry of Food. In addition to the herd of nearly 75 cattle a flock of 70 Masham sheep is kept. About one third are replaced yearly by young stores from Carlisle and the older ewes and fat lambs sold in Leicester during the summer. Dairying is, however, regarded as the chief activity and the farm organised to be largely self supporting. The other activities serve to give greater stability but the land devoted to cash crops and sheep pasture varies from year to year according to the requirements of the dairy herd. The farm was not occupied by the same tenant before the war and, apart from the fact that it was an all grass farm, no details were known. A greater area had been ploughed during the war but reseeded when more pasture was required for an increased number of stock.

Rather more rare than the specialised dairy farms are those concerned only with rearing and fattening beef cattle. A 215 acre farm of this type recorded the average acreage of arable land,

approximately 36% of the total. Wheat is produced for sale and the remaining area used for the production of feed crops. A breeding herd of 30 Lincoln Red dual purpose cattle is maintained and steers reared and fattened while the young heifers are sold in Leicester store market. During each summer about 40 fat or near fat bullocks are sold. In addition a breeding flock of about 100 Masham ewes is kept and stores and fat lambs sold, being replaced by young stores bought from Yorkshire in September. For water supply the farm depends on springs, the location of which determines the use of the land, the fields with an adequate supply being pastures. Although young cattle and sheep are grazed on leys, bullocks are finished on the permanent pastures. A feature which is rather unusual for an east Leicestershire farm is that this holding is equipped with a new set of buildings in order that all stock may be wintered in doors.

Before the war this was an all grass fattening farm. A larger proportion of the land was ploughed during the war than at the present time but the area of arable land has remained stable during the post-war period, and crop production is an essential feature of the farm economy.

In addition to farms of the types already described much more specialised enterprises also occur but are not characteristic of the area. Frequently such farms are run with capital obtained from an alternative source. Illustrative of this type is a 130 acre dairy farm on the Boulder Clay near South Croxton

run as a true ley farm (Farm D. Table VII). The land is relatively level, medium to heavy clay, a compact block accessible from the buildings or from roads which bound the land on two sides. All the land is in tillage, under roots, oats, mixed corn, and two or three year leys. Water is piped to all fields in order that all leys may be grazed in rotation. Young stock are bred to supply the herd of British Friesians but bull calves are sold when about 2 weeks old. According to the growth of grass sheep are bought in spring and sold in autumn. The farm has been equipped with sufficient buildings for all stock to be wintered indoors, a necessity on a ley farm of this type owing to the serious damage sustained by leys if stock are wintered on them.

Similarly uncharacteristic of the area is a specialised dairy farm 300 acres in area equipped with a grass drying plant. About two thirds of the area is under permanent grass which is cut five times a year and the grass dried for the production of concentrated cattle feed. The remaining area is divided between arable land for the cultivation of mixed corn and pasture near the farm buildings for the dairy herd. The pastures are grazed in rotation, divided into lanes by electric fences. After the meadows have been cut for the last time the herd is grazed round the farm to manure the land and in winter all stock are indoors to prevent damage to the grassland. New buildings have been erected for this purpose and piped water supplied to all pastures. Although the farm is supplied with main electricity, water is obtainable only from a well and from springs. In dry summers

this must be carefully conserved in order to ensure a sufficient quantity is available for the dairy.

As the parish statistics suggest, the typical farm of the part of eastern Leicestershire under discussion here, is a mixed stock farm with a substantial acreage of arable land devoted to cash and fodder crop production. In most cases a proportion[1] of the war-time arable land has been reseeded but there does not appear to be any marked tendency to return to the pre-war all grass farming except in the case of the smaller farms, ill-suited owing to layout, size and equipment for mixed arable and stock farming on heavy land which necessitates the use of a variety of expensive power driven machinery. Dairying has undoubtedly gained ground and is regarded as the chief enterprise on a high percentage of the farms. The numbers of stock wintered has therefore increased correspondingly. Some of the rearing and fattening stock have been 'ploughed out' and replaced by crops in the farming economy. Few but the untypical specialised farms, usually run with capital from another source, depend upon one enterprise for income. Ley farming in the true sense has not developed to any extent in the area, problems of water supply and of lack of farm buildings appearing to be influential factors preventing such development.

Direct natural controls of land use or of the farming economy are remarkably few. The layout of the holding appears to

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1. Farmers were reluctant to state the exact proportion of the war-time arable land which has been reseeded as permanent grassland on their farms.

A River-side Dairy Farm of Eastern Leicestershire.

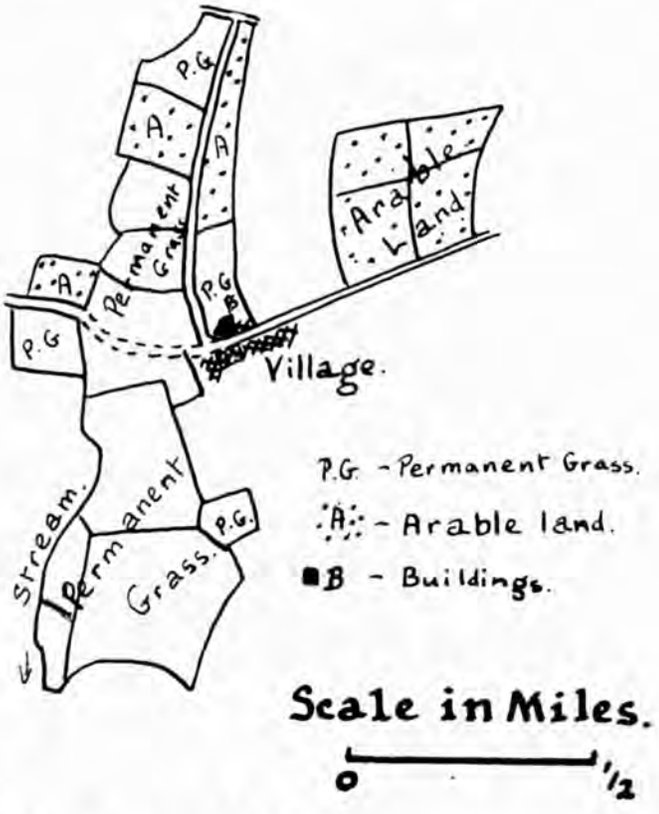
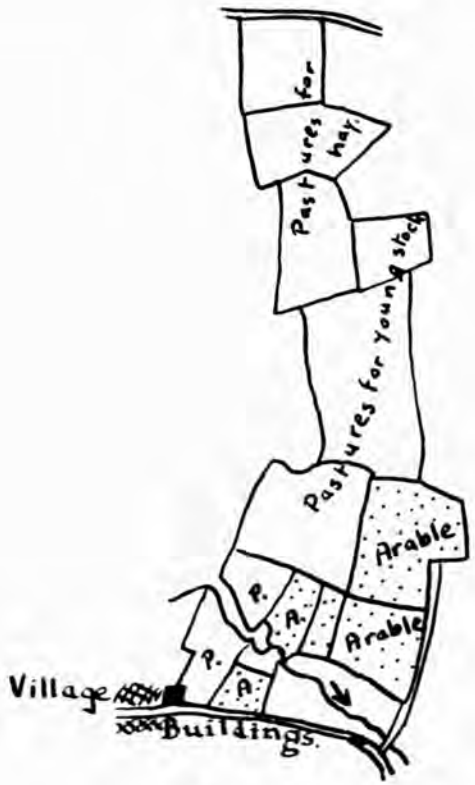


Figure 40.

be one of the major factors upon which the pattern of land use and the economy of the farms chiefly depend. The layout of the dairy farm shown in figure 40 illustrates this. The buildings are situated in the village and the land, with the exception of one field which is steeply sloping and irregular, is of gentle gradient. Soils are medium clay loams. Only the two small fields by the brook are true water meadows liable to flood, and therefore natural factors prevent the arable use of only three fields on the farm. The grassland in one field is considered to be first grade fattening pasture which would be unlikely to be improved by reseeding, but the remainder is poorer quality and, to judge from experiments in ley farming, would be improved if this were practised. Sufficient arable land is retained to produce the bulk of the winter feed required, and the farm is equipped with implements which would permit ley farming.

The buildings are not adequate for wintering all stock indoors and the location of the farm in the village causes there to be little room for the provision of additional yards and sheds. Permanent pastures are retained near to the buildings for convenience in wintering stock and collecting the milking herd. Water supply is a second influential factor. A main supply is not available and fields either with pits or access to the brook have added value as pastures. The arable fields are those more distant from the buildings but accessible from the roads, as the destruction of grassland by the passage of heavy farm machinery causes a serious loss of summer grazing. It would be by no



P. Pastures for the dairy herd.

A: Arable land.

a.

P.– Permanent Grass.

■ B.– Buildings.

b. Pastures are accessible from the buildings and border a reliable stream. Arable land is accessible from the road.

Scale in Miles.

0 ——— ½

Strip and Homestead Farms

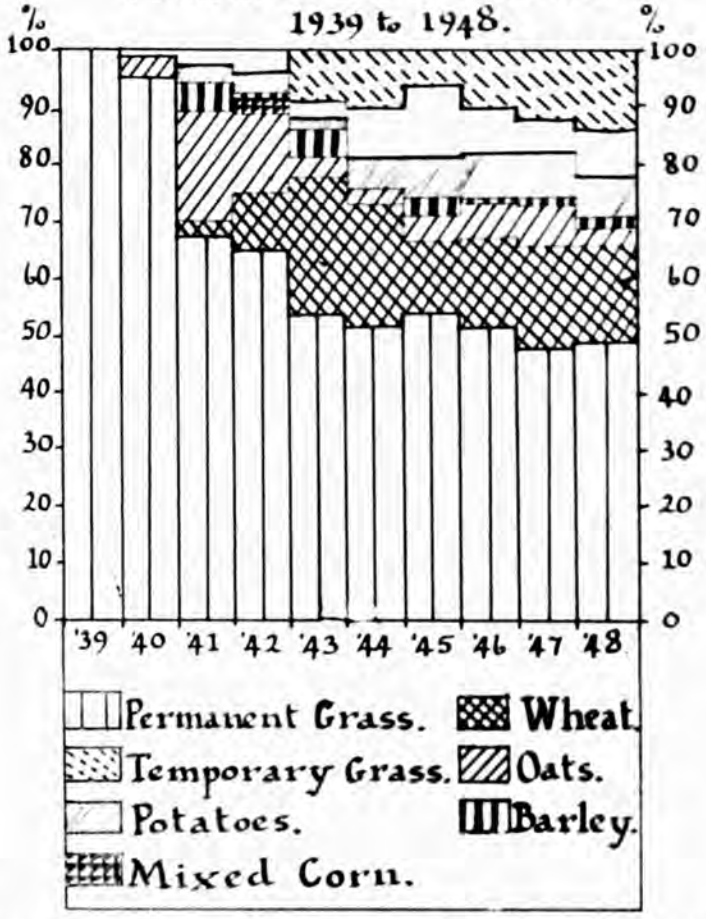
Figure 41.

means impossible to overcome these difficulties and hence to run the holding as an arable or ley farm. But the expense of providing buildings, water supply and surfaced tracks would involve capital investment far beyond the means of the average farmer and the fact that the holding may be run profitably under the present system is a further deterrent.

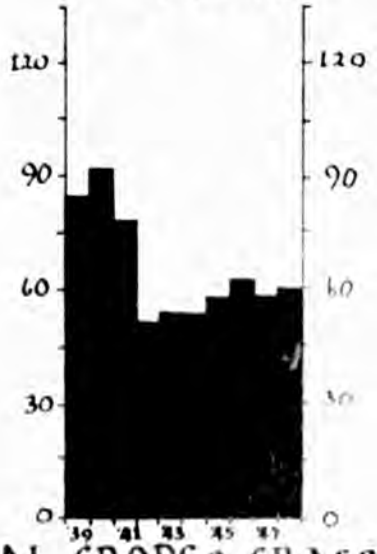
Figure 41 shows alternative farm layouts in which economic factors influence the use of the land. Neither is characterised by any marked natural factor sufficiently strong as a control of land use to influence the farming economy. In eastern Leicestershire as a whole natural factors exert far less influence on the land use and characteristic type of farming today than was the case before the war when the type of soil was considered to be particularly important in determining farm practice and the use of the land.

WELHAM PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS 1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS. 1939 to 1948.

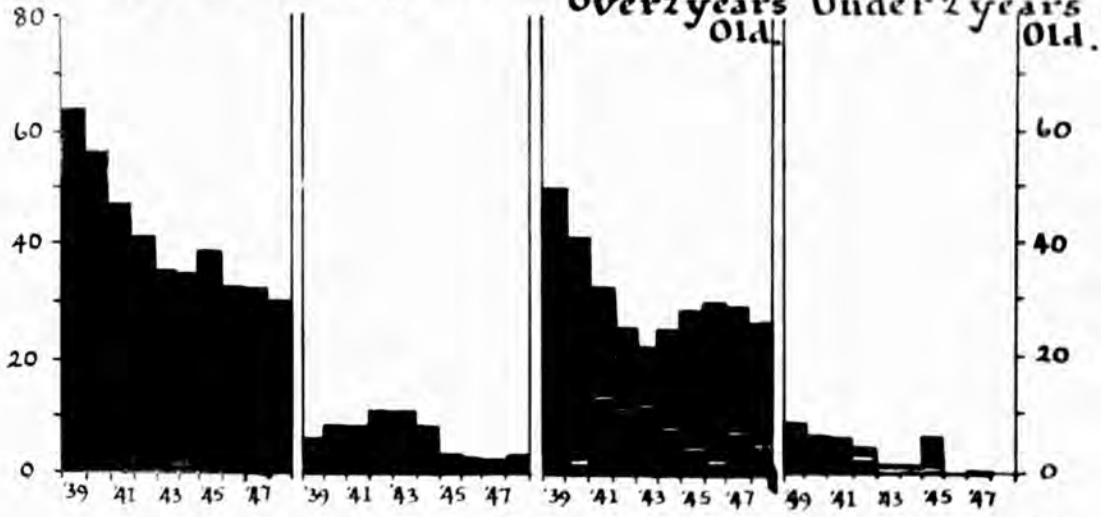
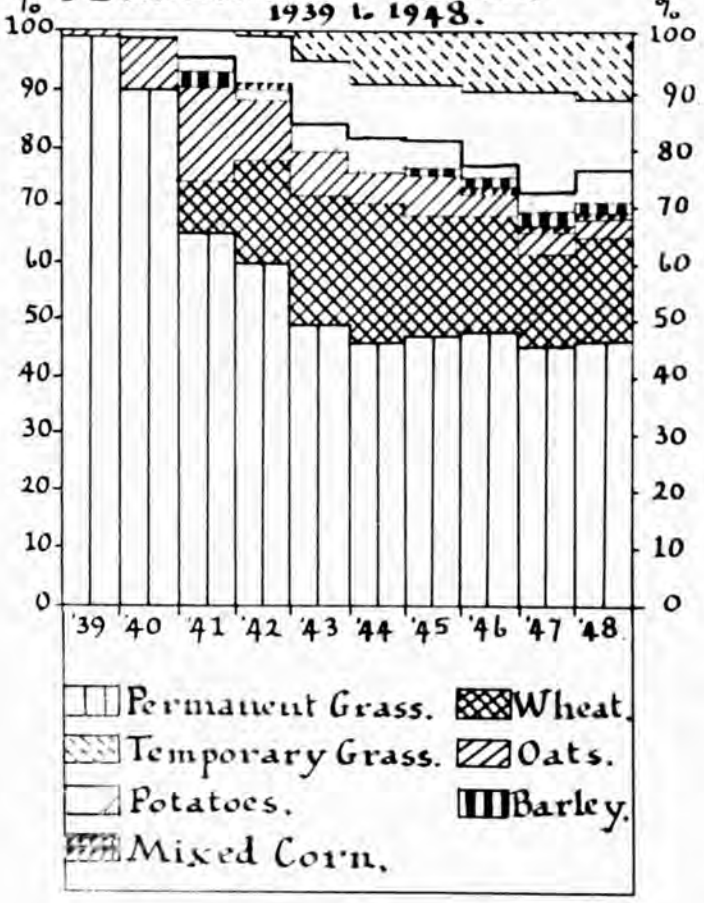


Figure 42.

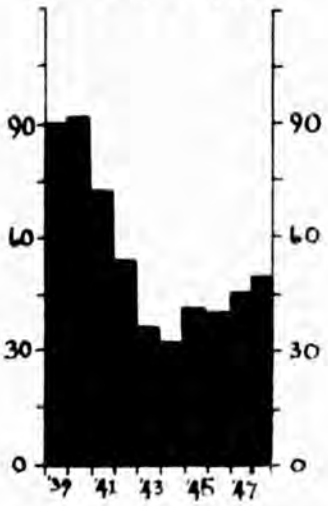
Note. The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

LUBENHAM PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS.
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.

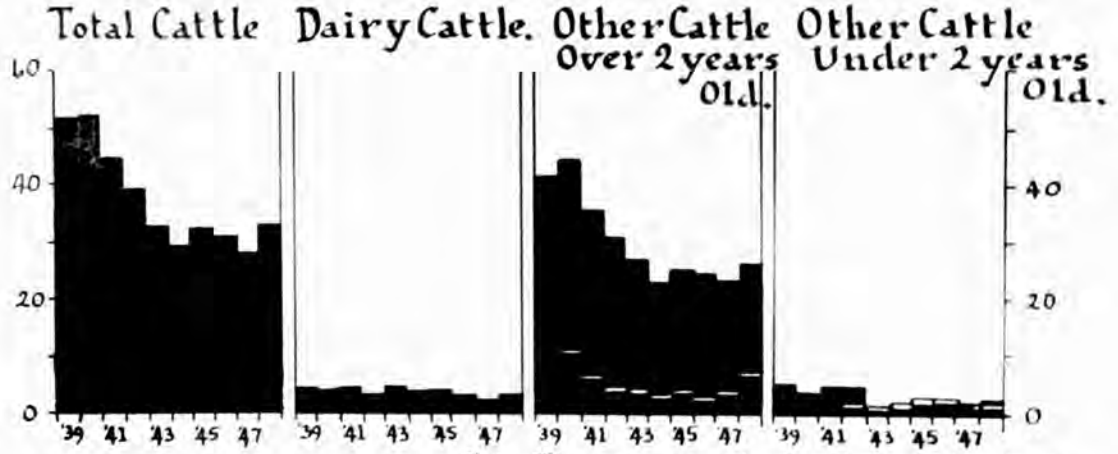
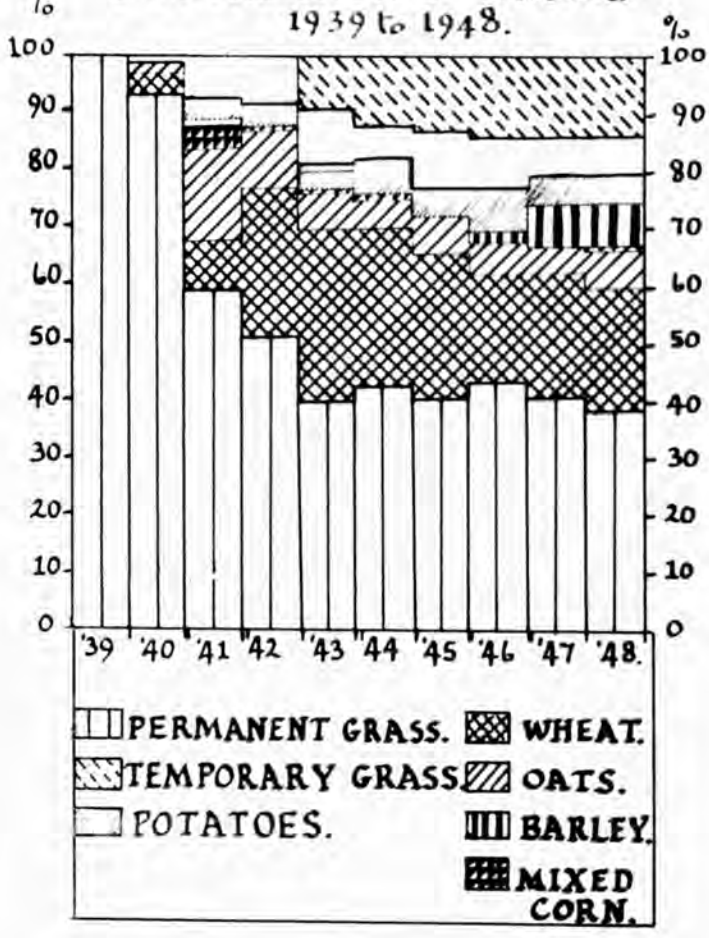


Figure 43.

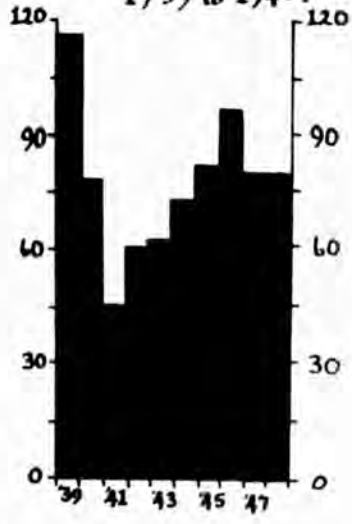
Note. The upper part of subdivided colums represents bullocks, the lower part cows and heifers

TUR LANGTON PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS
1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.

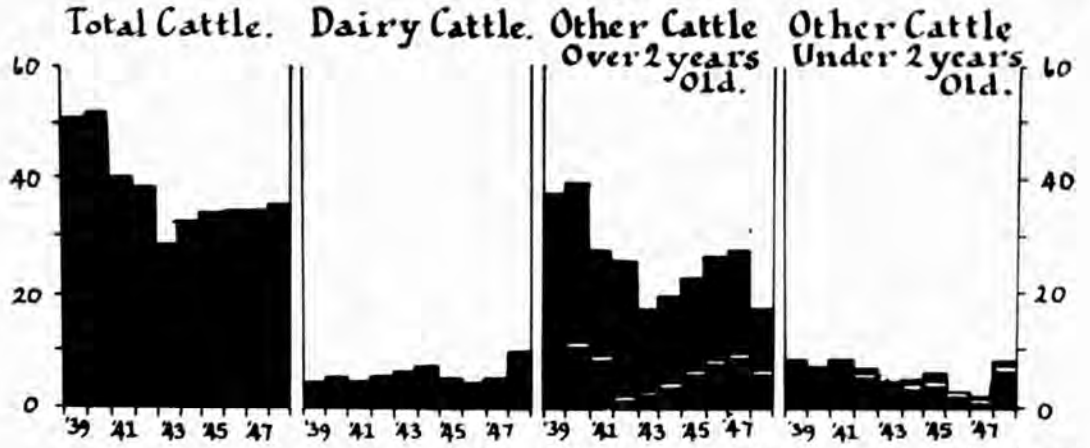


Figure 44.

Note The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

ii) The Welland District

The agricultural changes which have taken place in this south-eastern area of the county show clearly that throughout both the war and in the post-war period it has retained its individuality as a distinct agricultural region. Bounded in the north by the uplands of eastern Leicestershire the district consists of a lowland area near the river, varying in width from half a mile in the east to about three miles in the west, and the land which rises from this to the uplands with a number of isolated hills such as Langton Caudle and Slawston Hill. In the east the northern boundary is relatively distinct, corresponding approximately with the edge of the uplands. Towards the north-west, however, the bounding hills are lower and more broken and the area merges into that already discussed, from which it can be distinguished by no clear natural boundary.

To judge from the distribution of bullocks over two years old the boundary should continue north-westwards as far as Carlton Curlieu and then curve south-westwards through Kibworth and Gumley before finally following the hills to the north of Lubenham and Theddingworth and rejoining the Welland along the western boundary of the latter parish.

The statistics from three specimen parishes, Welham and Lubenham bordering the Welland and Tur Langton to the north-west show the same general trends (Figures 42, 43 and 44). As in the case of Billesdon, the largest acreage ploughed in the first two years of the war was devoted to oats and other feed crops, the

marked increase in arable land occurring earlier and more abruptly in the Welland District. The feed crops gave way to wheat and temporary grasses were introduced into the rotation and occupied the second largest acreage of the arable crops. Apart from the first two years of the war, however, feed crops occupied a smaller proportion of the land in the Welland Valley than was the case in Billesdon, while after the end of the war further contrasts became apparent. The acreage under wheat showed a much less marked contraction in the Welland District while the percentage of land under ~~permanent grass~~ arable use has remained more stable and there has been a tendency for this area to increase rather than to contract, even after compulsory ploughing was no longer enforced. In this area also potatoes occupied a larger percentage of land and, together with wheat, account for the relatively high proportion of arable land devoted to cash crops. Barley is not of importance except in Tur Langton where the acreage increased in 1947 and 1948.

Associated with the decrease in permanent grassland the reduction of total stock in the Welland Parishes has been much greater than in that of Billesdon where cattle were reduced by one eighth between 1939 and 1943. In the three Welland parishes approximately half the cattle were "ploughed out" during the same period. The tendency for the number of cattle to increase in the post-war period is similarly much less marked and, although a slight increase has occurred, especially in Tur Langton, they continue to be far below the 1939 level. The numbers of sheep

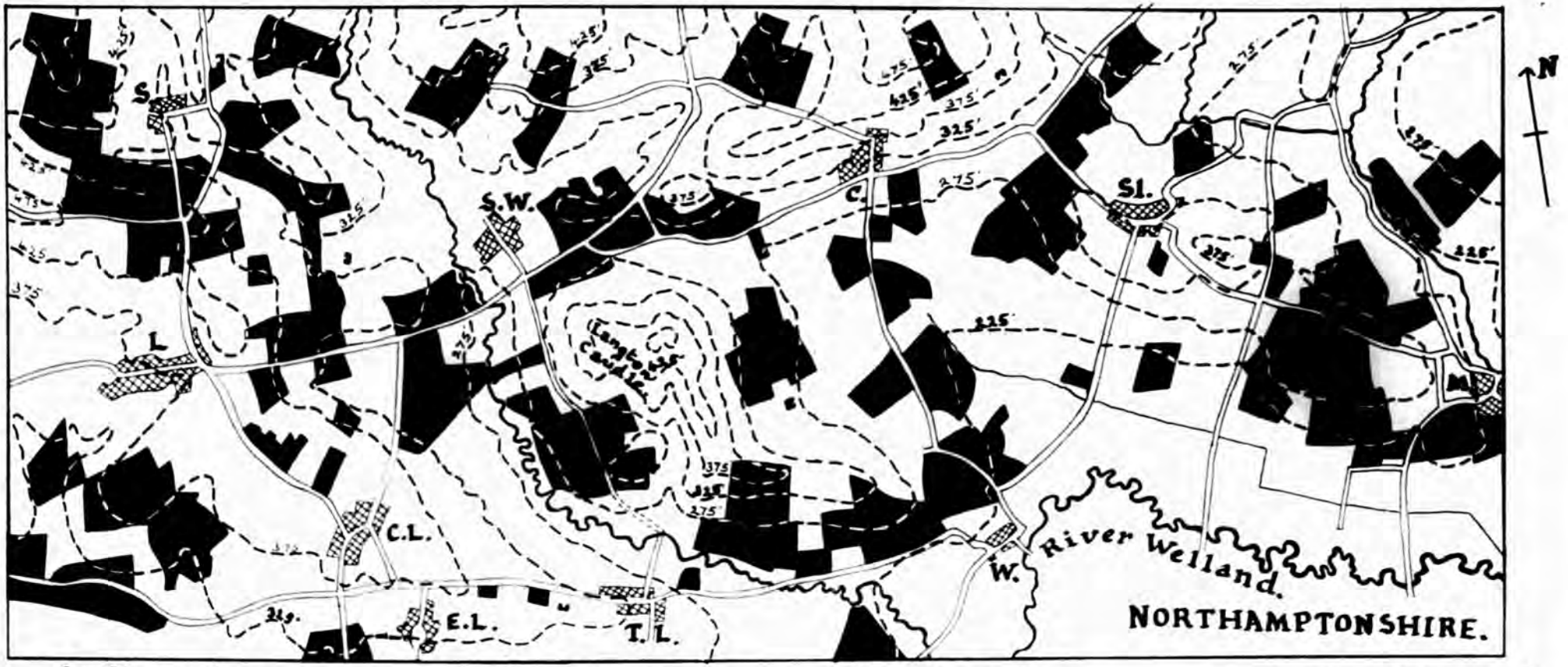
show a similar trend and, although they had increased in this latter parish to only little below the 1939 total by 1946, the decrease of the following year reduced them to less than 75% of that number.

The chief contrast with the mixed stock farming area to the north is the continued preponderance of cattle, especially bullocks, over two years old over all other types. Although dairy cattle have increased in Tur Langton and remained comparatively stable in Lubenham, thus showing that even in this specialised area there has been a gradual increase in this aspect of stock farming, they represent only a small proportion of the total. Similarly the increase in dairy stock during the war years in Welham (Figure 42) has been only temporary.

Young stock, relatively few before the war, have likewise declined. This shows that there has been no tendency for the area to participate in breeding and fattening stock, a significant fact since it has been shown that rearing and finishing beef cattle gives higher returns than fattening alone. In addition it is said by graziers in the area that there is a shortage of good store stock of sufficiently high quality to finish well on the strong pastures of the area.

The nature of the stock farming practised in this area has therefore shown little change during the war and post-war years. The finishing of advanced beef stores on summer grassland is the chief activity but arable cash crop farming now plays an important, though lesser, part in the farming economy. Dairying, breeding

PART OF THE WELLAND DISTRICT 1951.



S.- Shangton.
L.- Tur Langton.
C.L.- Church Langton.
E.- East Langton.
T.L.- Thorpe Langton.
W.- Welham.
C.- Cranoe.
Sl.- Slawston.
S.W.- Stonton Wyville.
M.- Medbourne.

Arable land.
Settlement.
n Isolated Farm.

Contour interval 50 feet.

Scale in Miles.

0. ½. 1.

Figure 45.

and rearing young stock are of small importance although the first of these has become relatively a little more prominent since 1939. The number of cattle wintered in the area remains small and the acreage under winter feed crops is correspondingly lower than in the mixed stock farming area.

The prevalence of all grass farming in this area before the war may have led to the conclusion that it was an area where natural conditions prevented arable farming. On the Land Classification Map of Britain[2] a large part of south-east Leicestershire is shown to be permanent grassland 'first class land but with a high water-table or liable to flood". The present land use of the part of the Welland Valley district surveyed in 1951 (Figure 45) makes clear how small is the area really unsuitable for arable farming owing to natural conditions.

Beside the Welland the water meadows remain areas of well grazed ancient turf. Subject to winter flooding and with a high water table rendering them useless for arable farming, these first class pastures have remained unploughed throughout the war. The area liable to flood, however, extends only a relatively short distance from the river, varying from about half a mile to only a few yards in width, and is bounded by an abrupt rise in some places, near Welham for example, about 25 feet and

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2. Land Classification Map. Based on the findings of the Land Utilisation Survey of Britain. Published by the Director General Ordnance Survey 1944. Scale 1:625,000.

THEDDINGWORTH PARISH
1951.

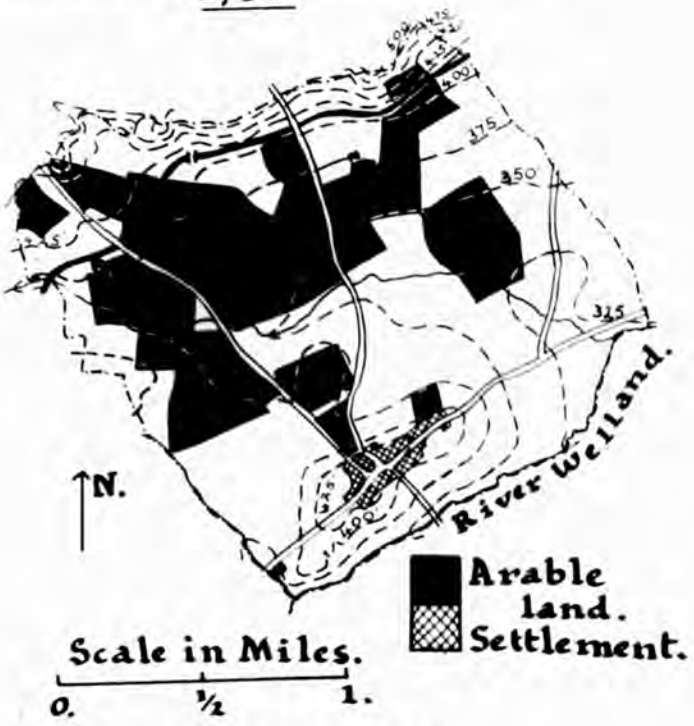


Figure 46.

in others, as near Medbourne, about 50 feet above the meadows.

On the terrace-like area which extends from this abrupt rise to the steep slope of the bounding hills a mosaic of arable and pasture fields has developed. The steep hillsides of the East Leicestershire Uplands and those of the isolated hills, Langton Caudle and Slawston Hill, are largely under permanent grass, their gradients being sufficient to present real difficulties to arable farming even with modern machinery. Towards the northwest, where gradients are less steep and the area merges into the lower more gently rolling land characteristic of the greater part of eastern Leicestershire, the pattern of land use similar to that of the mixed stock farming area to the north with no clear relationship to natural factors, is seen to occur. As in the former area it can be seen how the land near the villages, here also chiefly groups of farms, remains as permanent pasture, while the arable fields are for the most part those accessible from roads or farm buildings. Similar features are to be seen in the land use pattern of Theddingworth parish also in the Welland Valley (Figure 46).

There is however a close connection in the Welland Valley itself between natural factors and the distribution of arable land. The majority of farms possess at least a small area of the intermediate land neither too ill-drained nor too steep for arable use and thus the present land use pattern has developed without a fundamental change in the chief farming activity of the area though decided differences occur between the use of the various types of land.

From a farm situated near the edge of the true water meadows the following information was obtained and illustrates the modifications which have taken place as a result of the war time agriculture. A hundred and ninety acres in area, it extends from the river on to the terrace beyond. About one sixth of this area only is under arable crops, although a larger area was ploughed during the war. Wheat is the chief crop produced for sale and oats and small areas of other feed crops are grown for winter stock. Bullocks bought in spring at between three and four years of age are finished for market entirely on summer grass, and few are w intered on the holding, hence the small acreage under fodder crops. Sheep are likewise fattened and a few kept during the winter. The number of stock is varied according to the growth of grass and in winter all stock are removed from the water meadows and fed outside on the higher land near the buildings. More than one bullock per hundred acres of grassland is finished each year and the number has consequently decreased directly with the decrease in pasture.

Hereford crossbred bullocks are the breed most favoured and are obtained via Northampton market from the Welsh borderlands. Lincoln Reds obtained from the north of the county or from Lincolnshire are also popular but the Herefords which finish rather earlier can usually be sold for a higher price than the latter. The stock sold to the Ministry of Food are graded in Market Harborough.

The farm being a long established summer grazing holding

has, like many in the area, very few buildings either for storing produce or implements or wintering stock; this constitutes a further factor adding to difficulties of arable farming.

A farm situated towards the north-west of the fattening district about six miles from the Welland Valley itself shows similar changes in recent years (Farm J. Table VII). Although 19 acres had been ploughed during the 1914 - 1918 war, it was entirely under permanent grass in the 1930's. During the recent war more than 50% of the 300 acres were ploughed. A proportion has since been reseeded and one third of the total area is under crops. Wheat for sale occupies the largest single acreage; few potatoes are grown owing to lack of labour but sufficient oats, kale, roots, beans and mixed corn are grown for the farm to be self supporting with regard to winter feed. The land is all heavy clay loam and the relief does not cause any difficulty in working the arable area. Problems of drainage have, however, arisen because the ancient turf drains in some of the crop land have been broken by the weight of heavy machinery.

With the reduction in permanent grassland the number of fattening bullocks on the farm during the summer has been reduced from over 200 to about 150. Bullocks are bought when about two years old and kept for two summers and one winter. The winter stock is in consequence considerably below that of the summer. Hereford crossbreds are obtained from Northampton market and pass to Leicester for grading and slaughter. Before the war Welsh runts, Herefords crossed with Welsh Blacks, were fattened as

they winter well in the open. The advantages of this favourable quality are however outweighed by their late finishing in November or December when fat stock prices are rather lower than in the summer months. In the Welland District as a whole there are few of this type of bullock to be seen at the present time and by far the most numerous are the Hereford crossbreds.

No young stock are reared on the farm as the pastures are considered to be too strong for any but advanced store cattle. In addition to the bullocks about 100 Masham ewes are grazed and stores obtained from Skipton in spring. Fat lambs and sheep are sold during the summer and a breeding flock kept in winter. The best pastures on this farm are never grazed by sheep, and all stock are removed for wintering to the poorer grassland. The farm is without the necessary buildings for wintering stock or for storing implements and produce. The farmhouse is in the village and space nearby for additional buildings is lacking. The tractors and machinery are stored on a neighbouring farm.

The land, extending in a narrow strip from the village, is not accessible from roads or tracks and the passage of heavy tractors and machines across pastureland results in the loss of a large quantity of summer grass as the turf is torn and destroyed. This is a further factor encouraging the reseeding of land to permanent grass.

Both this farm and the one previously considered are examples of those which have retained the minimum area of the farm land in arable use i.e. less than the average amount indicated by

the parish statistics, and continued to maintain a farm economy as close as possible to that practised in the pre-war period. The war time introduction of arable farming has nevertheless had a lasting influence. Economic conditions have led to the maintenance of part of the fodder crop area which, by making the farm largely self supporting, reduces costs of production while the cultivation of cash crop wheat gives an additional source of income and consequently adds stability to the farm economy.

In contrast to the farms of this type others have retained a large arable area and practise a more mixed type of agriculture. On a 100 acre specimen farm situated entirely on the level terrace land above the water meadows, 50 acres is now under arable farming. Wheat and barley, the chief cash crops, together occupy rather more than half the arable area, while oats and rotation pasture account for the remainder. Fattening bullocks is the main activity. Herefords, Lincoln Reds, and Shorthorns are bought as stores and finished for slaughter. On the leys and poorer pastures a small number of younger stock are reared and a breeding flock of Kerry Hill crossbred sheep is maintained for fat lamb production. No dairying is carried on and the farm has neither main water nor electricity. It is a compact holding with buildings situated centrally and the land is accessible from these or from hard tracks.

On a large farm about 600 acres in area, similarly compact and accessible and situated entirely on the terrace land, arable farming has become one of the chief activities although before

the war it was an all grass holding. More than 50% of the land is under cash and fodder crops. Rearing stores, finishing bullocks and dairying are all of importance. A number of mixed stock farms and specialised dairy farms occur within the main fattening district. They are still however definitely out-numbered by the fattening farms as the parish statistics indicate.

Exceptional also is a farm situated across the hills which bound the true Welland District. Extending from the level land above the hills to that below, it includes a high proportion of steeply sloping land with a gradient of approximately 1 in 7. Nevertheless it is at the present time an arable farm and over 70% of the farm land is under wheat while of the permanent pasture only one small paddock near the farm buildings remains. Before the war it was a grassland bullock fattening farm and this continued to be the main activity until it was bought by the present owner, a farmer from an arable district.

In spite of the occurrence of considerable numbers of farms with differing practice, in general in the Welland District the most characteristic are still those on which fattening advanced stores from outside areas is the chief activity; but cash crop cultivation giving greater stability, and fodder production have become integral parts of the farming economy. The proportion of land devoted to crop growing varies according to the conditions of the individual holdings, being most restricted where the lay-out of the farm and lack of buildings or equipment add problems

to arable farming or where much of the land is lowlying water meadow. Arable farming appears to reach its maximum development on the terrace area and in the district towards the northwest on the compact homestead farms, and to be least prominent towards the east in the parishes of Bringhurst and Drayton where the steep hills of the eastern uplands of Leicestershire approach close to the Welland leaving only a narrow strip of well drained level land.

A number of other factors helping to account for the particular nature of the agriculture practised have emerged from the study of specimen farms. The lack of interest in rearing in conjunction with fattening, although generally profitable, appears to be the result of two main factors. Lack of buildings is a serious problem if little land is available on which stock may be wintered owing to the ploughing of the poorer pastures. In addition the high quality of the pastures seems to be an important determining factor. Young stock on strong pastures are liable to be affected by scouring which is likely to prove fatal if relief is not given. On many of the farms the pastures are some distance from the main buildings and therefore stock may not be closely observed and the risks of loss are great. Furthermore it is considered to be wasteful to graze store cattle, which can do well on relatively poor pasture, on the first class meadows of the district.

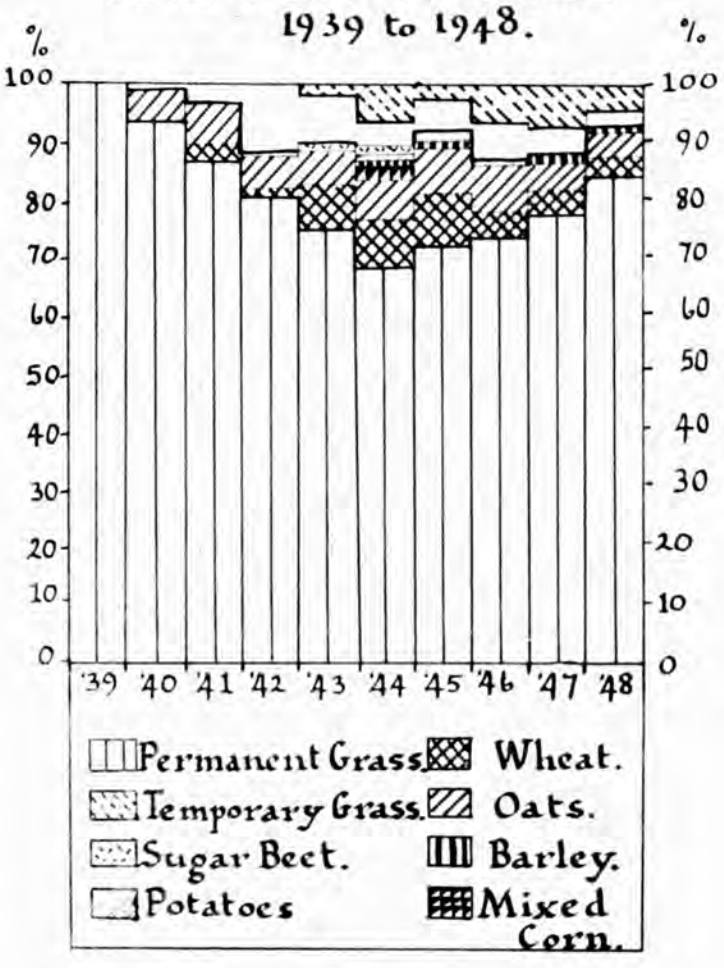
The fact that numbers of fattening stock have not risen in the post-war period to as great an extent as those in the mixed

stock district to the north appears also to be bound up with the high quality of the pastures. In many of the areas concerned primarily with rearing store beef cattle before the war, dairying and arable farming have expanded at the expense of this other activity. The number of stores of high quality in the market has been too small to meet the demand. The price of stores has been particularly high and the margin of profit for fat stock small. Poor beasts may scour and die on the best pastures and, as the loss of one expensive animal may offset the profit of several, some graziers have kept their stock lower than their pastures would allow if the quality of stores available has been lower than they considered necessary for the high grade pastures.

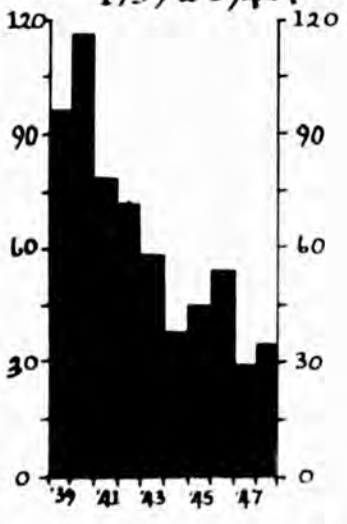
The Welland District is one of the few areas of the county in which the present day pattern of land use and the economy of individual farms shows distinct correlations with natural factors. The chief activity of the area remains unchanged from that of pre-war days but there is now much greater diversity in the farming characteristic of the area. The farm practice has been modified and adjustments have been made to meet the particular circumstances arising from the economic conditions existing in this country at the present time.

LAUNDE PARISH.

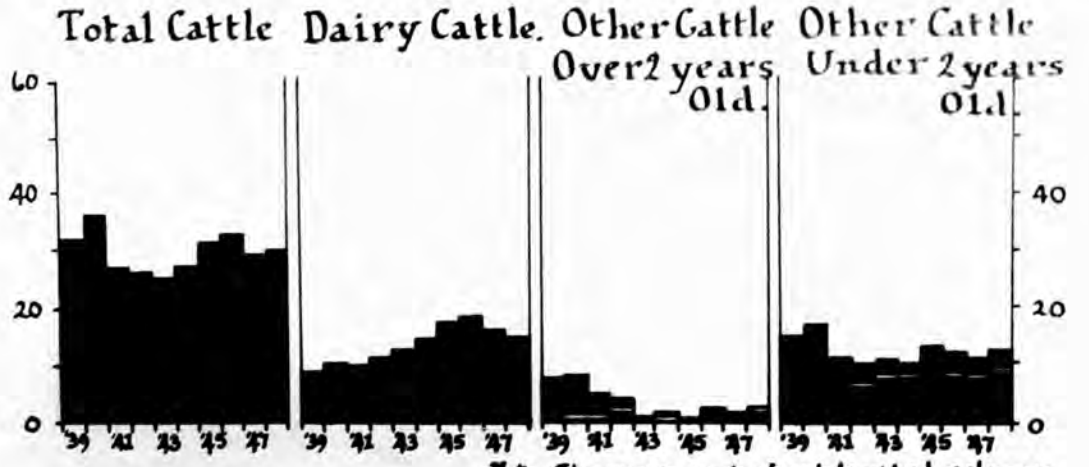
a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.



c. CATTLE PER 100ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.



Note. The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

Figure 47.

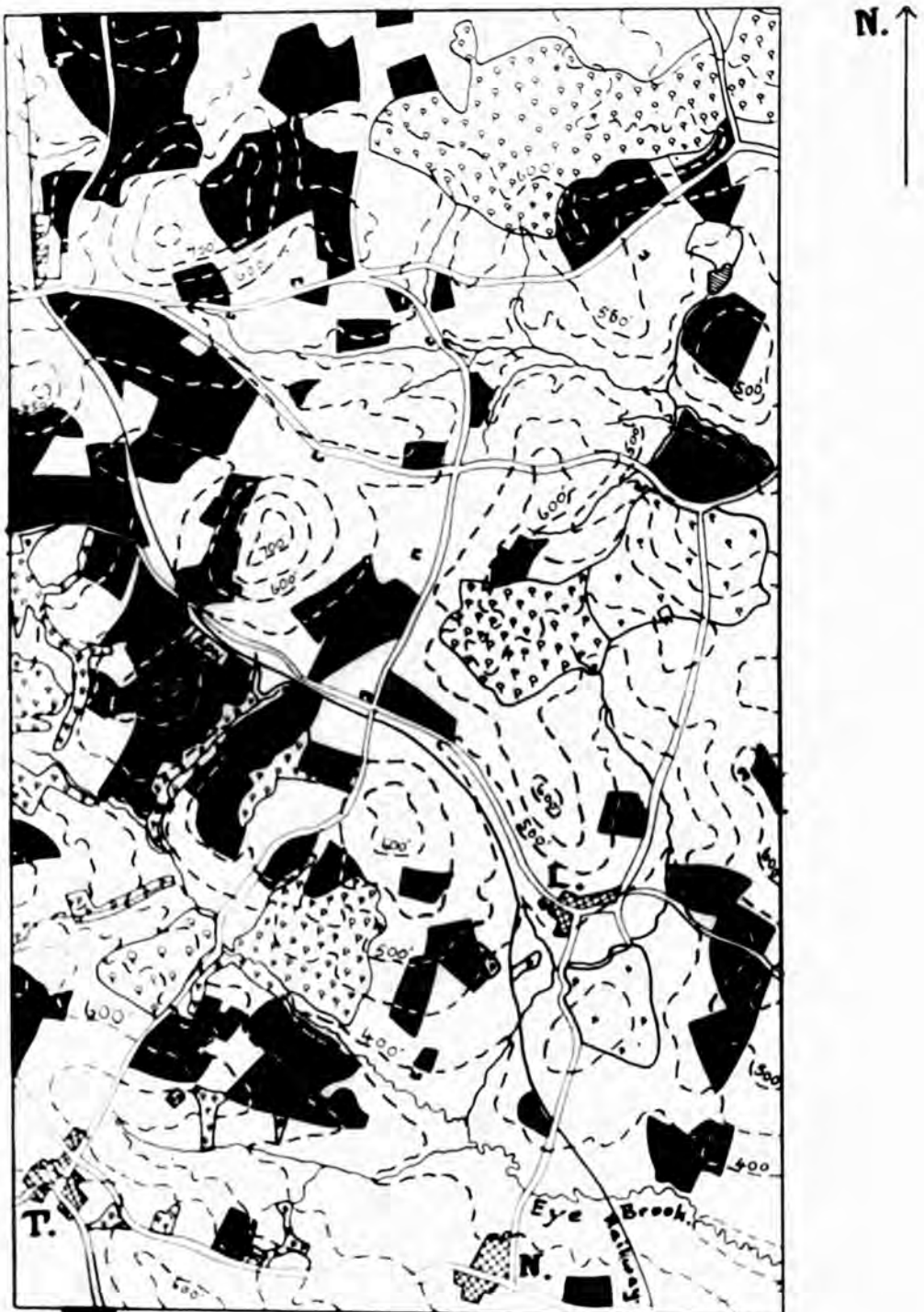
iii) The Uplands of the South Leicestershire-Rutlandshire Border.

The boundaries of this area are indistinct but it includes that eastern part of the county where the land rises to about 600 feet above sea level and consists of a deeply dissected upland associated with the Upper Lias deposits. Though partially overlain by glacial drift and with a number of hills capped with Oolite the dominant beds belong to this thick series of clays. Occurring in parts of Tilton and Skeffington parishes this area of steep-sided narrow valleys contrasting with the more gentle rolling land of the area to the west is most clearly developed in the parishes of Launde and Loddington bordering Rutland but is continued also to the south towards the Welland Valley.

Over 50% of the total farm land was in 1948 under permanent pasture but the total numbers of stock have decreased to a greater extent than in many of the parishes of the east with a lower proportion of permanent grassland. Launde parish was largely under permanent grass even during the war years and half the war-time arable area had by 1948 been seeded down to permanent grass (Figure 47).

Sheep declined most rapidly and although increasing in 1945 and 1946 even then before the decrease of 1947 were only approximately half the 1939 number. Cattle have likewise declined and in 1948 continued to be considerably below the pre-war total (Figure 47). The group suffering the greatest reduction are clearly the older store cattle which have become an insignificant part of the total. Those between 1 and 2 years of age have also

PART OF THE UPLANDS OF THE SOUTH-EAST.



Arable land.
Woodland.
Parkland.
Settlement.

L. - Loddington.
N. - East Norton.
T. - Tugby.
u - Farm House.

Contour Interval 50 feet.

Scale in Miles.

0 1.

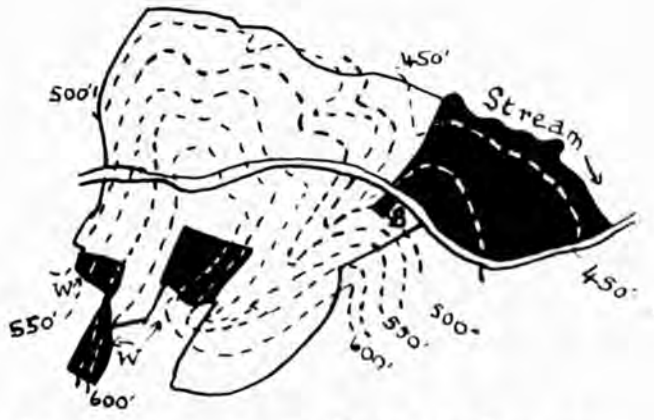
Figure 48.

been reduced but to a lesser extent. The only type showing a definite increase have been the dairy stock which now equal more than 150% of the pre-war number. Likewise illustrating an increased interest in this activity, of the young stores the greater proportion are heifers (Figure 47c). A similar increase in the proportion of stock in the dairy group indicates a similar tendency in the neighbouring parishes, which may be related to the fact that this is an area of lower grade pastures than the main fattening district and less well suited for finishing fat stock.

The land use survey of the area between Owston and East Norton carried out in 1951 (Figure 48) shows how closely, in the most deeply dissected part of the area, the distribution of arable land is related to the relief. Level areas of land are few and occur either on the exposed hill tops or on the wider valley floors. As the area of deeper dissection merges into the neighbouring area of lower relief gradients become less steep and the arable land is more evenly distributed on level and sloping land and the pattern of land use typical of eastern Leicestershire develops.

A specimen farm in the dissected area was an all grass stock farm before the war. During the war however fields on both the level and sloping land were ploughed. It was found that on the steeper gradients of 1 in 6 the heavy clay land could be worked in one direction only even with power equipment, and the expenditure on time and labour was consequently increased (Figure 49).

A Farm in the S.E. Uplands.



●B.- Buildings. ■ Arable Land.

□ Permanent Grass.

W.-War time arable land since reseeded.

Scale in Miles.

0 ½.

Figure. 49.

All but the level riverside field have therefore been reseeded to permanent grass and this alone is retained for winter feed production.

Before the war store stock were sent for wintering to the yards of Lincolnshire and returned in spring; a frequent practice in this district. The chief activity became dairying during the war and a herd of Ayrshires and British Friesians maintained, the milk being collected for the London market. In response to the demand for beef 6 Hereford stores were purchased for rearing this summer.

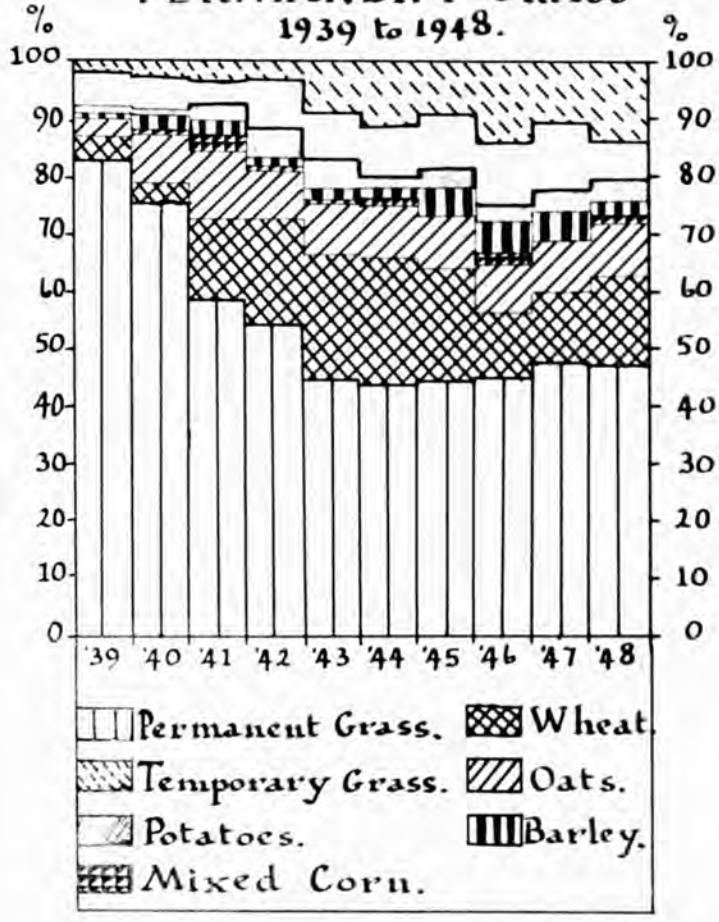
The arable field is the only one on the farm with a water supply reliable throughout the year and water must be carted to supply the stock in dry seasons. Thus in this instance the influence of relief upon land use has proved stronger than that of economic considerations which would suggest that this land should be retained in pasture and the labour of carting water be saved. It also shows how important it is considered that the farm should produce as much as possible of the stock feed required in order to reduce the cost of milk production.

This point is further illustrated by information from a second dairy farm within the area under discussion. Likewise situated chiefly on steeply sloping land, about 25% of the area is retained as arable land. It has been calculated that the degree of self-sufficiency with regard to winter feed achieved in this way allows the milk to be produced for only two thirds of the sum which it would cost if the land were under grass and all feeding stuffs bought.

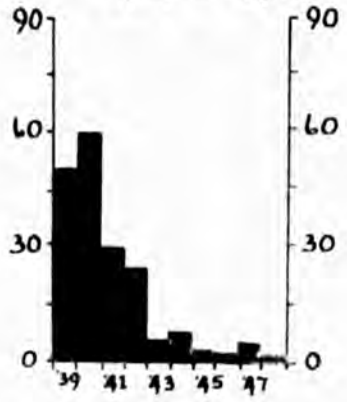
In addition to carrying on dairying, on both farms a flock of cross bred Border Leicester sheep is normally kept, stores bought in spring and stock sold in summer. Mixed stock farms similar in type to those characteristic of the remainder of eastern Leicestershire also occur but there appears to have been a definite increase in dairying. The general farming economy does not differ greatly from that of the neighbouring districts and this area chiefly owes its individuality to the more dissected relief and associated land use pattern and small proportion of arable land.

QUENIBOROUGH PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS
1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.

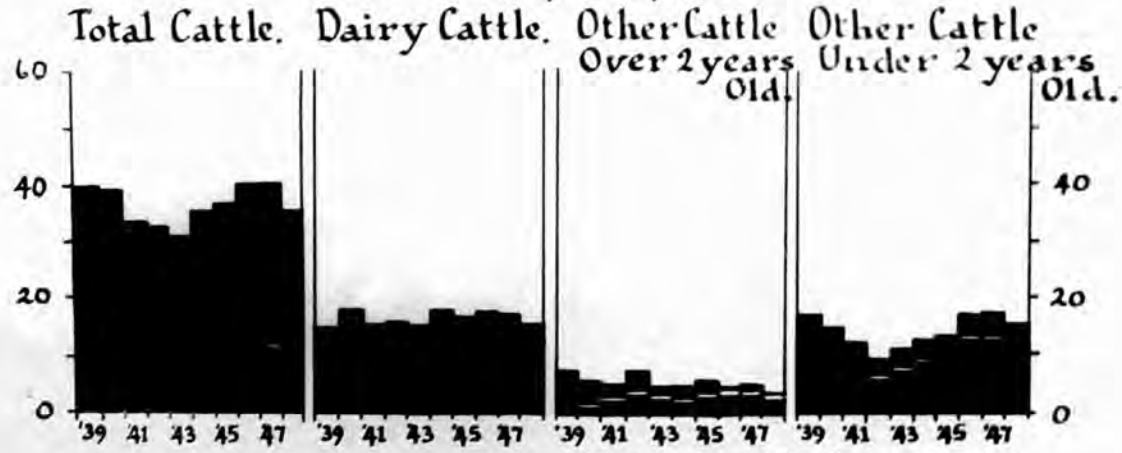


Figure 50.

Note. The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

iv) The Wreak Valley.

Like the last region discussed the Wreak Valley shows characteristics of agriculture similar to those of the greater part of eastern Leicestershire. However, the occurrence of particular natural features, the wide alluvial flood plain and well developed river terraces absent from the smaller river valleys, has given rise to certain modifications in the farming economy, which give the area a certain degree of individuality. This was discernible before the war and remains to a lesser extent in the post-war period. The boundaries of the region are indistinct. The parishes and many of the farms extend from the valley onto the boulder clay upland beyond and, as a result, the flood plain and terraces of the valley alone cannot be treated as a separate agricultural region. The agriculture practised depends upon the economy of the individual holdings and the alluvial and terrace land and the higher valley slopes are therefore closely bound together.

Queniborough parish extends from the river on to the boulder clay upland and thus includes all types of land in the region. The cropping (Figure 50) in 1939 differed little from that which prevailed throughout the war and in subsequent years, except for the increase in acreage of the individual crops. These are similar to those which have become characteristic of the whole of the eastern part of the county, although the light land crops, barley and potatoes, occupy a greater area.

The numbers of stock of different ages (Figure 50) also show

Table V1

Other Cattle over 2 years Old per 1000 acres of Total Crops and Grass.

		1933	1948
Lower Wreak Valley	Rearsby	92	72
	Ratcliffe	84	27
Upper Wreak Valley	Asfordby	87	88
	Hoby with Rotherby	155	135

trends similar to those noticeable in the neighbouring eastern parts of the county. It is clear however that the store cattle between 1 and 2 years old suffered the greatest decline as a result of the ploughing of grassland. The older group of cattle fewer at all times in this sample parish than in Billesdon for example, declined likewise and the bullocks over 2 years old by 1948 represented a negligible proportion of the total stock. Dairying has expanded as in the bulk of the east of the county.

Although other parishes in the lower part of the Wreak Valley show changes similar to those illustrated by the statistics for Queniborough, in some of those nearer to Melton Mowbray, Hoby and Rotherby and ~~Ab Kettleby~~ Asfordby for example, the number of older fattening stock recorded in both 1933 and 1948 indicate that if a decline took place during the war this type of stock has regained its position in the farming economy (Table V).

Mixed stock farming with fodder and cash crop growing characterises the farming of the valley. In the lower part nearer to Leicester dairying has gained ground, while in the upper part the presence of numbers of herds of Hereford and Devon bullocks, especially on the water meadows, in addition to the more usual Shorthorn and Lincoln Red cattle shows greater interest in fattening stock reared outside the county. Although the area is not comparable with the Welland District in this respect, the presence of this type of farming gives the agriculture of the valley one of its chief individual features.

The water meadows of the alluvial flood plain which are

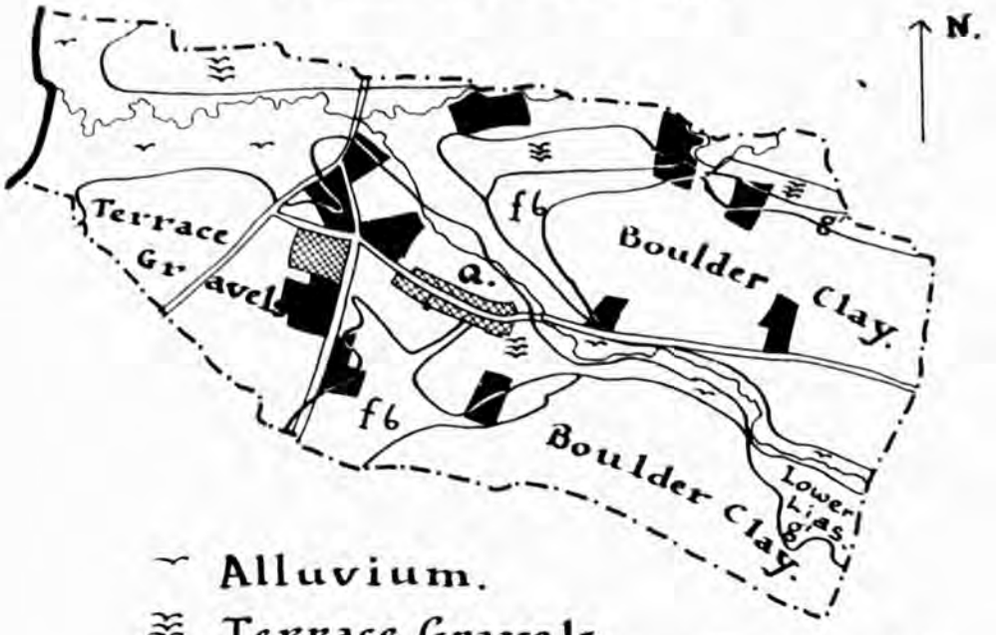
useless for arable farming, bear nutritious grasses suitable for finishing bullocks. The pastures of the higher slopes usually on boulder clay are likewise of sufficiently high quality for this purpose.

The increase in importance of dairying, deduced from the parish statistics of the lower part of the valley, is further illustrated by information collected from four specimen farms in Ratcliffe and Rearsby parishes. On each of these about 50% of the land is under crops of which wheat for sale occupied the largest single acreage. Dairying is the chief activity on each farm and although young dairy stock are reared on all, bullocks are fattened on only one of them. On the others steers are sold as stores, either when a few weeks or about one year old. One farm including a large area of water meadow was a dairying, rearing and fattening farm before the war with a herd of Lincoln Red dual purpose cattle. Now it is a specialised dairy farm with a herd of British Friesians. On all the farms a flock of sheep is maintained and stores are sold in Melton Mowbray during the summer.

Each farm is laid out for convenience of working rather than with regard to the different types of land across which they extend. The land near the buildings is under permanent grass for the dairy herds although in one case this is river terrace land with free working and deep soil. The arable land is on the more distant but accessible parts of the farms while the less accessible pastures are used for hay or young stock. The lighter soil associated with the terrace is recognised to be better suited

QUENIBOROUGH PARISH.

a. Pre-war Survey.



b. 1950 Survey.

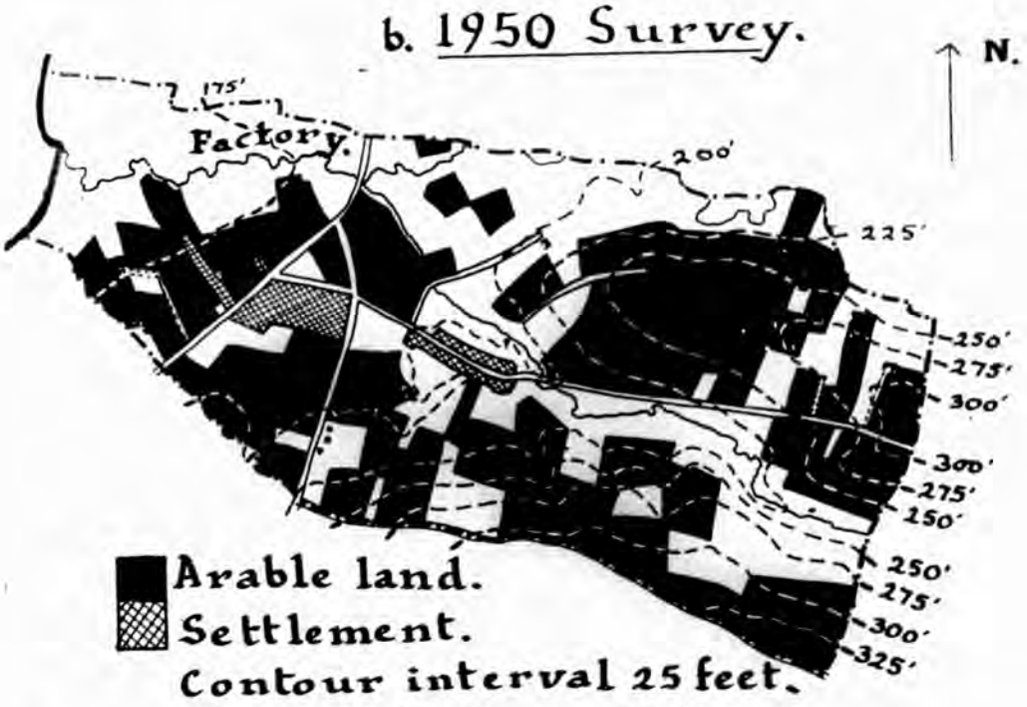


Figure 51.

PART OF THE WREAK VALLEY.

a. Pre-war Survey.

b. 1951 Survey.

Alluvium Terrace Gravels. } Symbols in white on arable land.

Arable land.

F. Frisby.
H. Hoby.
B. Brooksby.
R. Rotherby.

Scale in Miles.

0 ½ 1.

Figure 52.

to roots and to be more free working but is cropped in a similar way to the heavier land.

In Queniborough parish, although a definite correlation between the pre-war distribution of arable land and the occurrence of the light terrace soil was distinguishable (Figure 51a), this no longer remains. In 1950 44% of the whole parish was arable land (Figure 51b) and of the river terrace which occupied 53% of the parish area 42% was under tillage. This proportion is rather lower than might be expected but 20% of this terrace is occupied by buildings and about 50% of the farm land is in arable use. On the boulder clay, the second most extensive outcrop, 67% of the land was under the plough. A large part of this heavy land is level and easily accessible from roads or farm buildings. The arable land is noticeably absent from the low-lying Recent alluvium especially that of the main Wreak Valley.

The 1951 land use survey of part of the upper Wreak Valley (Figure 52) shows similar characteristics both in the pre-war and post-war periods. The alluvial flood plain continues to be an area primarily of permanent pasture, owing to the liability of much of the land to flood. The arable land of the terraces has however extended on to the heavier land of the valley sides where Lower Lias and Boulder Clays occur. Grassland remains near the villages and the farm buildings, whether or not these are situated on the terrace, while the ease of access from roads or tracks can be seen to influence the distribution of arable fields.

The specimen farm mapped in figure 53 shows how the layout

A Wreak Valley Farm.

Figure 53.

■ B - Buildings.

□ Arable land.

Scale in Miles.

0 ——— ½

takes into account the natural advantages of the land while considering also the convenience of working the holding as an arable dairy farm. The arable land is divided into four 25 acre blocks for purposes of rotation. Seeds, potatoes, wheat, peas, wheat, roots or potatoes and mixed corn or barley are grown in succession. In addition a three year movable cocksfoot grass ley is introduced where convenient to rest the arable land and increase the grazing area. All the arable fields are relatively accessible while the 'corridor' of pasture in the central strip gives access to the more distant pastures and allows any part to be used if necessary for the dairy herd. The farm possesses a private water supply system for the pasture fields. The terrace area near the building is retained as pasture, but the large area beyond the road is under tillage.

The occurrence of the lighter soils of the terrace is taken into account to a certain extent in the cropping; barley and potatoes being grown more usually on the lighter land to replace wheat and other roots in the rotation. A specialised dairy herd is maintained and the milk collected by a Leicester dairy. Milk production with arable farming for cash crops as well as fodder are the two chief activities.

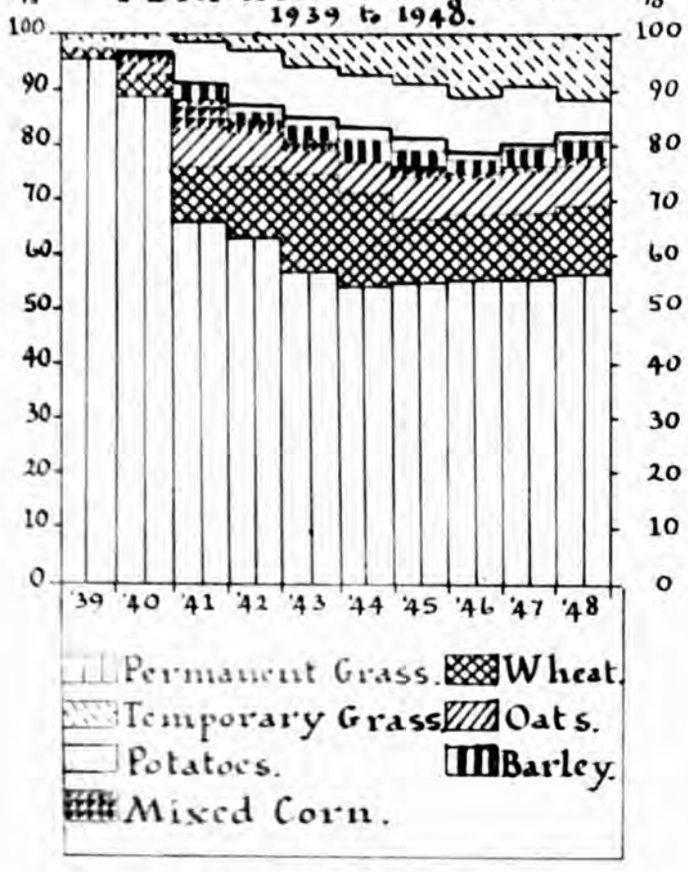
The farm is rather larger than the majority in the valley, many of which have considerably less arable land and practise a more mixed type of stock farming. Fattening is more usually associated with the water meadows which are lacking from this farm, although many with a similar lay-out extending from the hills to the river also retain pastures on the clay uplands,

partly because those of the alluvial areas are liable to burn in particularly hot dry summers when grass growth continues on those of the heavier lands.

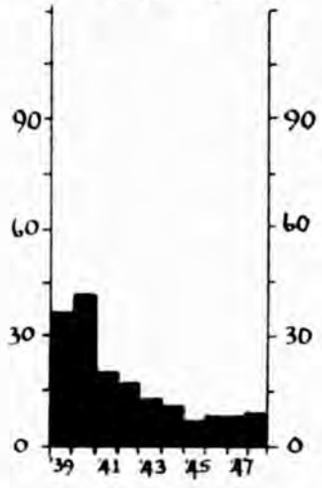
This valley which in the pre-war period was distinguishable as a separate agricultural region owing to the occurrence of arable farming associated with the lighter soils of the terrace area and of cattle fattening on the water meadows, continues in part to retain its individuality. Like the Welland Valley it is one of the few areas of the county where the use of some of the land is definitely influenced by a natural factor, the liability of the land to severe flooding. Trends are similar to those taking place in the eastern part of the county as a whole. Mixed arable and stock farming is dominant, fattening stock have decreased and dairying increased in importance.

CLAWSON AND HARBY PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS
1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS
1939 to 1948.

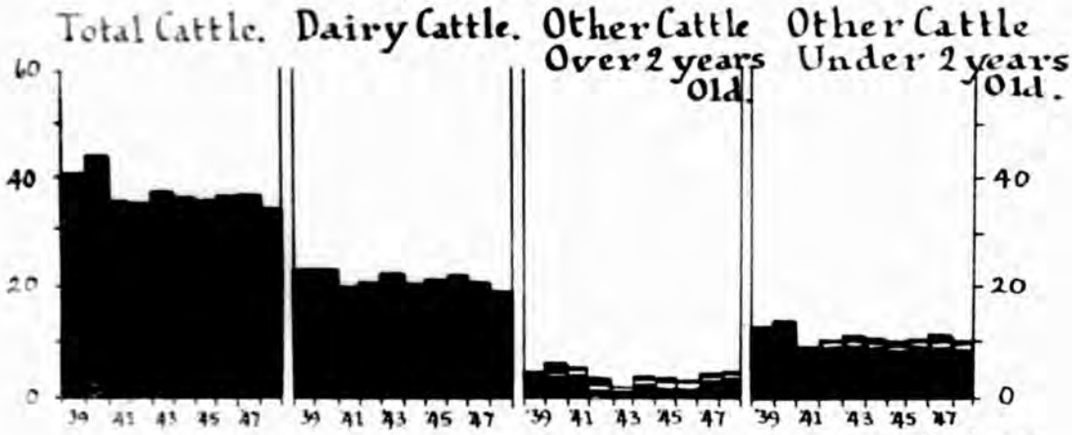


Figure 54.

Note The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

v) The Vale of Belvoir

In the pre-war period this area, with the exception of Bottesford parish in the extreme north-east, differed from the remainder of the east of the county owing to a marked specialisation in dairying rather than in mixed stock farming. Once famous as a corn growing district, it had since the beginning of the Nineteenth Century developed as a grassland dairying area specialising in the manufacture of Stilton cheese in addition to liquid milk production.

At the present time the agriculture of the Vale remains distinct from that of the greater part both of the east and west of the county. In 1948 less than 50% of the total farm land was under the plough, a lower percentage than in the western dairying districts, and a lower percentage of this area was under feed crops than in these latter areas. It cannot therefore be classed with them, while the continued and increased specialisation in dairying distinguishes it from the mixed stock farming districts of the east which its system of arable farming more nearly resembles.

The rapid increase in arable land in Clawson and Harby parish, the largest in the Vale, during the early war years, and the introduction of wheat as the chief cash crop, and also smaller acreages of barley, potatoes, oats and other feed crops, shows how the arable farming took the same general course as in the areas already discussed (Figure 54). Since the last war year, 1945, the percentage of land under the various crops has

remained stable, and only a very small area, namely 1% of the total farm land, had been reseeded by 1948.

In conjunction with the ploughing of pasture, stock of all types were reduced (Figure 54). Sheep, fewer in numbers in this area than in the mixed stock districts to the south, almost disappeared, and showed by 1948 little tendency to return. After an early reduction store cattle, chiefly young heifers, and older stock have remained stable. In marked contrast to the dairying areas of the west dairy cattle also declined in numbers and in 1948 had not increased to the pre-war level. Store bullocks, few in 1940, declined and form a particularly small percentage of the older cattle.

The information obtained from specimen farms further illustrates these changes. On a 200 acre farm the arable land, 50% of the total, is cropped in the following manner. Wheat and barley occupy the largest single acreages, the former being the chief cash crop and the latter sown in late years when winter wheat has not been drilled in the autumn. Oats, kale, mangolds and leys occupy the remaining arable land. No fixed rotation is used, but cereals are not grown in consecutive years. They are followed by green fodder crops or seeds leys of varying length. Normally three or four year leys are favoured but one year leys are also used. About 12 acres of land have been reseeded since the war and the pasture has been improved by the war-time ploughing.

Before the war it was an all-grass holding concerned chiefly with dairying, but to a lesser extent with rearing and fattening

Vale of Belvoir Strip and Homestead Farms.

■ B. - Buildings.
:A: - Arable Land
P. - Permanent Grass.

Figure 55.

■ B- Buildings.
P. ~ Permanent grass.
:A: - Arable land.

0 ½.
Scale in Miles.

Figure 56.

stock. Two permanent pastures are considered to be first class fattening land capable of finishing bullocks. With the ploughing of nearly 50% of the pasture sheep have been reduced by half. Store sheep and fat lambs are reared, however, chiefly on seeds leys, and sold in autumn. Store and fattening bullocks are no longer kept but a dual purpose herd of Lincoln Red cattle is still maintained and bull-calves sold as stores.

Dairying is the chief activity, and the milk produced is sent to the local Stilton dairy. All the arable fields are readily accessible from roads and the farm is laid out for the convenience of organising dairying. Permanent pastures remain near the buildings for the milking herd, and on the more distant parts of the farm for young stock or hay.

The area of arable land on this farm is rather above the average for the Vale. On a farm of similar acreage, but less accessible and with more interest in fattening stock, only 60 acres are retained as arable land. The average as shown by the parish statistics is rather less than 50%.

The layout of farms in the Vale, as in other parts of the county, follows two characteristic forms. Those with farm houses in the villages usually extend in strips from the buildings, while some consist of several blocks of land. A typical farm of this kind is illustrated in figure 55. The farm house and dairy are in the village and the pastures for the dairy stock occupy the neighbouring land, while the arable land centres upon the second set of buildings, barns and implement sheds.

In the case of the second farm (Figure 56) that of the compact

homestead type, three factors can be seen to influence the land use pattern. The fields accessible from the road are under crops. The pastures are arranged in such a way that stock may both be easily collected for milking and, by running fields together, be allowed access to the brook, the only reliable source of water for stock on the farm.

In the villages especially, many of the farms are much smaller than those already described being usually below 50 acres. The proportion of arable land is lower, chiefly owing to the inaccessibility of the land and lack of capital and equipment. Many of the farms extending from Long Clawson in particular are only one field wide and the arable land is normally situated beyond the pastures on the most distant parts of the farm, a layout which has a marked influence on the land use pattern of the parish. In some cases the holding consists of a small field near the farm house and an additional block of land some distance away. Normally such farms are chiefly under permanent grass but an exceptional example is one of which ten acres near the village alone is maintained under permanent pasture and on this the stock are wintered owing to lack of other accommodation. The whole of the remaining 30 acres about half a mile away is ploughed for feed crop production. The present tenant who has recently taken the holding previously farmed a larger area of poorer land outside the county and already possessed the necessary implements and machinery. A herd of 28 dairy cattle is in this way maintained, a larger number than is usual on farms of this area.

The smaller village farms are usually lacking in buildings

CLAWSON AND HARBY PARISH 1950.

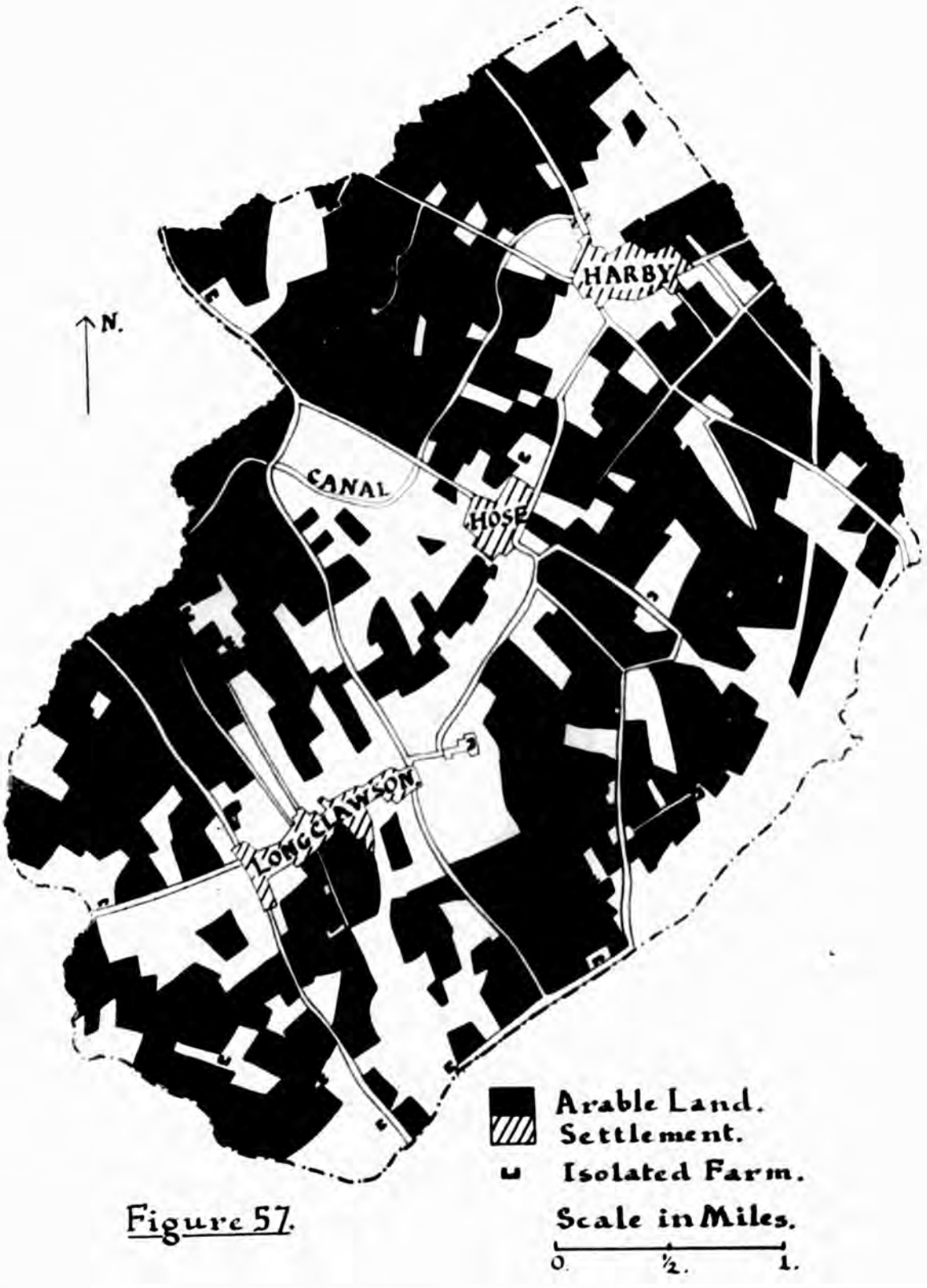


Figure 57.

for storage or wintering stock but the larger ones, especially those of the homestead type or long-established dairy farms, are better equipped. In this respect they resemble those of other parts of the county.

The land use pattern which has developed in the parish of Clawson and Harby (Figure 57), a typical part of the Vale with little variety in natural conditions and lacking natural controls sufficiently strong to influence land use, can be seen to depend primarily on the convenience of the layout of the individual dairy farms. The larger areas of permanent pasture occur in the roughly north to south central strip in which the villages are situated. The arable land is that more distant from the farm buildings and yet accessible from roads or tracks. The same arrangement of land use occurs on a smaller scale round the isolated farms.

The main enterprise of the area has remained unchanged since pre-war times. Arable farming for cash crop and fodder production has been added to the farming activities at the expense of stock rearing and fattening. However dairying remains dominant and a high proportion of the milk passes to the Stilton dairies. Nowadays the bulk of this is for liquid consumption, but Stilton cheese is manufactured intermittently in the summer when the surplus of milk allows.

TABLE VII

A Summary of the Chief Features of 12 Specimen Farms of Eastern Leicestershire

Farm	Area	Chief Activities Providing Sources of Income	Land Use	Cattle per 100 acres of total farm area	Sheep	Lay-out	Other General Features
A	300 acres	1 Dairying	65% arable, under fodder crops	40 British Friesians	None	Compact Homestead type, Land accessible from roads	Well equipped with buildings and machinery. Capital obtained from an additional source of investment in the farm.
B	170 acres	1 Dairying. 2. a few beef stores sold. 3. Wheat sold off the farm. 4. Store sheep sold	40% arable, under wheat, oats, other feed crops and seeds leys	36 Mixed	56 breeding ewes	Compact, homestead type. Land accessible from roads	Well equipped with buildings and machinery
C	315 acres	1 Dairying 2 Barley, potatoes and wheat sold 3 Fat lambs sold	40% arable under barley, wheat, potatoes, feed crops and seeds leys	35 British Friesians and Ayrshires	70 Masham breeding ewes	Compact Homestead type. Land accessible	Reasonably well equipped with buildings and machinery. Some of the land is light loam derived from the Marlstone. All other activities are subordinate to dairying
D	130 acres	1 Dairying	All land arable, under feed crops and seed leys	53 British Friesians	Grazing flock kept some years	Compact homestead type. Land accessible from roads	Well equipped
E	272 acres	1 Dairying 2 Wheat and sometimes oats sold off the farm 3 Fat lambs sold	30% arable under cash crops, leys and feed crops	35 Mixed	50 Masham breeding ewes	Strip type. Buildings in the village. Land in 2 blocks part inaccessible	Equipped with machinery. No buildings for wintering stock indoors
F	215 acres	1 Stock rearing and fattening 2 Wheat sold	35% arable, under wheat, feed crops and seeds leys	60 Lincoln Reds	100 Masham breeding ewes	Homestead type. Most land accessible	Well equipped. Cattle sold fat or as beef stores
G	460 acres	1 Cattle rearing 2 Dairying 3 Fattening 4 Wheat and barley sold 5 Fat sheep and lambs sold	47% arable, under wheat, barley, feed crops and leys	30 Lincoln Reds	100 breeding ewes	Homestead type. Land accessible	Equipped with buildings and yards for wintering stock. The best land is retained as permanent pasture for fattening stock
H	300 acres	1 Dairying 2 Rearing and fattening 3 Wheat and sugar beet sold 4 Fat lambs sold	33% arable, under wheat, sugar beet, leys and feed crops	50 Dual-purpose Shorthorns	50 cross-bred Border Leicester breeding ewes	Strip type Part of the land is accessible	Buildings are in a village but are not cramped and the farm is well-equipped. All activities are considered to be of equal importance

TABLE VII (continued)

Farm	Area	Chief Activities Providing Source of Income	Land Use	Cattle per 100 acres of total farm area	Sheep	Lay-out	Other General Features
I	105 acres	1 Rearing 2 Fattening 3 Wheat sold off the farm	50% arable, under wheat, feed crops and leys	50 Mixed	Breeding flock of 50 ewes	Compact. Homestead type. Land accessible.	Stock reduced in winter
J	300 acres	1 Fattening 2 Wheat sold	30% arable, under wheat, feed crops and leys	50 Cross-bred Herefords	100 Masham breeding ewes	Strip type. Land not easily accessible	Buildings are in the village and are cramped. Accommodation for wintering stock and storing equipment is lacking. Stock reduced in winter
K	180 acres	1 Fattening stock 2 Wheat sold off the farm	20% arable, under wheat, feed crops and leys	70 Cross-bred Herefords	Store sheep bought and fattened	Strip type. Land not easily accessible	Lack of buildings for storage and for wintering stock
L	160 acres	1 Rearing beef and dairy stores 2 Dairying 3 Wheat sold	40% arable, under wheat, feed crops and leys	40 dual-purpose Shorthorns	None	Strip type. Land retained as arable is accessible from roads	Buildings in the village. Lack of accommodation for wintering all stock indoors

Section b) The Transitional Areas between Eastern and Western Leicestershire

i) The Wolds North of Leicester

In the Land Utilization Survey Report[3] the Wolds lying to the north of Leicester, between the Soar Valley and the Vale of Belvoir, were distinguished as an agricultural region. It was stated at that time, however, that it was a transitional zone. The area is one of low hills reaching its greatest elevation at Six Hills in the central part and falling away towards Nottinghamshire in the north and towards the Soar and Wreak Valleys in the south. Gradients are for the most part gentle and the small river valleys are open in character. Thick layers of Boulder Clay overlie the greater part of the area but in the valleys Triassic and Lower Lias beds are exposed. Although gravels in the glacial drift give rise to small areas of light land and on the Keuper Marls near Cotes and Hoton good loamy soils occur, it is an area of heavy cold clay loams. The natural boundaries are distinct but, apart from a change of land use to the alluvial pastures of the two valleys to the south, little difference between the agriculture practised in this ares and the neighbouring areas occurs and it con not be regarded as a clear cut agricultural region.

Seagrave parish has been selected as a representative area. Extending south-eastwards from Six Hills to where the underlying Lower Lias Clay is exposed in the river valleys, it includes both relatively level Boulder Clay covered land and part of the lower but more undulating area bordering the Soar Valley.

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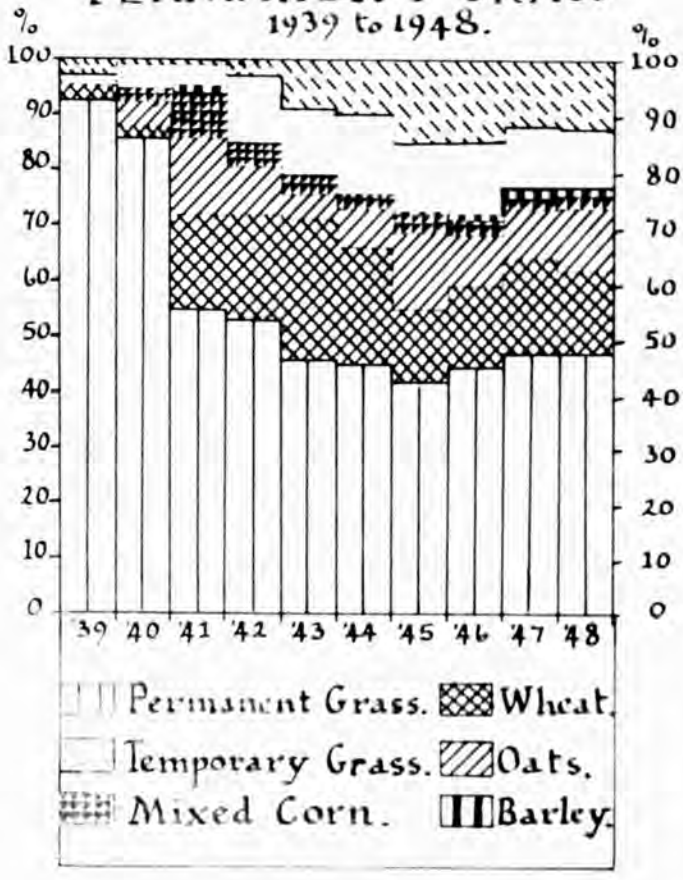
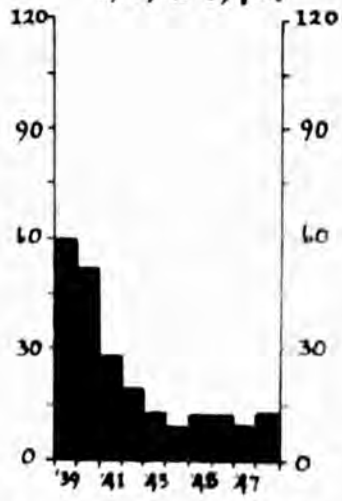
[3] L.U.S. Report of Leicestershire P.305

SEAGRAVE PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS
1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.

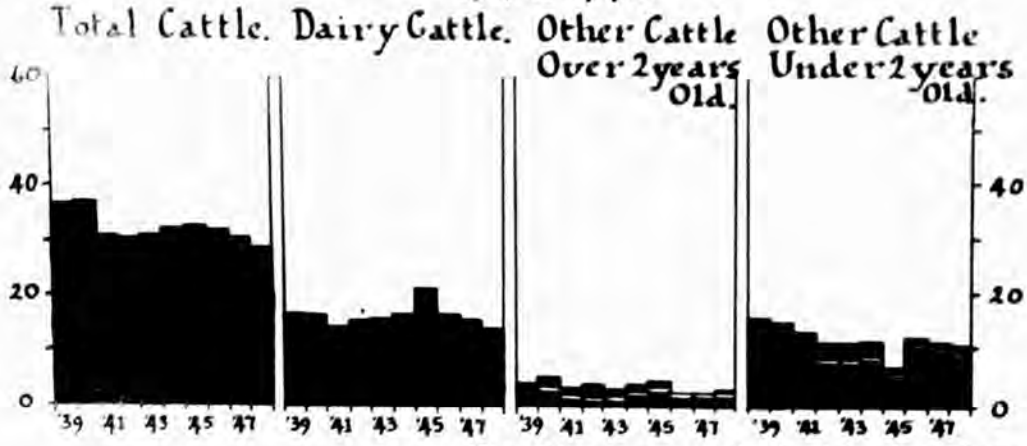


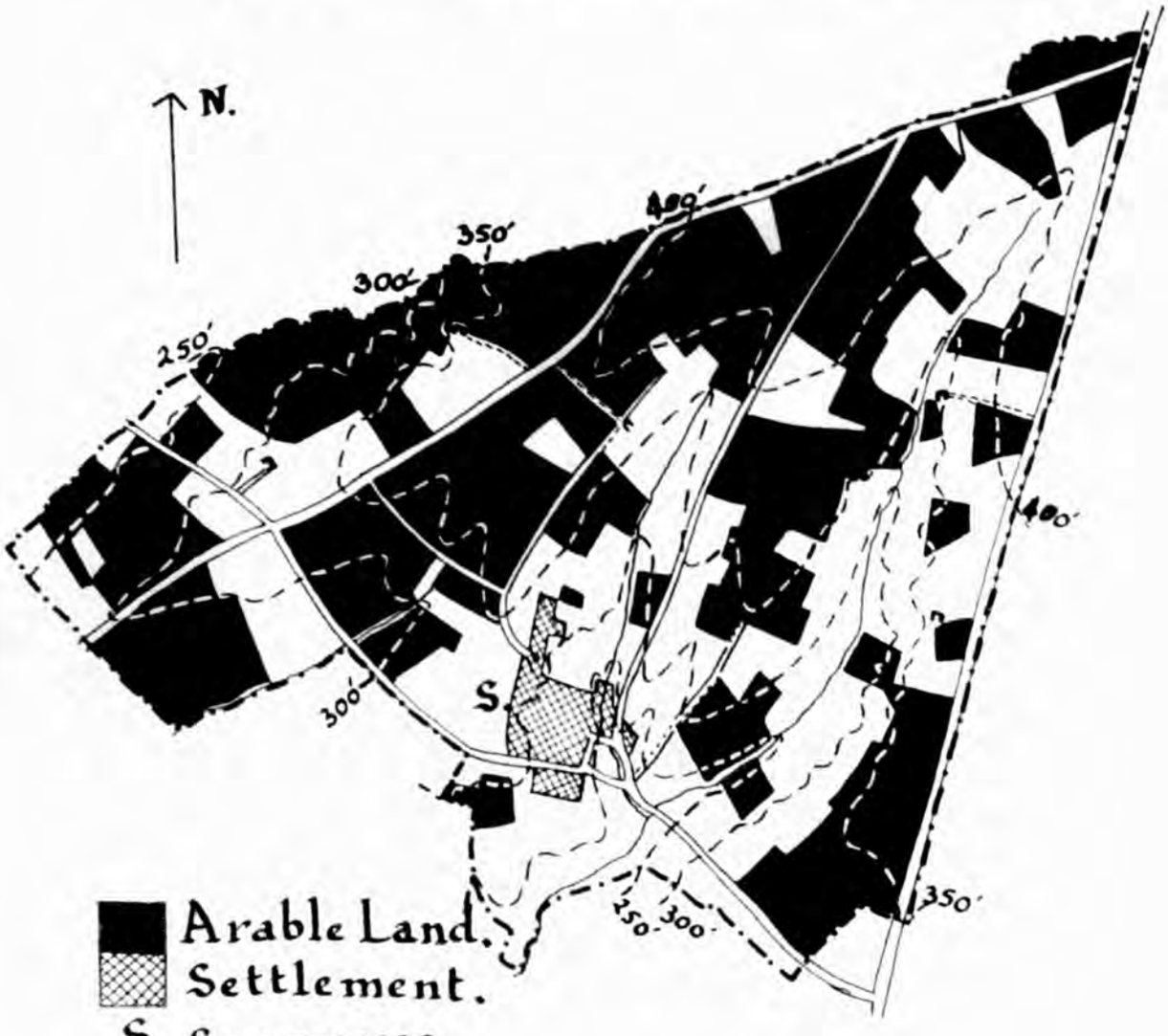
Figure 58.

Note The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

Virtually a grassland parish in pre-war days, it showed characteristics of the Vale of Belvoir both in land use and the type of stock farming practised. Although a small acreage was under wheat, grassland stock farming with a particular emphasis upon dairying was dominant. The changes in land use and cropping (Figure 58) followed the normal course noted in the parishes of the east already discussed, with first a large acreage under feed crops and later in the second war year a marked increase in wheat, sufficient to make this the chief crop. Likewise the steady increase in rotation grasses and, later in the post-war period, a decrease in wheat and in the total arable area show the same trends taking place here as in the Vale of Belvoir and the former grasslands of the east. However, in the east a relatively larger area of arable land was maintained under cash crops after the war. In Billesdon, for example, these occupied 37% of the total farm land compared with only 30% in Seagrave, while in the latter parish a correspondingly larger area was devoted to fodder production in 1948. The post war system of cropping has therefore become more similar to that characteristic of the western part of the county but the permanent grass area represents a proportion of the total farm land lower than that usual in the west.

The changes in numbers and types of stock (Figure 58) show characteristics of both the eastern and western areas. Total stock have declined during the ten years considered and the number per 100 acres is lower that that of most western parishes. Sheep have decreased to a very small number and the group of older 'other cattle', especially bullocks, shows a similar

SEAGRAVE PARISH 1950.



Arable Land.
Settlement.
S. Seagrave.
Contour interval 50 feet.
Scale in Miles.
0 ½ 1

Figure 59.

decline. Dairy cattle have remained more stable in number while young heifers have increased. Thus the tendency appears to have been for specialized dairying, with a high proportion of land under fodder crops and grass leys, to become more important in the area. Although certain traits of the agriculture more characteristic of the eastern areas remain, notably a relatively high percentage of permanent grassland and a lower number of stock, nevertheless, there is definite evidence of the extension of the western type of specialized dairy farming into the area where formerly a more mixed type of stock farming prevailed. (Figure 59). Formerly on the Wolds arable fields were more numerous towards the lower parts of the valleys of the south west where the Keuper Marls outcrop and rather lighter soils occur. Similarly on the Boulder Clay uplands the few scattered arable fields corresponded with patches of gravel giving light free-working soils and the heavy clay areas were under permanent grass. In Seagrave parish no correlation between the distribution of light and heavy soils and of arable land remains. Large areas of the heavy clays are under the plough and the distribution of arable and pasture land is now related to economic rather than natural factors.

The large areas of arable land in the north and north-west of the parish are associated with the larger more compact homestead type farms. The land is accessible from roads, tracks or farm buildings while the size of these farms is usually over 100 acres and allows the economic use of machinery necessary for arable farming on heavy land. Near the village the land is divided among a large number of small holdings ranging from

approximately 20 to 60 acres in area. Well below the optimum size for mechanized agriculture, they are largely under permanent grass and the chief activity is dairying. Small areas of arable land are used for fodder or wheat production. There are also near the village a few larger holdings with greater proportions of arable land, an added indication that it is the size and lay-out of the holding, rather than any natural factor, which influences the type of farming practised.

From the owner of a Wolds farm compact and 130 acres in area the following information was obtained. Before the war it was, with the exception of one field, a grassland stock farm. Dairying was the chief activity but some stores were reared and a breeding flock of Hampshire Down sheep maintained. At present only 12 acres of land near the buildings are under permanent grass. Grass leys occupy a further 28 acres and the remaining area is under wheat for sale, roots, green crops and one year mowing leys. A herd of over 50 dairy cattle is maintained and, although replacements for the herd are bred, bull calves are now sold when a few weeks old and sheep are no longer kept. Ley farming of this type has been made possible by the equipment of the farm with the necessary machinery, buildings for wintering stock and a water supply in all fields. It is considered that the added returns obtained will amply repay the very great initial expenditure. In 1951, a late year, the leys on this farm provided adequate grazing for all stock approximately six weeks before any sign of growth appeared on the old turf, thus resulting in a considerable saving in feeding stuffs. On the smaller farms feeding stuffs were extremely

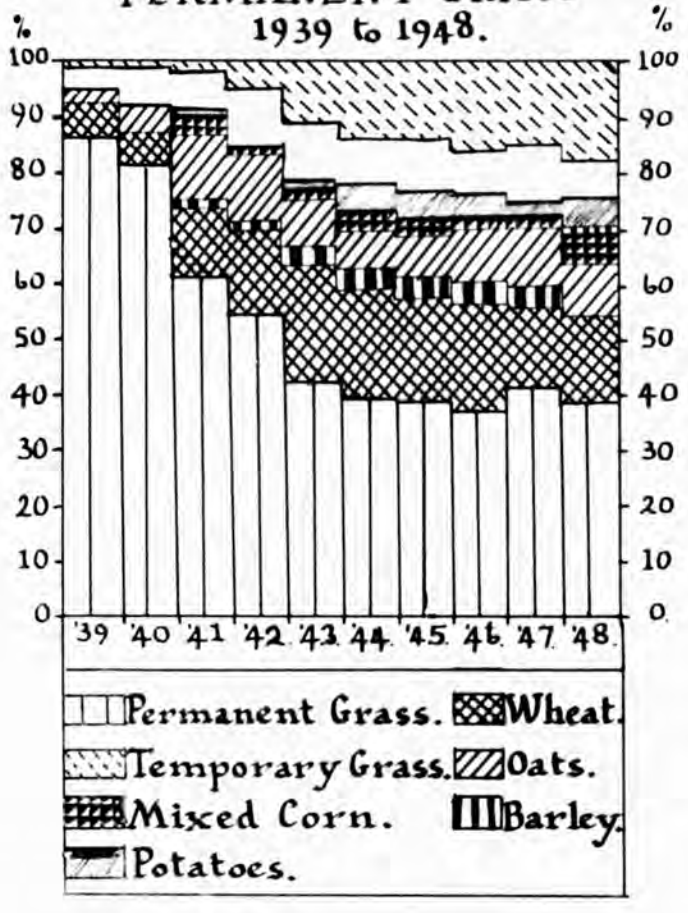
short and some depended on the scanty grasses of the roadside verges for stock grazing; the rights of grazing these are auctioned each spring.

On the specimen farm the heaviness of the soil and the slope of some of the more irregular land are not considered to be disadvantageous. The rather better drainage in the latter areas is thought to compensate for the greater difficulty of manoeuvering agricultural machinery. This farm is exceptional in many respects but serves to show how, given sufficient capital equipment and a medium-sized holding, the natural conditions of the area do not provide any serious obstacles to prevent the adoption of ley farming as recommended by agriculturalists but seldom practised in the former grasslands of the county.

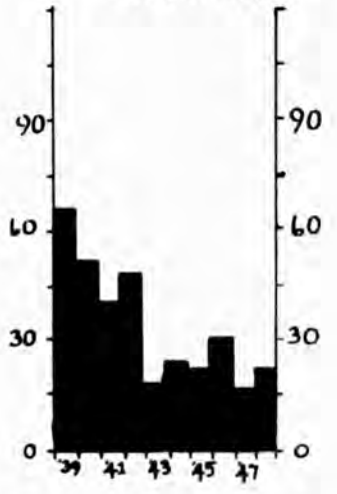
The Wolds remain a transitional area but the agricultural changes indicate that the specialised diarying with aravle farming has gained ground, extending further east into the former mixed stock grassland area.

ASHBY MAGNA PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.

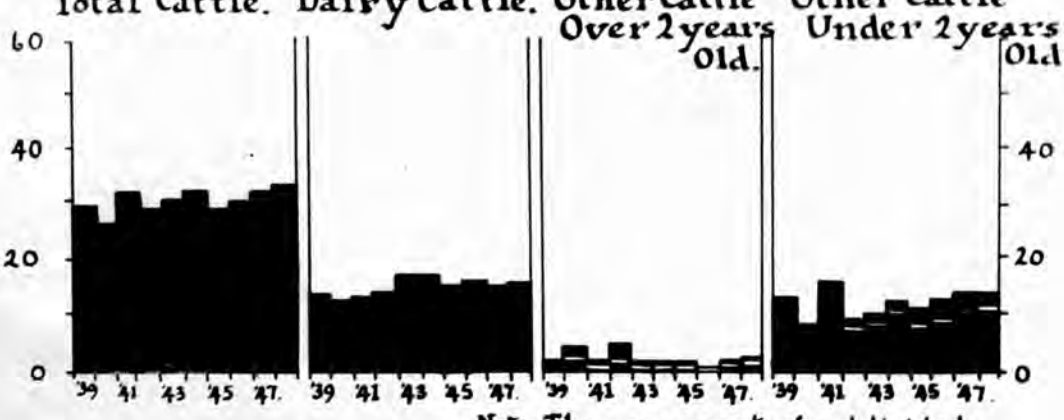
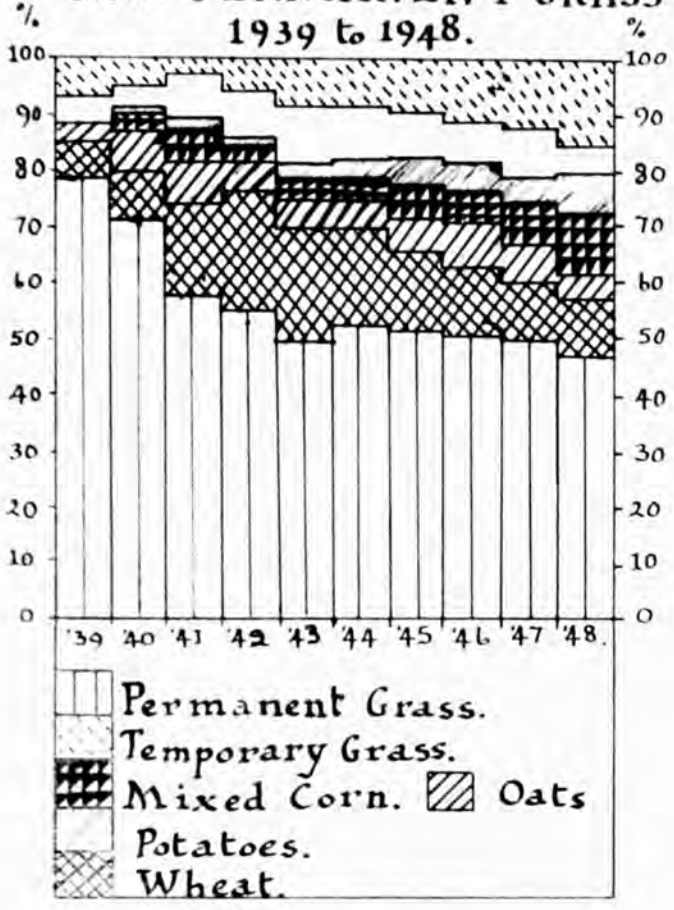


Figure 60.

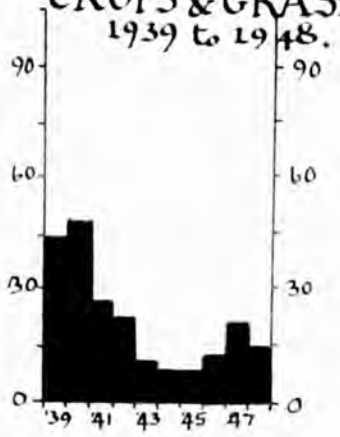
Note. The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

STONEY STANTON PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS 1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS. 1939 to 1948.



c. CATTLE PER 100 ACRES OF CROPS & GRASS.

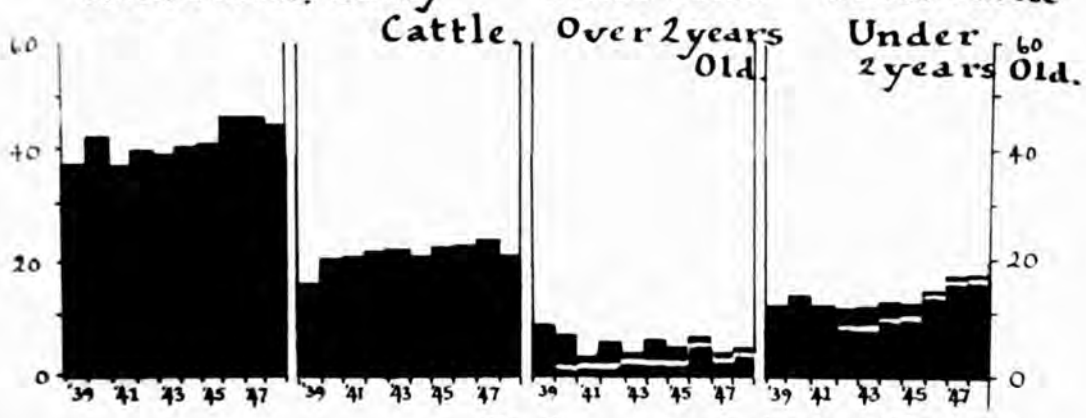


Figure 61.

Note The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

ii) The Area to the South of Leicester

No transitional area in the south of the County between the Eastern Grassland and the Grassland with Arable area of the west was distinguished in the Land Utilisation Survey Report of Leicestershire. The divide between the two regions was not, however, claimed to be a clear cut boundary,[4] but included the bulk of the arable land in the western area. At the present time such a means of delimiting the areas is far from satisfactory. In a broad area south of the County Borough the mixed stock farming of the east gradually gives way to more specialised dairying with a higher percentage of arable land, chiefly under fodder crops.

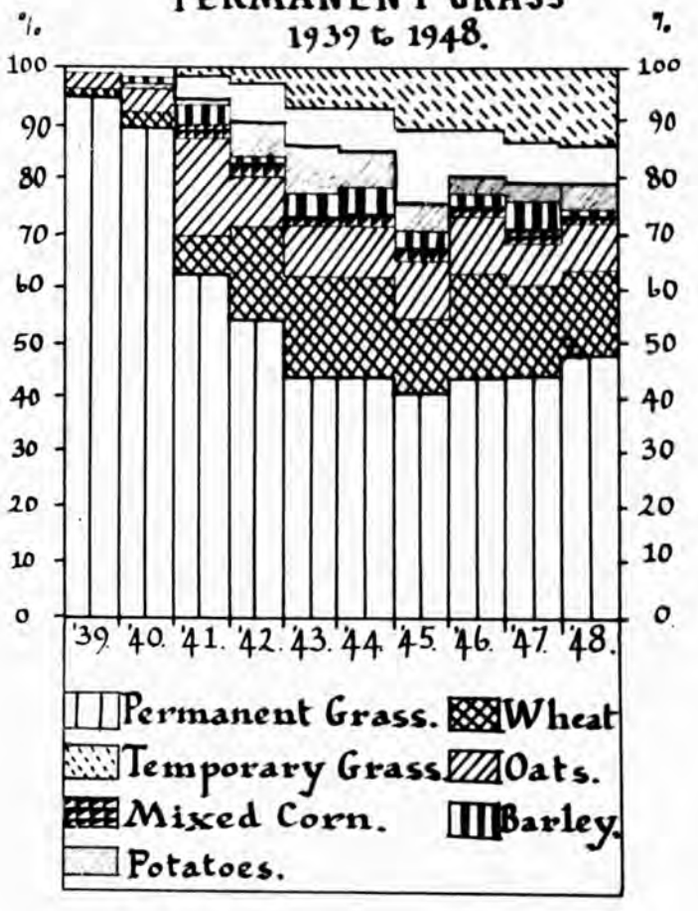
Three specimen parishes have been selected in this transitional area, Ashby Magna and Stoney Stanton within the pre-war Grassland with Arable Region and Cosby to the south within the former Eastern Grasslands. The usual changes in cropping, associated with the majority of the parishes already considered, took place in all these during the early years of the war. As there had previously been a considerable area of arable land this involved the expansion of the acreages under crops already grown and the introduction of potatoes and additional fodder crops, especially mixed corn, to replace imported feeding stuffs. (Figures 60,61,62).

In the post-war period in Ashby Magna and Stoney Stanton the system of war-time cropping has largely persisted. The wheat acreage has decreased but the total arable area has remained comparatively stable and the high proportion of land under rotation grasses and other feed crops has also continued. The

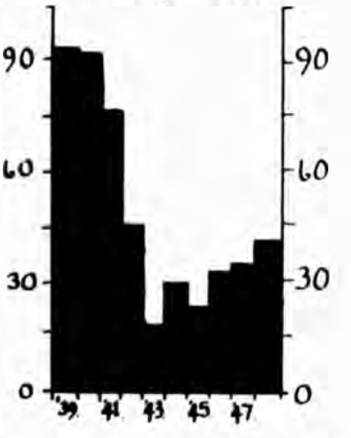
4. L.U.S. Report of Leicestershire P.295.

COTESBACH PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS
1939 to 1948.



b. SHEEP PER 100 ACRES OF TOTAL CROPS AND GRASS
1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS.
1939 to 1948.

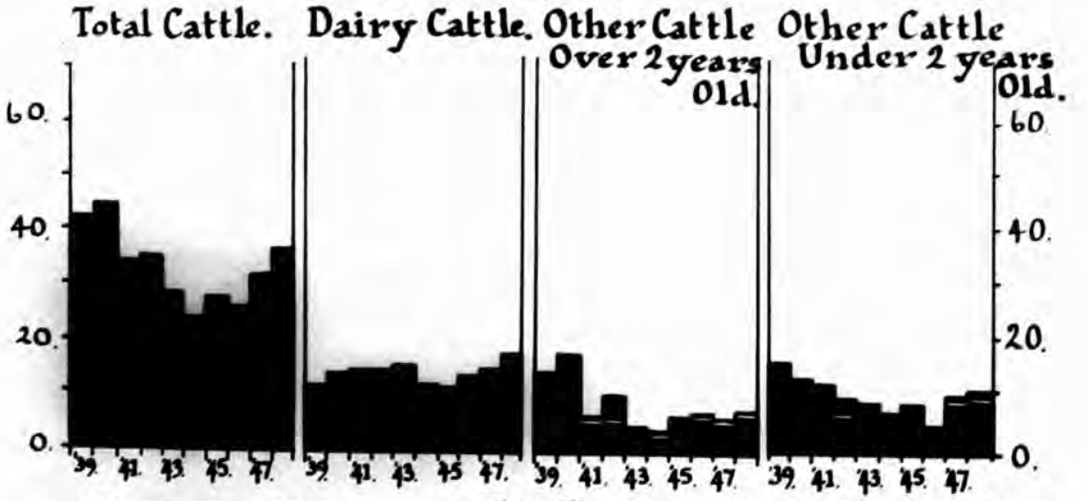


Figure 62.

Note. The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

present day cropping therefore closely resembles that of the west of the county.

In Cotesbach, on the other hand, the changes in crop acreages and the percentage of land under arable use more nearly resembles those indicated by the statistics for Billesdon parish, showing this area still to be in this respect similar to the eastern part of the county.

With regard to changes in numbers and types of stock, there are distinct similarities between Ashby Magna and Stoney Stanton. Sheep have declined rapidly and show little tendency to return. Total cattle on the other hand, in spite of some fluctuations, have increased more or less continuously, in marked contrast to the trend in the eastern part of the county, and there is no evidence of their having been 'ploughed out' in the course of the war-time agriculture. (Figures 60 & 61). At all times between 1939 and 1948 dairy cattle have been the most numerous group and have gradually increased. The younger store group, at all times chiefly composed of heifers, has shown a similar upward trend. In Stoney Stanton the number of young steers has declined in recent years. The number of cattle over two years old, also in contrast to other groups, have suffered a marked decrease while of these the bullocks, more numerous than heifers and cows in the early war years, have in the last 3 years become very much fewer. In this latter parish, therefore, there are definite indications that the stock farming practised has become more specialised dairying similar to that of the western part of the county.

ASHBY MAGNA PARISH.

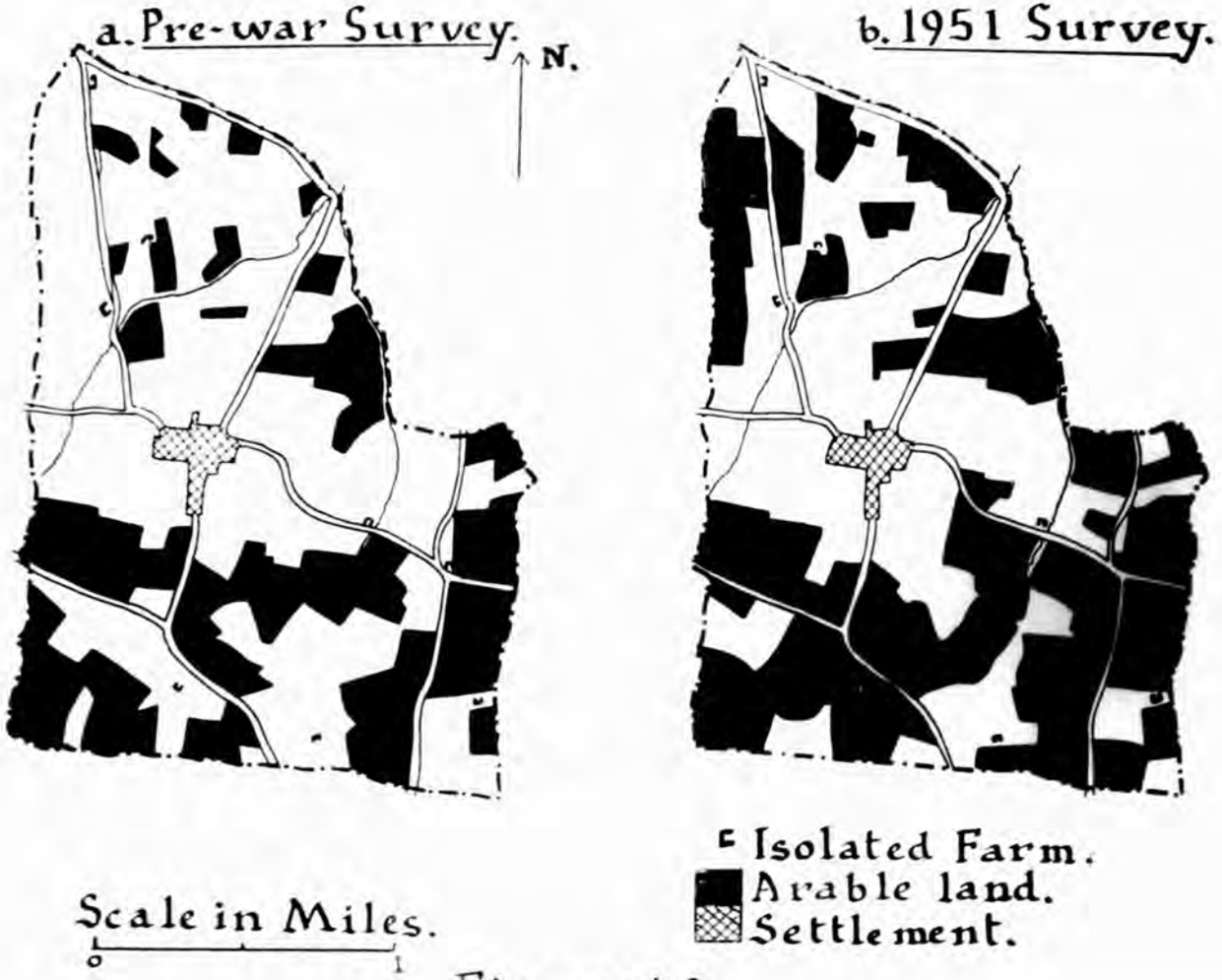


Figure 63.

In Ashby Magna older non-dairy cattle have represented at all times in the period considered a very small percentage of the total and their decline is therefore less marked. In Cotesbach (Figure 62) on the other hand the changes in numbers of stock show the parish to resemble more nearly those of the east of the ~~east of the~~ county in 1939 and the early war years. The decline in sheep has been particularly great and similarly total cattle decreased by 50% between 1939 and 1944. The 'other cattle' decreased most notably but in 1944 and 1945 dairy stock also declined. Bullocks decreased continuously and by 1948 represented a negligible proportion of the total stock.

From 1946 onwards, however, the increase in total cattle has gone far to counteract the war-time decrease and the 1948 number is equal to 86% of that for 1939. Most marked has been the increase in dairy stock and the younger group of female stores, the future dairy cattle. In this respect, therefore, the statistics indicate that there has been a decided change in the stock farming of this parish from the more mixed type associated with the eastern areas to the more specialised dairying of the west. The distribution of dairy stock (Figures 29a & b) show that such a change is far from limited to this one parish but has taken place over a large part of this southern area of the county and the western type of farming has shown a definite extension eastwards.

The sample areas surveyed in the field in 1951 (Figures 63, 64 & 65) show a similar distribution of arable land to that of

BLABY AND COUNTESTHORPE PARISHES.

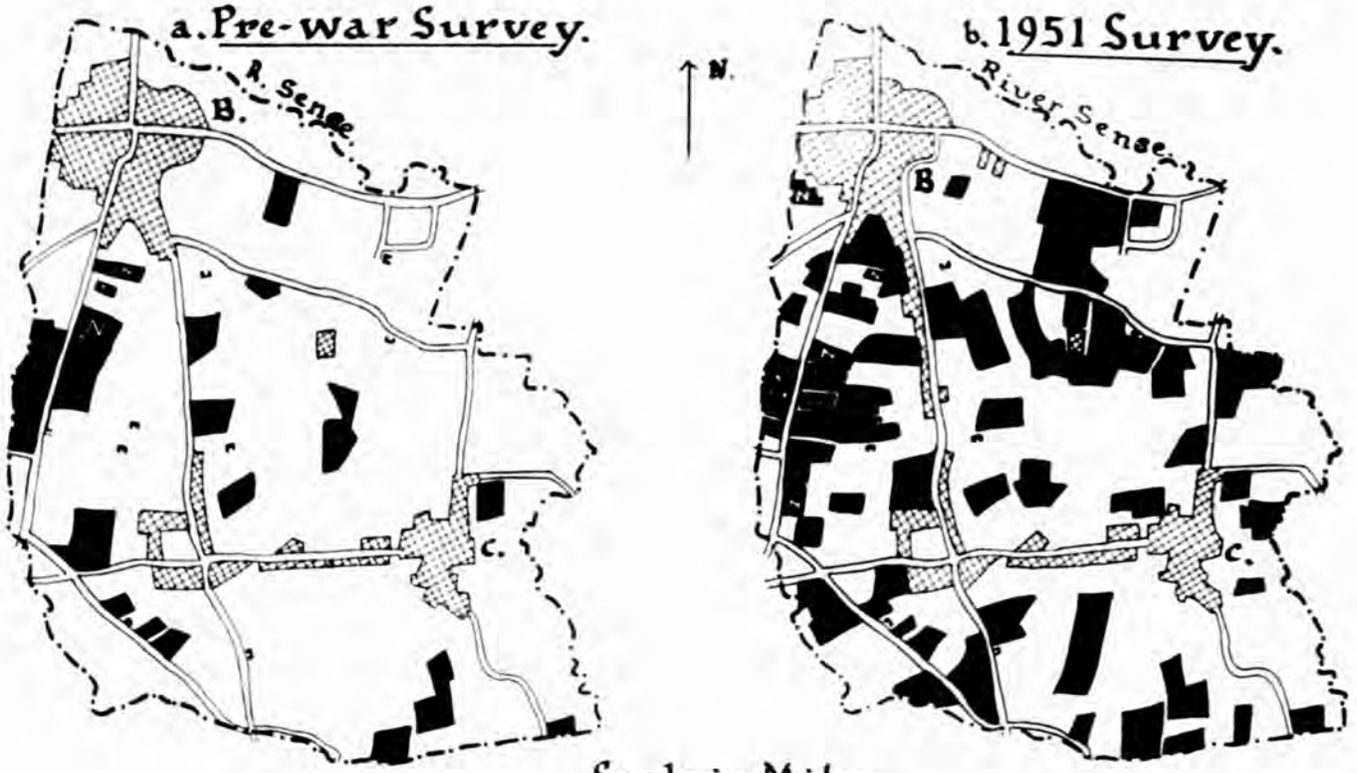
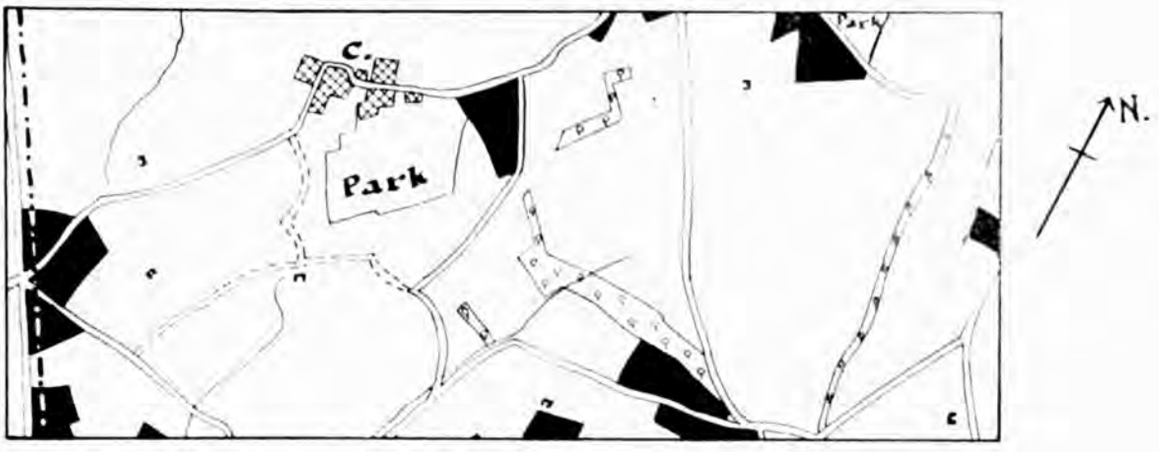


Figure 64.

COTESBACH DISTRICT.

a. Pre-war Survey.



b. 1951 Survey.

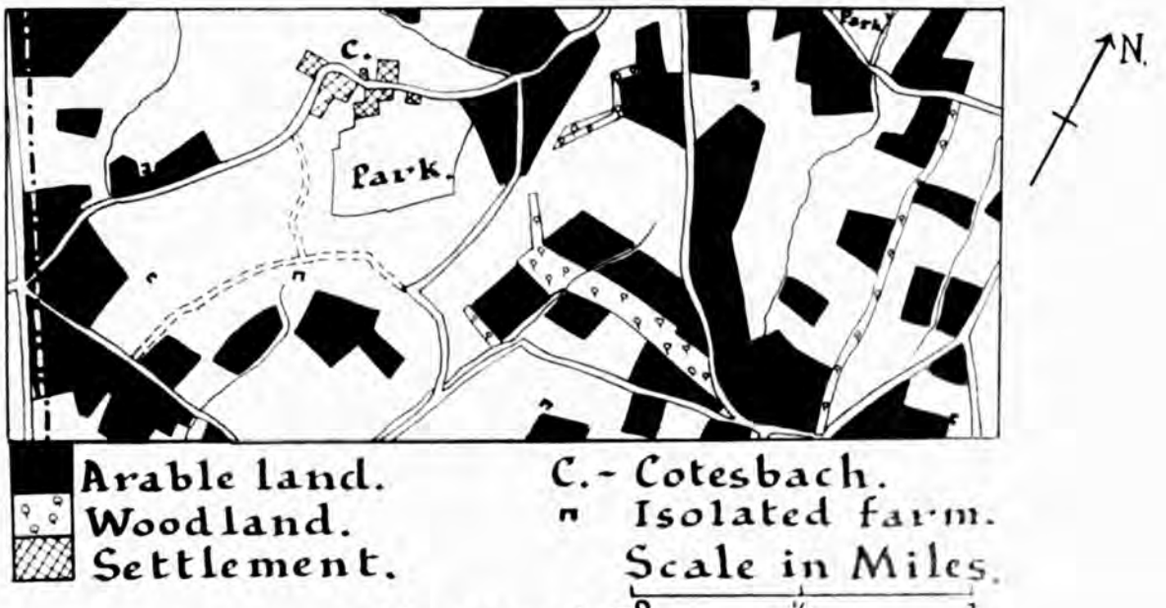


Figure 65

the majority of the gently undulating areas of the county. The occurrence of pasture near villages and farm buildings and the arable use of more accessible road-side fields are characteristic features of the land use pattern. The arable area has clearly increased particularly in the Lutterworth-Cotesbach district, but the water meadows remain in the Upper Soar Valley where flooding occurs and the River Sence is followed by a similar but narrower strip of permanent pasture. (Figure 64)

Field observations show that in spite of the changes in the stock farming herds of beef cattle are still to be found in the area, while imformation from specimen farms indicates that certain characteristics of the eastern mixed farming remain.

On five out of six farms visited dairying is considered to be the chief farming enterprise. On two run together it is the only main activity apart from rearing a small number of sheep and all the arable land is under leys or feed crops. On three farms however stock are reared for sale as beef stores when about two and a half years of age, and on one, although a small quantity of milk is produced, the chief enterprise is rearing dual-purpose stock for sale as beef or dairy stores. Illustrative of the way in which the nature of the stock farming may change within a relatively short period is the fact that on this farm six British Friesian heifers have just been purchased to form the nucleus of a specialised dairy herd. On two of the specialised dairy farms on the other hand, in response to the present day demand for beef and the possibility of good future returns, a beef bull has recently been purchased and it is intended to rear

some of the bull calves as beef stores. Thus the economic conditions prevailing have a marked influence on the particular type of stock farming practised.

All these farms showed similar characteristics of general lay-out to those in other parts of the county. One with the buildings in a village is of the strip type with pastures near to the buildings and arable land beyond, while the others of the 'homestead' type are likewise laid out for convenience of working.

This part of the county, therefore, remains transitional between the eastern and western type of farming but that of the latter area has expended and as in the north of the county the indistinct boundary has been pushed further east.

Section c)

Western Leicestershire

To the west of the transitional areas lying north and south of the County Borough, specialised dairying with a high proportion of arable land chiefly for feed crop production, reaches its maximum development. The parish statistics show a high degree of uniformity in the agriculture of the whole area.

Apart from the Soar and Trent Valleys, with their river terraces and alluvial flood plains, and Charnwood Forest, an area of distinct ridges and valleys, little variety occurs in natural factors likely to influence modern agriculture. The area is characterised by low relief with gently undulating ridges and valleys. Slopes sufficiently steep to present real difficulties to arable farming are few and occur spasmodically, chiefly in the sides of some of the more deeply cut valleys, in such a way as not to give rise to any distinct natural or agricultural region. Soils vary from light sandy loams to heavy clays and were said in the Land Utilisation Report to be of moderate quality.[45] The lighter soils are those derived from the sandstones and glacial or terrace gravels but in addition the soils of the Keuper Marls, especially where skerry beds occur, are in general lighter than those of the Boulder Clays or the solid beds of eastern Leicestershire.

The pre-war arable land was associated with the areas of lighter soils, but the parish statistics show that in those areas where the lighter soils predominate, now, no higher proportion of arable land is recorded than in the areas of the heavier soils.

[45] L.U.S. Report of Leicestershire P. 307.

PARISHES OF WESTERN LEICESTERSHIRE.

The Percentage of Farm Land Under the Chief Crops and Permanent Grass. 1939 to 1948.

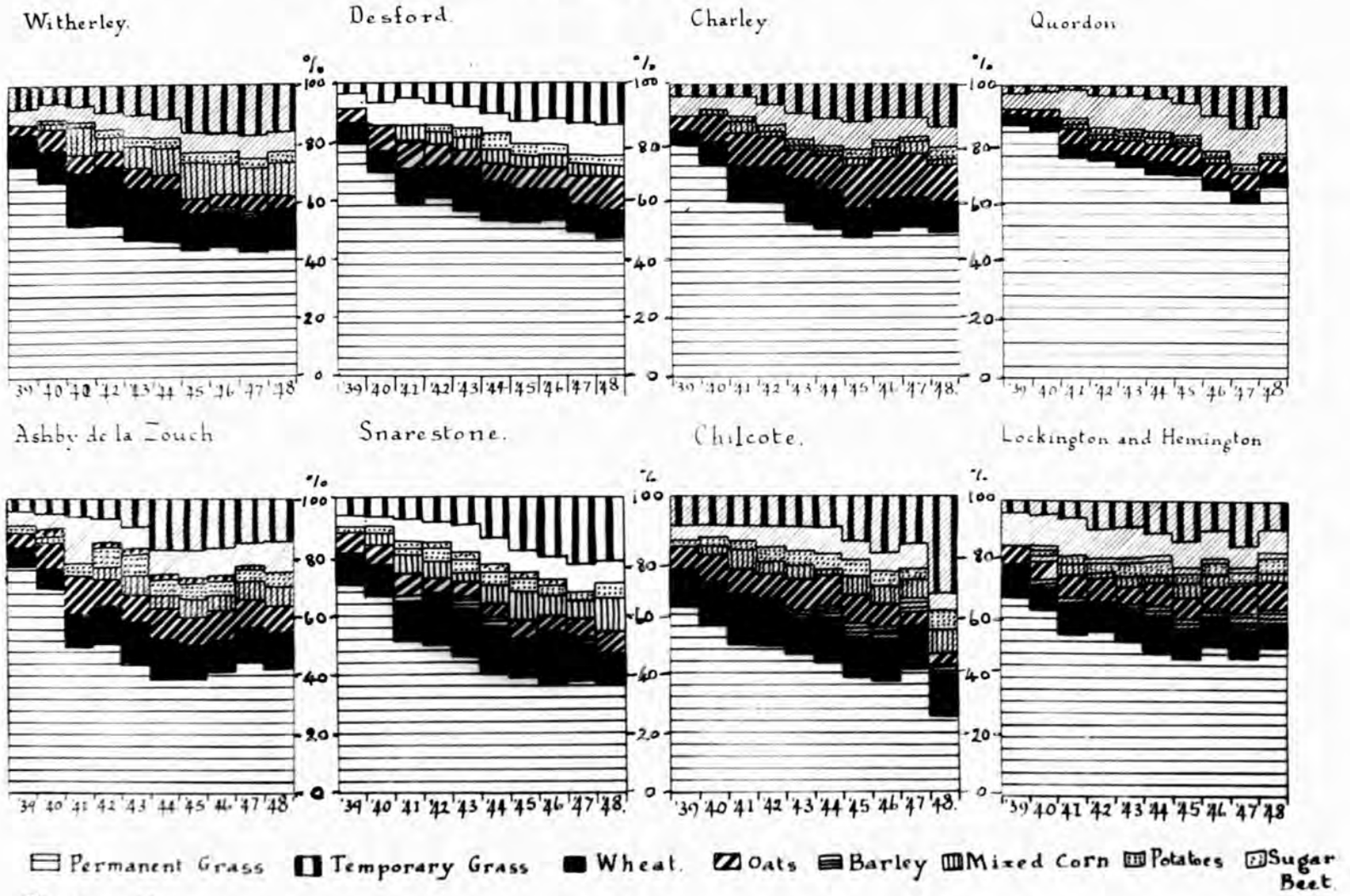
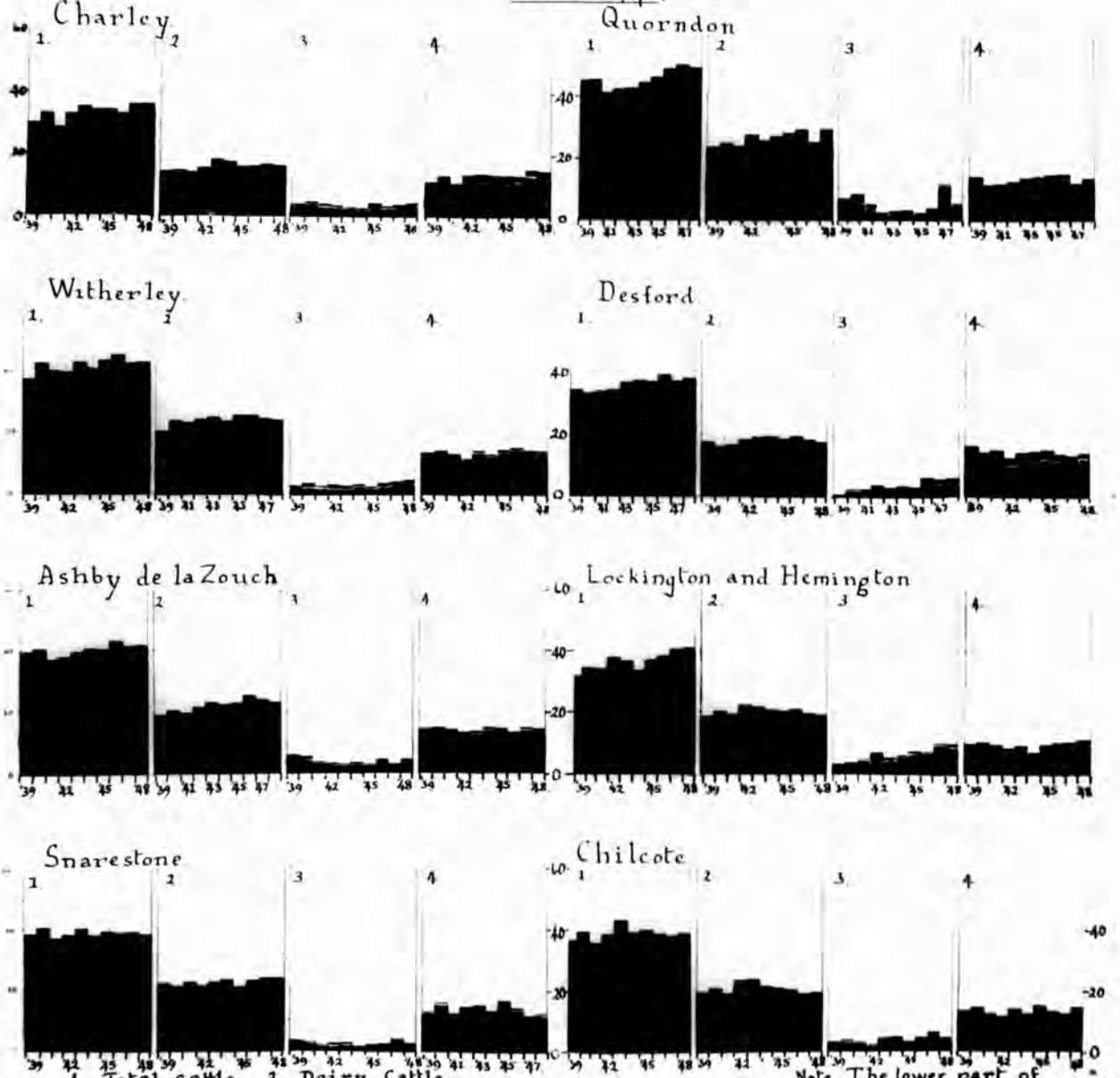


Figure 66.

PARISHES OF WESTERN LEICESTERSHIRE.
1939 to 1948.

Cattle Per 100 Acres of Total Crops and Grass
1939 to 1948.



1. Total cattle 2. Dairy Cattle.
3. Other cattle over 2 years old.
4. Other Cattle under 2 years old.

Note. The lower part of subdivided columns represents cows and heifers, the upper part bullocks.

Figure 67.

The selected parishes represent areas of each type of land occurring in this part of the county, including Charnwood Forest and the Soar and Trent Valleys. The statistics (Figures 66 & 67) indicate that the same general trends have taken place and similar features of agriculture are dominant in the post-war period in all of these. Quorndon, very largely an area of alluvial land on the Soar flood plain, shows a small proportion of arable land at all times but otherwise does not appear to differ from the other parishes.

Charley parish, chiefly in Charnwood Forest, does not show any exceptional agricultural features. The greater part of the farmland included in the returns is the relatively level or gently sloping valley land largely underlain by the Keuper Marls. The steeply sloping ridges of ancient rock with thin acid soils are for the most part in heath or rough pasture and are consequently excluded from the total area of crops and grass.

Since 1939 the system of agriculture practised in the pre-war period has steadily expanded. The chief difference between the cropping in this part of the county and that of the eastern parishes lies in the high proportion of arable land and of fodder crops such as mixed corn, clover, lucerne and rotation grasses. In addition there has been less tendency for land to be seeded down to permanent grass in the post-war period.

In Desford and Chilcote there has been a continued increase in the arable area since the war while in the other parishes it has remained stable representing between 50% and 60% of the total farm area. Wheat continues to be the chief cash crop and barley

is a minor crop although a large acreage is recorded more recently in Chilcote a parish underlain entirely by Keuper Sandstones associated with lighter soils, and in Lockington and Hemington parish where lighter soils occur on the river gravels and Keuper Marl skerry beds. In these two parishes also as in Snarestone and Ashby-de-la-Zouch, both of which are areas of lighter land, potatoes have continued after the war to occupy a relatively greater percentage of the farm land than is the case in the parishes characterised by heavier soils. To some extent therefore the soil type does appear to influence the particular crops grown, although it does not affect the total arable area. A large area of rotation grasses is recorded in recent years compensating for the large acreage of grazing and meadowland lost by the ploughing of pastures. Young leys which have 'taken' well are likely to have a considerably higher stock carrying capacity than the older pastures which they replace, especially in those areas where lower grade grassland was recorded in the 1940 Grasslands Survey.

Changes in the numbers and types of stock (Figure 67) in the parishes of this area show marked contrasts with those of the eastern part of the county. Most significant is the fact that although sheep have been reduced during the war and the total number of cattle has either remained stable or increased continuously throughout the ten years considered. Dairy stock have been at all times by far the most numerous group in all parishes. Of the store cattle under two years old the majority have been

heifers and in the older group, at all times small, few bullocks have been recorded. Both before the war and since, it is apparent that dairying has been the one main stock farming activity. No real interest in rearing beef stores or fattening cattle is indicated; the older group of cattle is composed chiefly of dry cows or older cows culled from the dairy herds. Although some of these are finished for beef production this can in no way be compared with the fattening of specially reared beef cattle associated with the eastern parts of the county.

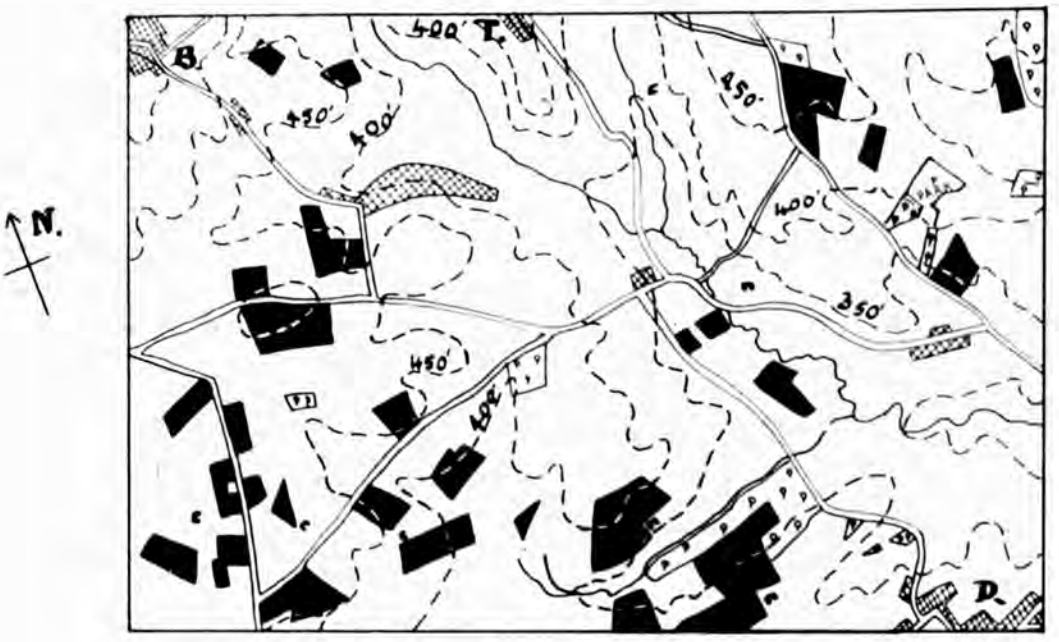
A further indication of the specialisation in dairying alone is the number of herds of the chief dairy breeds, included in the milk recording scheme of the Milk Marketing Board. Most numerous are those of Ayrshires, British Friesians and Dairy Shorthorns, all of which give a good yield of milk but are not well favoured for beef production.

On the water meadows of the Soar good second grade pastures occur but there is no real concentration upon beef fattening in the valley in any way comparable with that of the Welland or the Upper Wreake. Dairy herds are grazed on much of the land and the fattening cattle to be seen are chiefly of the dairy breeds with a few crossbred Herefords or others of the beef breeds. Large herds of specialised fattening bullocks are almost completely absent.

The stock farming of the west of the county as a whole has shown remarkably little change as a result of the war. Already before 1939 it was concerned chiefly with the production of milk for which the war-time demand was so great. As a result the

DESFORD DISTRICT.

a. Pre-war Survey.



Scale in Miles.

0 1

b. 1951 Survey.

Arable land.
Woodland.
Settlement.

n Isolated farm.
B.- Bagworth.
D.- Desford.
T.- Thornton.

Figure 68.

factors which encouraged changes in the mixed farming areas of the east merely stimulated the established stock farming of the west. Stock were increased as much as possible and the main changes were in the arable farming. Owing to the fact that fodder crops and wheat were already produced the war-time demand for bread grain and feed crops to replace imported commodities in this case also resulted in an expansion rather than any real change in the type of farming practised. The increase in the area of arable land and its extension on to the heavy lands has allowed a particularly high degree of uniformity to develop in the agriculture of the whole area.

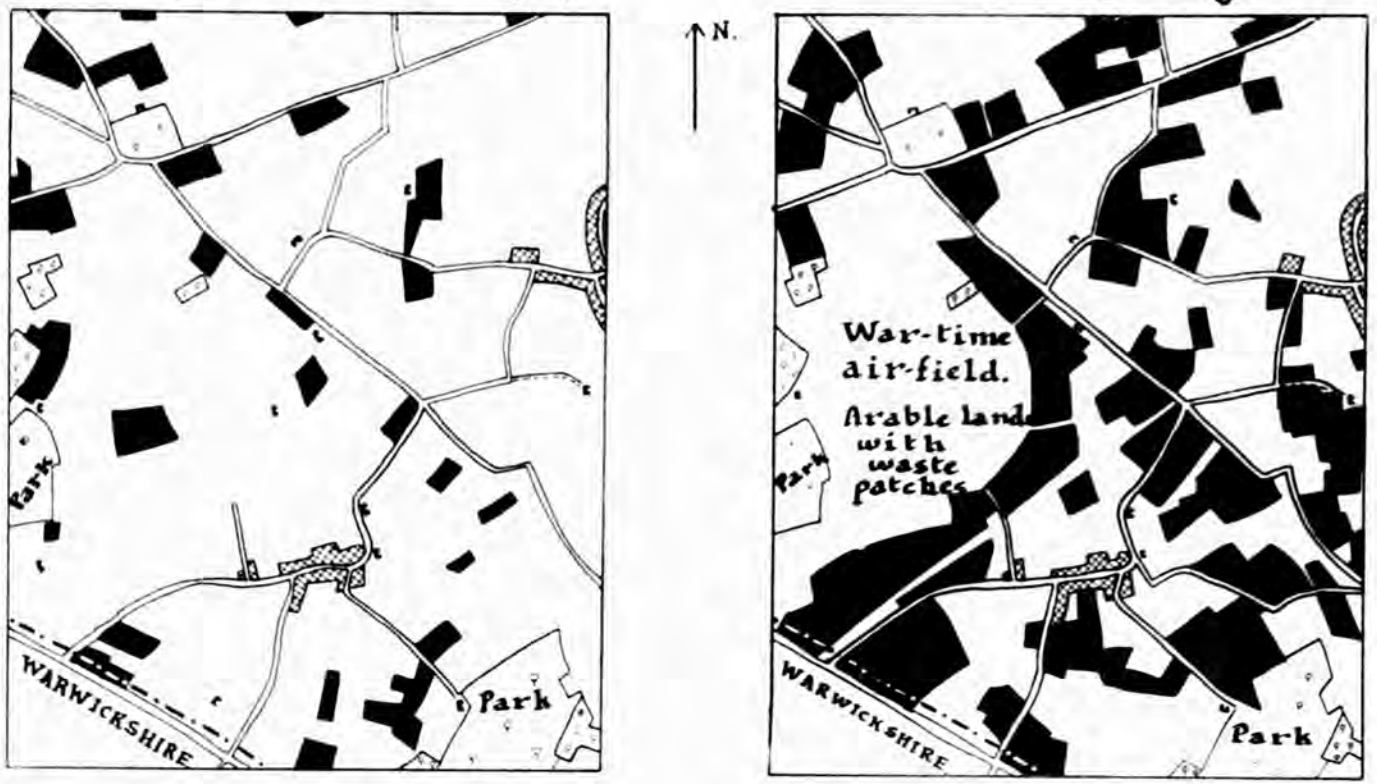
The distribution of arable land in 1951 in the area between Desford and Bagworth, chiefly on the Keuper Marls, (Figure 68), and near Higham-on-the-Hill to the south, where Boulder Clay overlies much of the Trias, shows that there is now no real difference between these two areas either in the proportion of arable to pasture land or in the pattern of land use. The pre-war Land Utilisation Survey map on the other hand showed a greater area of arable land in the former district, the area of rather lighter soils derived from the Keuper Marls.

At the present time as in other parts of the county the use of the land appears to be related primarily to economic factors. Arable fields are generally accessible from roads while permanent grassland remains near the farms and in less accessible areas. There is, however, some correlation with relief. South-west of Thornton, for example, the steep hill sides are entirely under permanent grass. (Figure 68).

THE DISTRICT NEAR HIGHAM.

a. Pre-war Survey.

b. 1951 Survey.



Arable land.

Woodland.

Settlement.

E Isolated Farm.

S.- Stoke Golding.

H- Highamon-the-hill.

Scale in Miles.

0 ½ 1

Figure 69.

PART OF CHARNWOOD FOREST.

a. Pre-war Survey.

W.- Woodhouse Eaves.

N.- Newtown Linford.

N.

Woodland.
Arable land.
Heath land
Settlement.

Scale in Miles

0 ½

b. 1951 Survey.

Figure 70.

In the parish of Higham-on-the-Hill (Figure 69) large areas of land on the disused airfield, unfenced and well suited to large scale agriculture, have been let to farmers in the district on a yearly lease and are chiefly under grain crops. Part of the area has recently been withdrawn owing to the danger of farm machinery crossing the runways which are used for testing motor vehicles.

The area of Charnwood Forest surveyed in 1951 (Figure 70) shows more marked correlations between the relief, soils, and use of the land. The area of arable land has increased very markedly but as in the pre-war period, is restricted to the level lands of the valleys. These are for the most part areas of Triassic rocks but considerable areas of arable land occur also where the underlying beds are sediments of Palaeozoic age usually associated, especially on steeper slopes, with thin poor soils. It appears that gradient and to a lesser extent soil are of significance in determining land use. The steeper higher slopes remain as areas of rough pasture or heath and woodland. Gradients of these areas are steep and patches of rock bare of soil occur on hillsides and ridge tops. In the area surveyed it is clear that the increased arable acreage has been the result of ploughing permanent pasture. There is no evidence that rough pasture or heathland has been reclaimed to increase the total area of crops and grass. A considerable area has been lost to agriculture in this part of the county owing to the occurrence of increasing numbers of huts serving as temporary or permanent habitations.

The distribution of arable land in the Soar Valley (Figure 71)

PART OF THE SOAR VALLEY.

a. Pre-war Survey.

b. 1951 Survey.

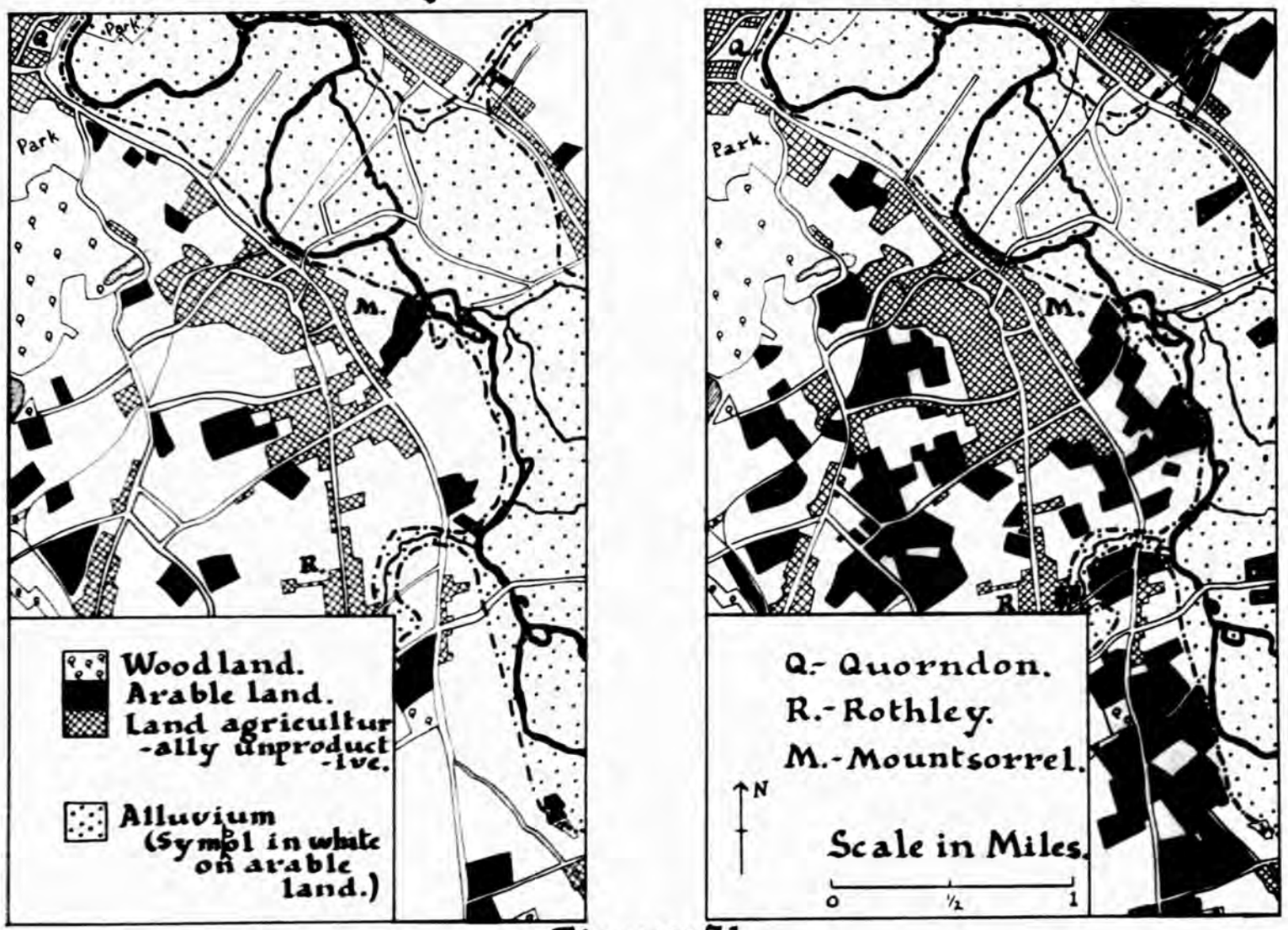
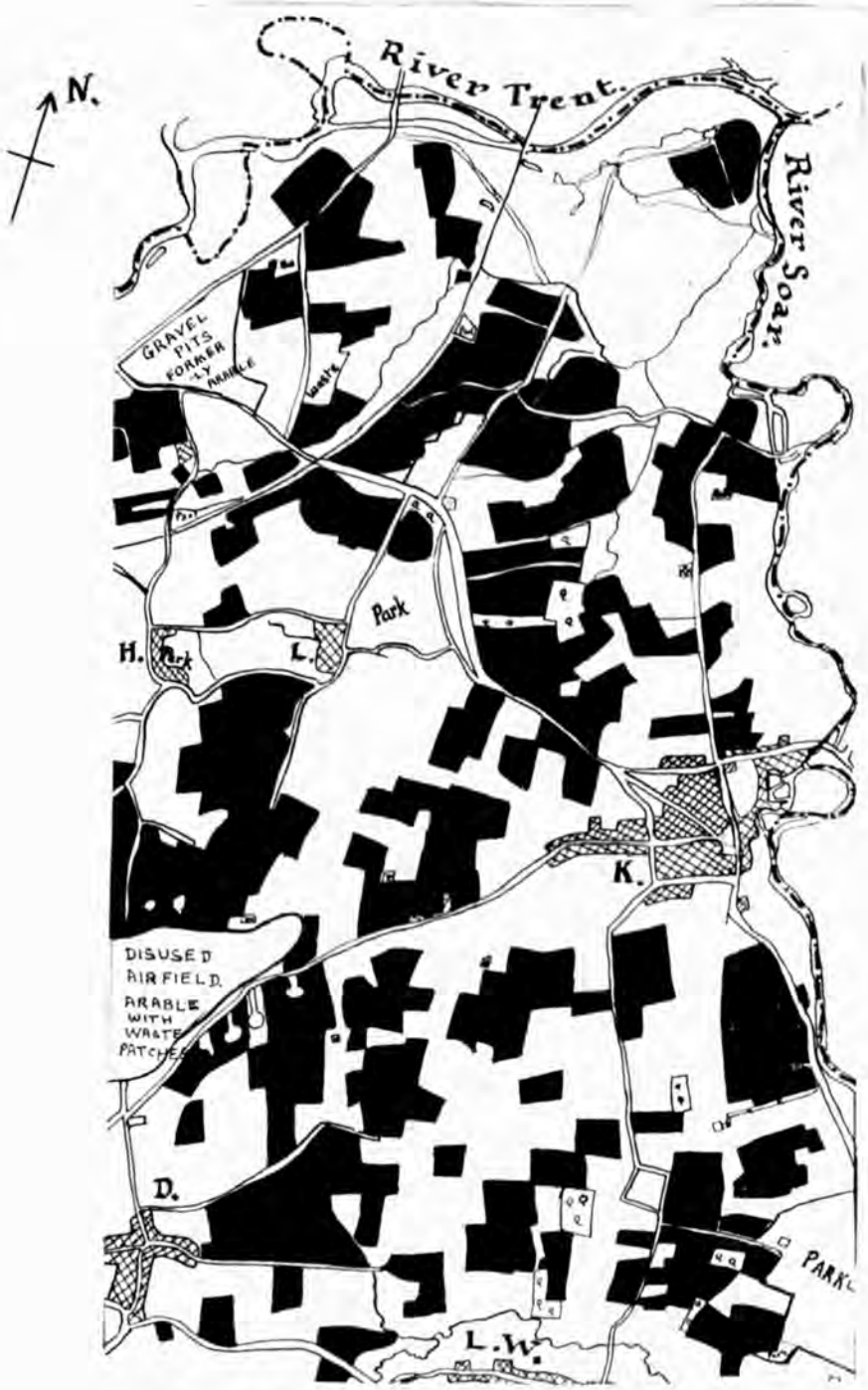


Figure 71.

THE LOWER SOAR AND TRENT VALLEYS 1951.



L:Lockington. K.-Kegworth.
H:Hemington. D.-Diseworth.

L.W.-Long Whatton.

Settlement.
Arable Land.
Woodland.

Scale in Miles.
0. 1.

resembles that of the Wreak Valley in that the flood plain of Recent alluvium is almost unbroken permanent grassland. The area useless for arable farming owing to a high water table and liability to flooding does not, however, coincide entirely with the alluvial land. Arable fields occur near the margins where the land is slightly more elevated and sufficiently distant from the river to be better drained. The river terraces and areas of Keuper Marl and Boulder Clay show increased acreages under the plough and the pattern of land use does not show any unusual features. Waste land occupies considerable areas near the quarries of Mountsorrel and the growing urban areas are also encroaching on the agricultural land in this area near to Leicester. The grasslands of the flood plains give a distinctive feature to the land use pattern of this area which in other ways does not show any marked variation from that of the other weatern areas surveyed.

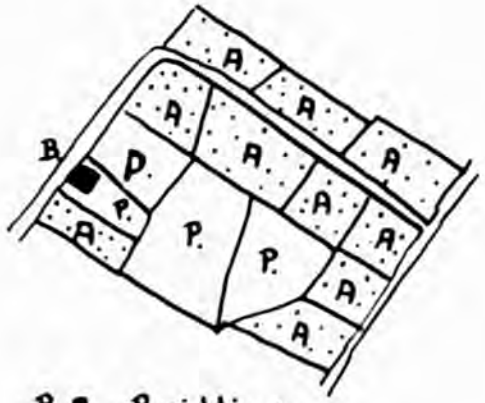
To the north-west of the county the valleys of the Soar and Trent merge thus giving rise to a wide area of river terrace land, with light free-working soils. Outcrops of Keuper Marls with skerry beds also occur, similarly associated with free-working soils and in the pre-war period the parishes of Lockington and Hemington, Castle Donington, Long Whatton and Kegworth, all showed a relatively high acreage of arable land. The 1951 survey (Figure 72) shows few outstanding features. The land use pattern and proportion of arable land is not unlike that of the other areas surveyed. The land bordering the rivers and liable to flood is a relatively narrow strip of permanent grassland and the

distribution of arable land shows adjustment to economic rather than natural factors. On the terraces of the Trent large areas of waste land occupy an increasing area where old gravel pits occur. A considerable area shown as arable land on the pre-war survey is now of no agricultural value as a result of these workings.

Although the land use does not appear to be related to soil type it is in this area of friable soils that rather larger acreages of light land crops, potatoes, sugar beet and barley occur. The air-field to the south-west of the surveyed area is chiefly under crops. Land occupied by run-ways and derelict buildings however remains, waste and so reduced the agricultural area.

In the western part of the county also there are considerable areas affected by opencast coal mining. These will however be restored subsequently and the particular problems of farming such land are considered to be beyond the scope of this thesis.

Western Leicestershire as a whole is rather more urbanised than the east of the county and as a result economic conditions differ correspondingly. The prevalence of dairying in this area in pre-war days can be related in part to the fact that the towns provided local markets for produce, a factor of considerable importance before the collection of milk from distant areas was fully organised. In this area at the present time considerable numbers of producers-retailers remain and supply the urban centres. Roads are on the whole better and a closer network of hard surface roads or tracks facilitates transport and also makes



a.

B ■ - Buildings.
P. - Permanent Grass.
A - Arable Land.

b.

■ B - Buildings.
A - Arable land.
P G. - Permanent Grass.

Scale in Miles.
0 ½.

Figure 73. Western Leicestershire Dairy Farms.

the land more easily accessible for farm machinery.

A further factor which is likely to encourage arable farming is the fact that where the small towns and villages are industrial in character unlike the groups of farms forming many of the settlements of the east the small inaccessible village farms are largely absent and more of the isolated homestead type occur. There are however considerable numbers of 'farm villages' in which the holdings are either of the strip type or occur as separate blocks of land.

The two specimen farms mapped (Figure 73) are both of the homestead type and are laid out in a way similar to that of the stock farms of other parts of the county. Both are specialised dairy farms with herds of Ayrshire cattle. Replacements are bred for the herds and additional cows purchased. Bull calves are sold when about two weeks old and occasionally barren cows culled from the herd are fattened but no other aspect of stock farming is of importance in the farming economy, and no sheep are kept. From one of these in conjunction with three neighbouring farms, milk is sold in the local town but from the other it is collected by a large dairy although before the war this also possessed an independent milk round and butter was made and sold in the neighbouring area.

On the former of these about 50% of the land is under crops. The soil is chiefly heavy clay developed from Boulder Clay and the chief farming problem is the lateness of the land. The arable area is entirely used for fodder production. A large acreage of

mixed corn is grown and used chiefly for the production of pit silage for winter use to assist in maintaining a high milk yield, a factor of particular importance when the milk is sold directly to the retail market.

The second farm shows a larger proportion of arable land. only a little over one third is under permanent pasture and of the arable area nearly 50% is under wheat and barley for sale off the farm. The land is likewise heavy with a consequently short working season. It is for this reason that part of the cash crop area is under spring-sown barley as all the land could not be drilled with wheat before the winter weather made work impossible.

Both farms have been dairying enterprises since the 1930s and are well equipped with the necessary buildings for wintering stock indoors, but one lacks storage space for implements. This farm was almost entirely grassland before the war unlike the other on which about one third of the land was arable. Main water and electricity are also supplied to each farm.

Section d)

The North East Cash Crop Producing Area

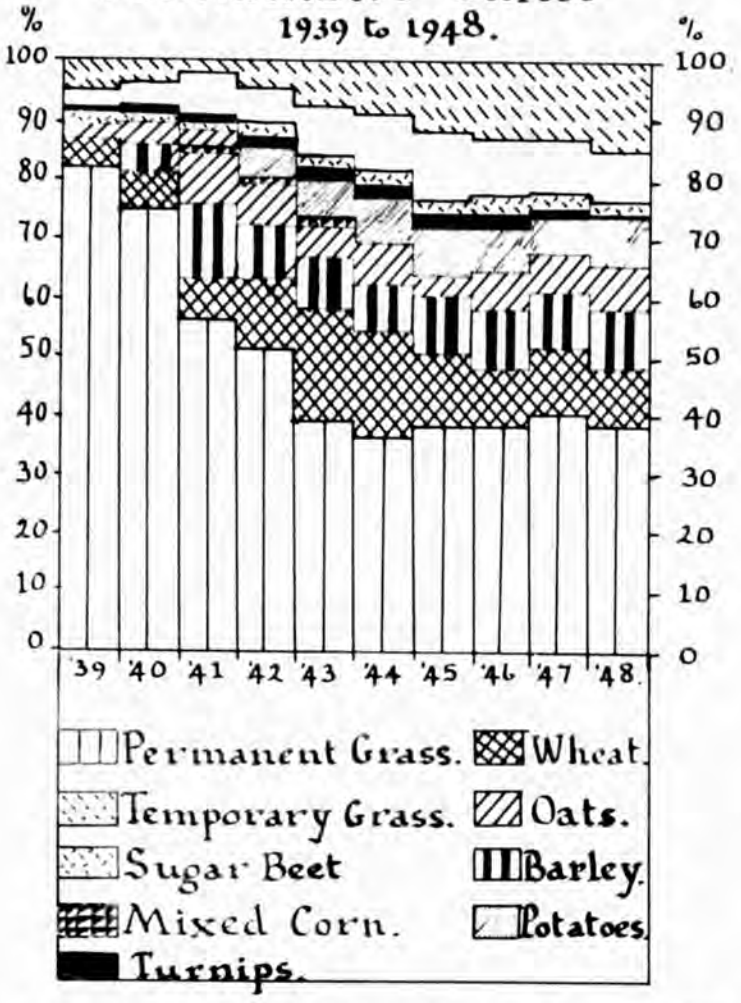
This area includes that part of the county where arable farming, with particular emphasis upon cash crop rather than fodder crop production, reaches its maximum development. It includes therefore those parishes of the north-east where on the 1940 distribution maps more than 30% of the total farm area is shown to be under the principal cash crops, wheat, barley, potatoes and sugar beet. The easternmost of these, Sproxton and Croxton Kerrial and, to a lesser extent, Buckminster, are characterised by the occurrence of large areas where the Oolite beds, the Lincolnshire Limestone and Northampton Sands, are exposed and the soils derived from them are light, easily worked, and well drained. Eaton parish with neighbouring areas of Croxton Kerrial and Belvoir is largely underlain by the Middle Lias Marlstone, likewise associated with a well-drained free working soil, which is, however, more loamy and deeper than that derived from the Oolite. In part of each parish occur areas of heavy land either on the Boulder Clay or on exposures of the Upper Lias Clays. Such areas are, however, limited in all except Garthorpe parish, to the south, where statistical evidence shows that the farming resembles that of the parishes where the Oolite predominates, although it is entirely an area of Boulder Clay. Similarly Bottesford in the Vale of Belvoir is unlike the remaining parishes in that the underlying beds are those of the Lower Lias Clays but superficial deposits of alluvium with lighter soils occupy nearly one-third of the area.

Although showing certain variations in soil type the whole area is characterized by similar conditions of relief. With the exception of Bottesford on the level land of the Vale of Belvoir it consists for the most part of the plateau-like dip slopes of the Middle Lias Marlstone and Oolite escarpments and the conditions of slope are such as to favour arable farming with the use of modern equipment. Only on the scarp slopes and where streams have cut deep narrow valleys into the dip-slopes do steep gradients occur and these represent only a small proportion of the total farm area.

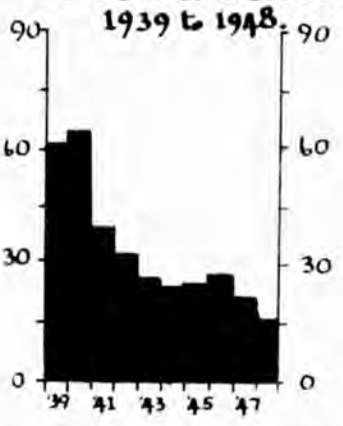
Although the parishes enumerated show certain features of agriculture in common, a high percentage of arable land, a particular emphasis upon cash crop production and a relatively small number of stock, considerably below the average for the county, nevertheless, distinct variations in individual crop acreages occur between the parishes where the shallow soils derived from the Lincolnshire Limestone predominate and those where a deeper soil, especially that of the Marlstone, occupies a large area. Therefore two parishes, Eaton, on the Marlstone dip-slope, and Sproxton, chiefly on the Lincolnshire Limestone, have been selected as specimens by means of which the changes in farming may be traced in the two sub-regions of this area.

EATON PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS. 1939 to 1948.

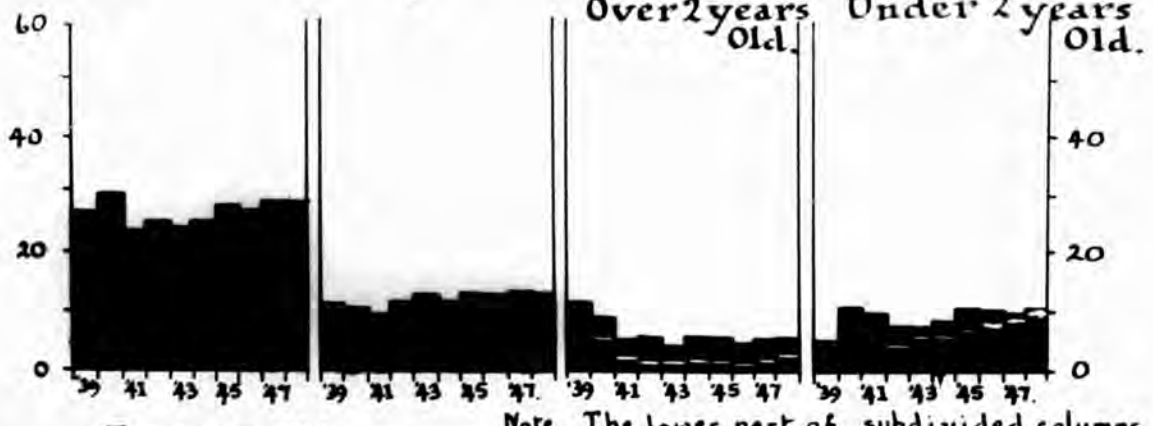


Figure 74.

Note. The lower part of subdivided columns represents cows and heifers, the upper part bullocks.

i) The Marlstone District

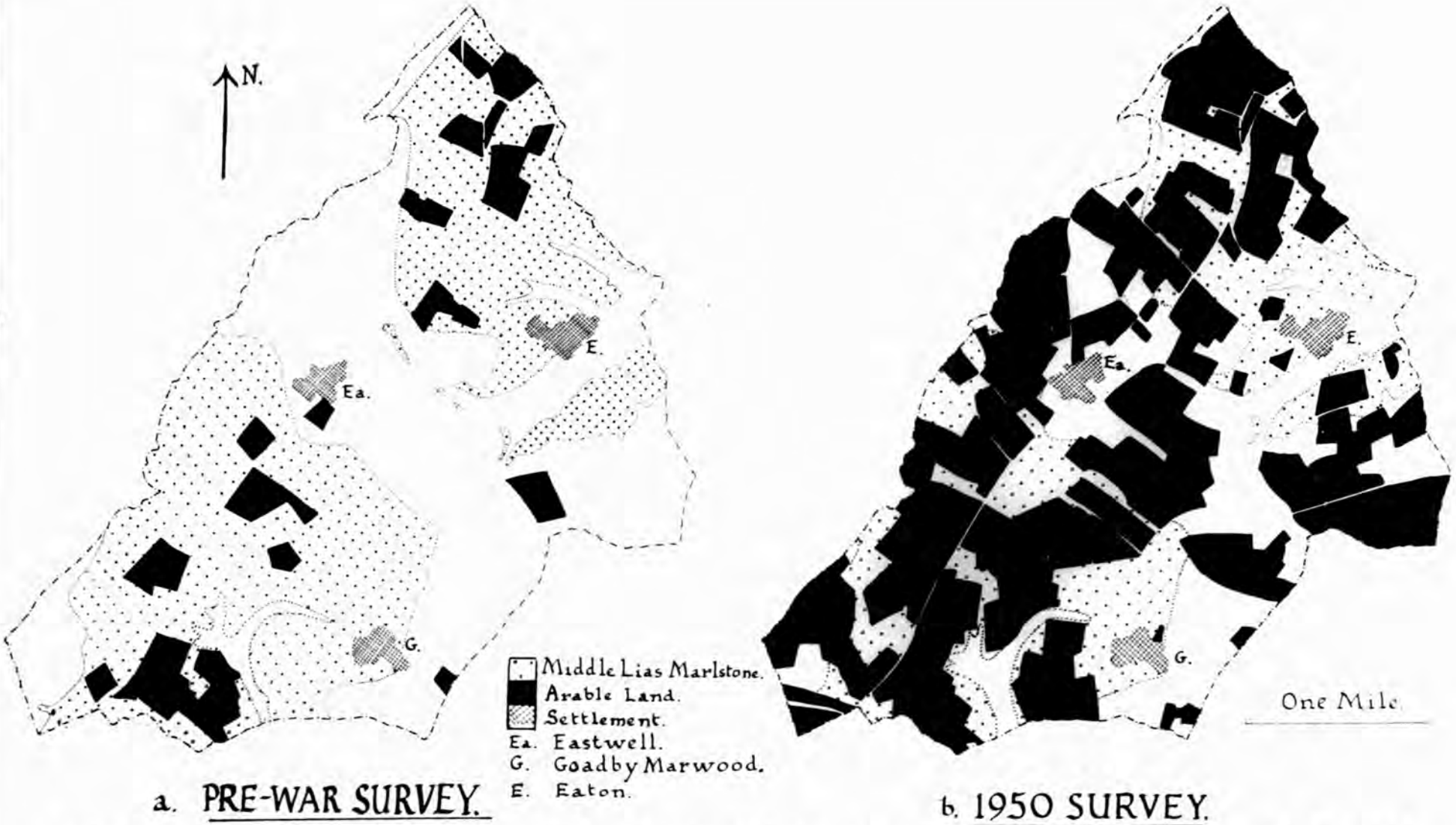
Eaton parish includes two large areas of the Middle Lias Marlstone separated by a belt where this bed is overlain by Boulder Clay. Areas of Upper and Middle Lias Clays and Inferior Oolite also occur but occupy a small proportion of the total area. The scarp of the Marlstone lies beyond the limit of the parish towards the north-west and the greater part of the land is gently undulating except where streams have cut down through the Marlstone to the clays beneath, forming narrow steep-sided valleys. To the south-east, part of the escarpment of the Northampton Sands gives rise to a small area of steeply sloping land.

The ploughing of permanent pasture followed the same course in this parish as in the remaining areas of the county but a particularly large area was affected and by 1943 only 36% of the total farm area, little over one-third, remained as permanent grassland. (Figure 74). In 1939 the wheat acreage far exceeded that of any other single crop apart from rotation grasses, but, in the early war-years both barley and oats and, later, potatoes became of increasing importance first rivalling, and then exceeding the wheat area. Although in 1943 and 1944 wheat gained a temporary advantage, the two cereals, wheat and barley, have subsequently occupied approximately equal areas closely followed by oats and potatoes. These four crops with rotation grasses which have shown a steady increase in acreage from 1941 to 1948 appear to have become established as the chief crops of the area in the post-war period. It is significant that this parish where the extensive areas of Marlstone give rise to a deep medium

loam is one of the few in the county where potatoes grown in considerable quantities in most areas during the war have remained an important crop after the end of the war and compulsory cropping. In addition, sugar beet, also requiring a deep free-working soil, occupies an acreage equal to nearly one quarter of that of each of the four main crops, a larger proportion than is usual in the county with the excention of some north-weatern parishes, likewise with areas of loamy soil.

From the pre-war to the post-war periods the arable farming has shown a decided change in emphasis from fodder to cash crop production. Not only has the cash crop area expanded but the variety of crops for sale off the farms has also become much greater. (Figure 74).

Changes in numbers and types of stock during this period also show the same general trends as those in other parts of the county, (Figure 74), apart from the Welland District. As a result of the war-time ploughing sheep were reduced by more than half their number between 1939 and 1945 and after only a slight recovery in 1946 have been still further reduced to represent only one quarter of the pre-war number in 1948. The number of cattle per 100 acres of farm land, at all times from 1939 to 1948 below the average for the county, likewise declined during the early part of the war with the rapid decrease in permanent grass and the relatively small area devoted to temporary grassland or fodder crops. The increase in cattle in the later war years and post-war period can be related to the increase in area of clover, lucerne, and rotation grasses.



a. PRE-WAR SURVEY.

b. 1950 SURVEY.

THE DISTRIBUTION OF ARABLE LAND IN EATON PARISH.

Figure 75

Of the various types the dairy cattle and young heifer stores have shown a definite increase since 1942 which more than restored their total to the pre-war level by 1948. The younger bullocks, on the other hand, have shown a continuous decrease but after 1941 the older group of bullocks, the advanced stores and fattening stock, have remained more or less stable. The returns therefore indicate that the increase in cash crop production has taken place at the expense of mixed stock farming, especially the rearing of beef stores and to a lesser extent fattening stock for slaughter. Dairying, as in other parts of the county has, in spite of the increased arable area, become more important in the farming economy.

The survey of land use carried out in 1950 (Figure 75) shows that arable land occupies approximately 60% of the total parish area, a proportion similar to that recorded in the Ministry of Agriculture statistics for 1948, indicating that there has been little tendency to re-seed the land to permanent grass since the end of the war. In the pre-war period, when little over 10% of the total area was under the plough, there was a remarkably close correlation between the distribution of arable land and the occurrence of the Marlstone outcrop with free-working loamy soils. (Figure 75a). As the 1950 survey shows, arable land now occurs in all parts of the parish and although the area on the Marlstone has increased to represent 61% of the outcrop, this proportion is exceeded on the Boulder Clay area of heavier soils, the second most extensive outcrop, of which 70% is arable land. (Figure 75b).

The Boulder Clay area in Billesdon parish showed a similarly high percentage of arable hand in 1950 but in that parish the Marlstone is largely under permanent grass. This use of the land appeared to be related to relief rather than to variation in soils based on differences in rock type, a conclusion also supported by the distribution of arable land in Eaton parish. Where the Marlstone outcrops in the steep sides of small valleys cut into the dip slope to the north and south of Eaton village and to the west of Goadby Marwood the land is mainly under permanent grass in contrast to the areas of the level land. Similarly the lowest percentages of arable land occur on the Upper and Middle Lias Clays with 41% and 31% of the land in tillage. Both these outcrops are associated with steep gradients, the former occurring chiefly on the face of the Oolite escarpment in the south-east, and the latter in the sides of the valleys in the Marlstone. The highest percentage of arable land occurs on the limited outcrop of Northampton Sands, a level area in the south-east where 78% of the land is under the plough.

Apart from this correlation with gradient the land use pattern of the present day shows characteristics similar to those noted in the other parts of the county. The villages, each consisting essentially of a group of farms, are almost surrounded by permament pasture and similarly grassland occurs near isolated farms. The arable fields are usually those most readily accessible from roads or tracks.

It appears, judging from the pattern of land use, that the mixed arable and stock farming, formerly associated only with the free-working soils of the Marlstone, has extended to include also the heavy lands. The former control of land use exerted by the heavy clay loams is no longer a factor of importance under present economic conditions.

In spite of the uniformity of the distribution of arable land on the light and heavy soils of this parish both field observation and information from specimen farms provide evidence that the occurrence of the extensive areas of loamy, deep soil of the Marlstone 'redlands' does exercise an influence on the particular crops in the area. On four farms, each situated chiefly on the Marlstone, wheat, barley and potatoes were all grown for sale off the farm; the last of these occupying rather over one-eighth of the arable area, a proportion indicated by the parish statistics and greatly exceeding that grown on the heavy land farms visited. On two farms in the area, both situated on the Boulder Clay, wheat is the only cash crop regularly grown. Barley is grown on one in those years when weather conditions prevent the full area of wheat being drilled in the autumn. It is, however, not normally of sufficiently good quality to be sold for malting. Similarly on both these farms potatoes are an insignificant crop, only sufficient being grown to meet the requirements of the farm itself for human and pig food. In the course of field survey it was noticed that large areas of 'redland', both in Eaton and in the neighbouring parishes to the south and east, were under potatoes. Elsewhere in the county,

with the excention of the land along the western side of the Soar, and to a lesser extent in the Welland Valley, this crop usually occupies relatively small fields or is grown in part of the fields under other root crops.

The stock farming associated with crop production on the farms of the area is mixed in type, but the large numbers of churns awaiting collection at the majority of the farms provides evidence of the emphasis upon dairying. Three selected specimen farms, two on the Marlstone and the third on the Boulder Clay, illustrate the chief farming activities of the area. Each farm is of the homestead type, compact and with the farm buildings more or less centrally situated. The greater part of the land is readily accessible either from the buildings or from the roads.

An arable dairy farm situated on the Marlstone is 180 acres in area and of this approximately 100 acres is arable land, although 20 acres of this have been put down to a long ley. Wheat occupies 24 acres, barley 18 acres and potatoes 15 acres, while the remaining land is under roots, kale and seeds. The first three crops, occupying about one-third of the total area and rather more than half the arable acreage, are sold off the farm while the remaining crop land supports the dairy herd. No strict rotation is observed but two cereal crops are not taken in succession.

A dairy herd, of which 30 cows are normally in milk in the summer, is maintained and young stock are reared for replacements. Little interest is taken in other aspects of stock farming although in 1951 there were seven cattle being fattened on the

holding. The milk produced is sent to a Stilton dairy in the Vale of Belvoir.

Before the war the farm was run in a similar way but the arable area was little above half the present acreage and more store cattle and sheep were also grazed. Being long established as a dairy and arable farm it is better equipped with cattle sheds, barns and other farm buildings than a large number of the farms in the former grazing areas of the county. Although not receiving main water the farm obtains an adequate supply from a well in the Marlstone.

A second holding on the Marlstone, 230 acres in area, is run as an arable and stock farm and shows similar characteristics of arable farming. About one-third of the land is permanent grassland. Wheat occupies the largest single crop acreage but is closely followed by barley while, as additional cash crops, 20 acres of potatoes and 5 acres of sugar beet are grown, the latter being sent to Colwick factory, near Nottingham. Oats, peas and small areas of roots and green fodder crops are grown to support the stock. No rigid rotation is observed but after cropping for several years the land is normally put down to grass for three or four years. Leys may be left down for longer periods if the 'take' is good; one in 1951 had been down for six years.

The number of stock varies with the pasture available, as arable farming is regarded as the chief activity. Dairying is not carried on and no cattle are reared. Stores are bought in spring and grazed on leys and permament grass, being drafted to

Melton Mowbray as fat stock during the summer. In the early part of the summer of 1951 they totalled 42 of which 18 had been wintered in a yard on the farm. The breed of cattle varies from year to year but normally Lincoln Reds obtained from Boston, Herefords from the Welsh borderland or beef Shorthorns are favoured. Occasionally cows culled from dairy herds are also fattened. A flock of sheep is also kept, the number being varied from year to year, and these are grazed chiefly on the new leys.

Like the arable dairy farm this is also equipped with adequate buildings. The arable land is accessible from roads, while the permanent grass fields are those bordering a reliable stream or supplied with water from springs in the Marlstone. In one part of the farm the Middle Lias Clays outcrop and the soil changes abruptly from the red loam of the Marlstone to a heavy clay. This land is only a small strip along one side of a field and does not give rise to any variation in farming. Before the war the farm was also an arable stock farm but the arable area was much smaller and the chief activity stock fattening.

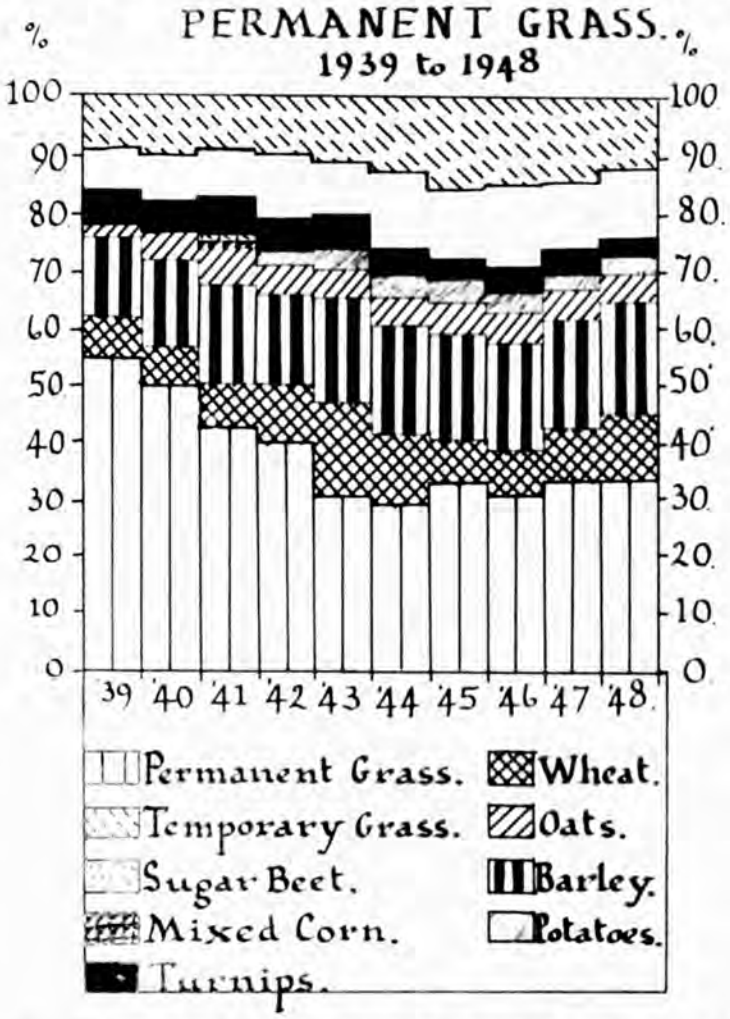
An arable dairy farm, 80 acres in area, and situated on the Boulder Clays where cold clay soils occur, shows a number of significant contrasts when compared with these two specimen farms of the Marlstone. Approximately 50% of the land is under crops and only 14 acres have never been ploughed but a large area of land after being under crops for a number of years has been re-seeded as permanent pasture. The farmer considers that the pasture has been improved in this way.

Of the crops grown wheat occupies the largest single acreage, and is sold off the farm. The remaining area is under feed crops, chiefly oats and kale, and grass leys. In May 1951 there were ten cattle in milk on the farm. Heifer calves are reared and additional dairy replacements sometimes bought. A few steers are also reared, yard fed in winter, and sold as stores as the land is not good enough to finish beef cattle for market. A flock of 35 sheep is also grazed chiefly on leys and the number varies from year to year according to the grassland area. Store sheep and fat lambs are sold in summer. Before the war this was an all-grass farm, likewise chiefly concerned with dairying, Although accommodation is sufficient for yard feeding cattle and wintering dairy stock indoors, little storage space is available for produce or farm machinery.

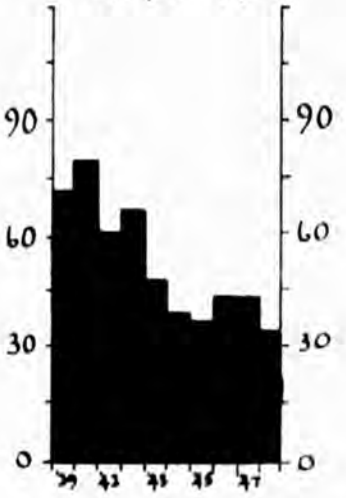
In contrast to the arable, cash crop producing stock farms of the Marlstone this very closely resembles in the chief characteristics of its farming economy the majority of the stock and arable farms of the heavy lands in the eastern part of the county.

SPROXTON PARISH.

a. THE PERCENTAGE OF TOTAL FARM LAND UNDER EACH OF THE CHIEF CROPS AND PERMANENT GRASS. 1939 to 1948



b. SHEEP PER 100 ACRES OF TOTAL CROPS & GRASS 1939 to 1948.



c. CATTLE PER 100 ACRES OF TOTAL CROPS & GRASS. 1939 to 1948.

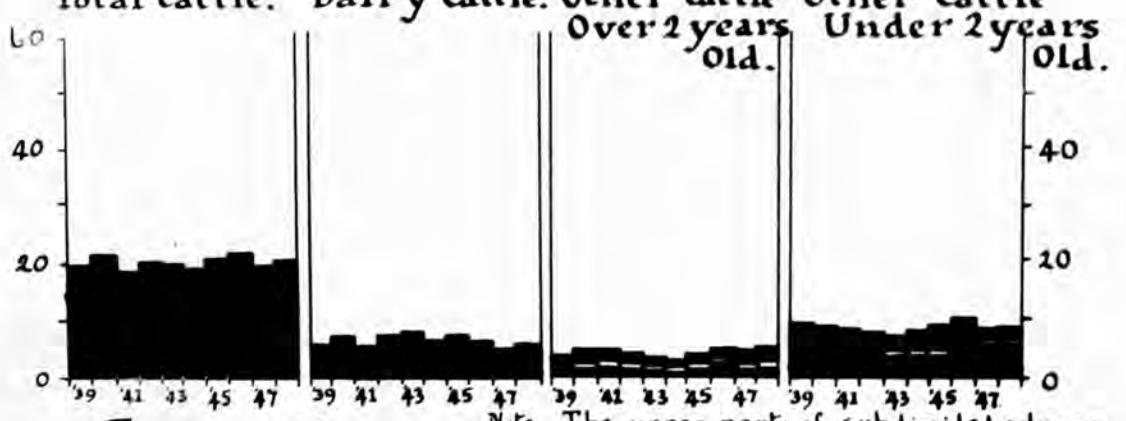


Figure 76.

Note. The upper part of subdivided columns represents bullocks, the lower part cows and heifers.

ii) The Inferior Oolite District

Sproxton parish comprises two large exposures of Lincolnshire Limestone, separated by a belt of Boulder Clay-covered land, and also containing small areas underlain by the Middle Lias Marlstone, Upper Lias Clay and Northampton Sands near its southern boundary. Owing to the predominance of the first of these beds, it is as an illustration of the agriculture characterizing this area of thin light, well-drained soils that the parish is considered. The greater part of the parish is gently undulating or level land, the only relatively steep gradients occurring in the sides of small river valleys.

In the pre-war period the light land of the Inferior Oolite was the only area of the county which could be regarded as a true arable farming district. It was barley, sheep and turnip land with small quantities of wheat grown as a cash crop and seeds leys as a course in the four year 'Norfolk' rotation providing summer grazing land.

Little change has taken place in the proportion of the arable land under the major crops in Sproxton parish between 1939 and 1948. (Figure 76). The system of cropping used in the pre-war period has continued and the area of arable land has been greatly increased. The wheat acreage became relatively greater during the war years 1943 and 1944, but in 1948 the area under barley was nearly twice as great as that under wheat. The comparative percentage of farm land under these crops are for 1939 wheat 7%, barley 14% and for 1948 wheat 11%, barley 19%. The

relative increase in wheat acreage is probably to be associated with the increase of plough-land on the areas of heavier, deeper soils. Much of the land on the Lincolnshire Limestone has soil only from 3 inches to 5 inches deep, whereas wheat to give a reasonably good yield requires at least 6 inches of soil.

In contrast to the two main cash crops, turnips, formerly a staple crop in the rotation, have declined in acreage, partly no doubt as a result of the decrease in the numbers of sheep, but also owing to the fact that they have given place to rape and other green fodder crops upon which sheep may be folded in winter and which give a higher yield of food stuff per acre. The area under oats has remained relatively small while potatoes, which occupied an insignificant acreage before the war and increased very little during the years of compulsory cropping, continue to be of very small importance. Sugar beet, likewise, is an insignificant crop. Both these latter crops do well on light soils but a deep loamy soil is most favourable and a shallow, stony soil, such as that which occurs on the Lincolnshire Limestone, prevents full development and gives very poor yields; hence the contrast in the importance of these two crops on the Marlstone and Lincolnshire Limestone outcrops.

The relatively small change in the system of cropping from pre-war to post-war times suggested by the parish statistics is to be related to the fact that this is a poor area of the county where a strict rotation must be observed if yields and returns are to be maintained at a level sufficiently high to justify the

present day expenses of arable farming. The four course rotation of barley, roots (kale, rape or other green crops), barley and seeds is suggested by the parish statistics with wheat and oats also produced, the former on the better areas of deeper soils. The two barley breaks account for the high proportion of land under this crop.

Sheep have declined in this area as in the other parts of the county in spite of their former position of importance in the farming economy. (Figure 76b). In contrast the total number of cattle, after considerable fluctuation, has shown a slight increase (Figure 76c). The total number per 100 acres of farm land however remains little above half that for the whole county, a factor to be related to the emphasis placed upon arable cash crop farming.

Dairy cattle, after an increase in the war years, were by 1948 approximately at the 1939 level. Older stores nearly equal the dairy stock but the most numerous group is that of the young cattle, indicating that the chief activity is rearing stores rather than dairying or finishing summer stock. In this area of poor, thin, 'hungry' soils stock form an essential feature of the farm economy in order that the arable land may be well manured.

Cattle are grazed in summer on the temporary and permanent pastures. In winter the stock yards are filled with these and additional stores bought from the summer grazing farms with more limited wintering accommodation. Older stores are finished for

PART OF THE NORTH-EAST ARABLE AREA
1951.

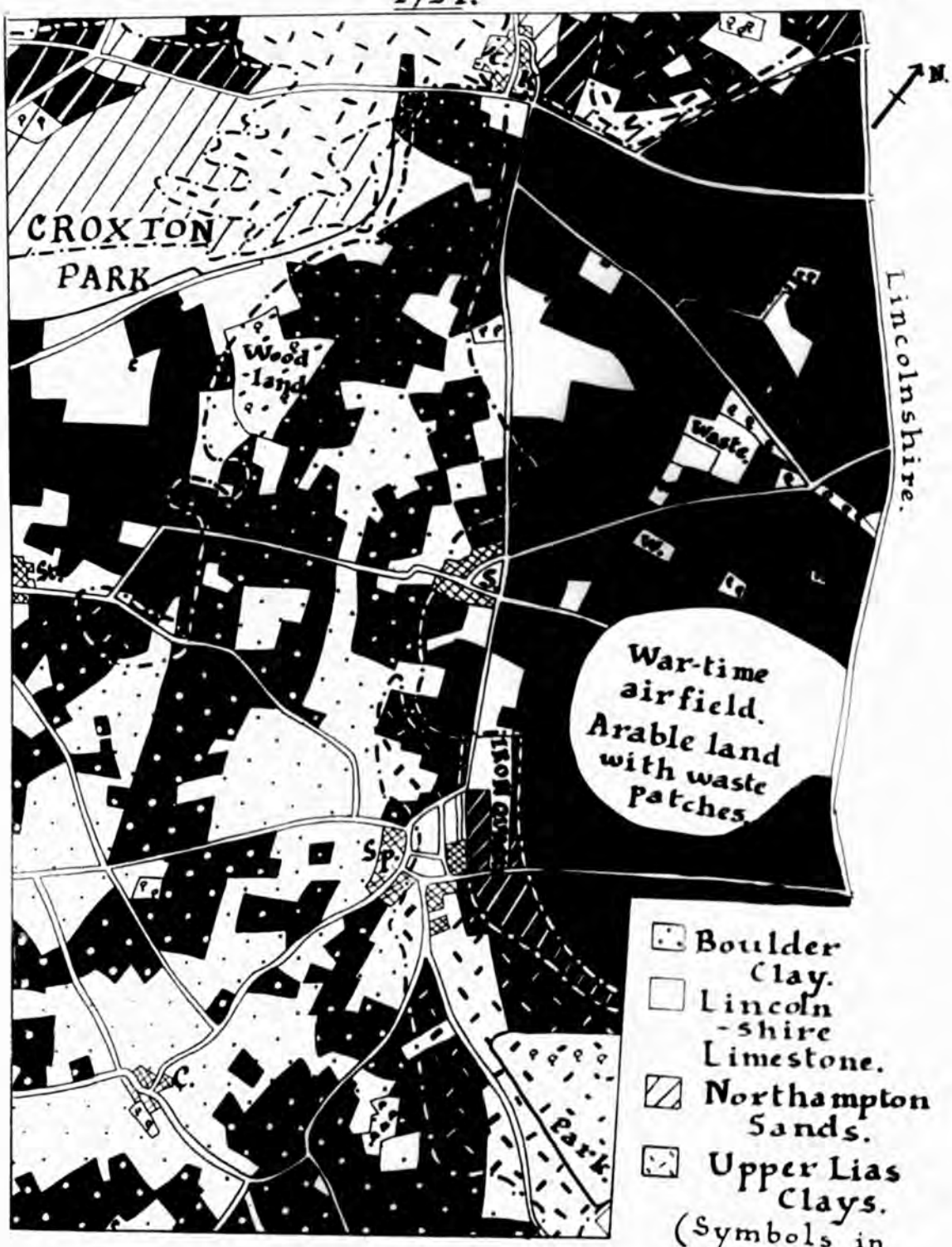


Figure 77.

slaughter on roots, green fodder and hay while younger stock are maintained primarily on cereal straw. This latter group, therefore, fits into the farming economy owing to their smaller requirements of the more nutritious feed crops.

The stock recorded in the parish statistics for June are considerably below the number in the area during winter, in marked contrast to the numbers in the summer grazing areas. This area, therefore, on an average throughout the year, is not as far below the southern and western parts of the county with regard to numbers of stock carried, as the June distribution maps make it appear. This system of wintering stock in yards was also practized before the war but sheep folding on roots was then of greater importance in maintaining soil fertility.

The post-war distribution of arable land in a belt of country surveyed in 1951 and extending from Croxton Kerrial southwards to Buckminster, and including both the main Lincolnshire Limestone exposure and the Boulder Clay area to the west, together with smaller exposures of Upper and Middle Lias beds and the Northampton Sands, shows marked similarities to the pre-war pattern of land use. The area of arable land on the Lincolnshire Limestone, exceptionally high for the county in the 1930s, has been increased to include all but a few small areas of permanent grass, usually near the farm buildings, and patches of waste land occupied by derelict buildings and runways of a disused war-time aerodrome. (Figure 77).

Although the percentage of arable land on the neighbouring heavier clay areas developed on the Boulder Clay or that of the

A Farm on the Lincoln-shire Limestone.

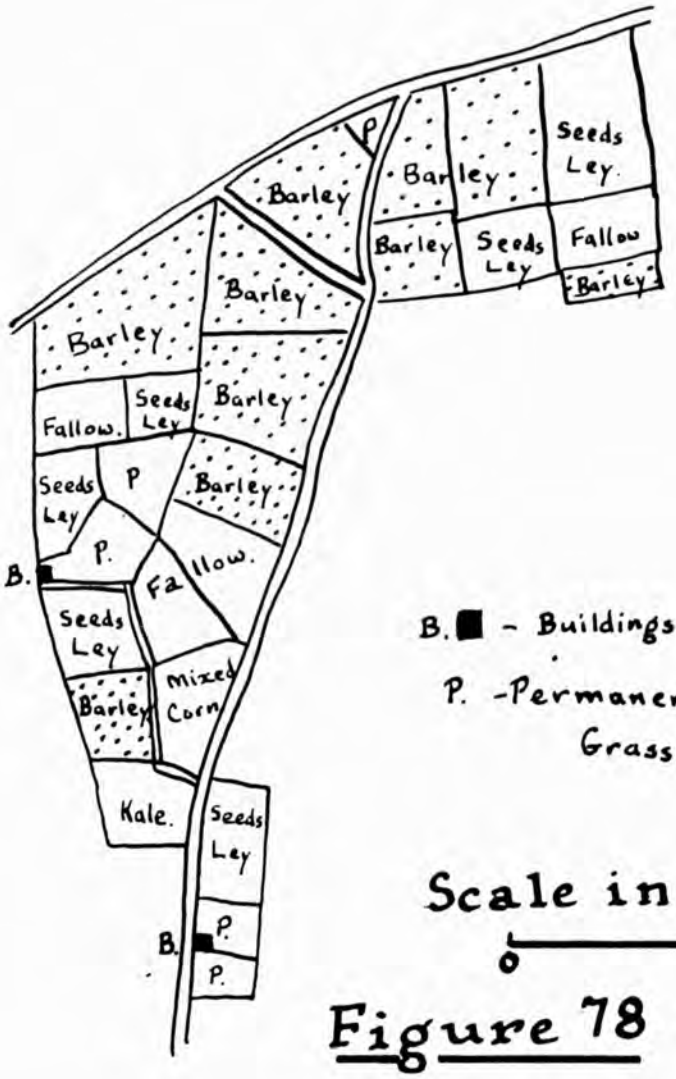


Figure 78

Upper Lias, has also increased as in the remaining areas of the county, a distinct change in the land use pattern coincides with the occurence of the heavier clay soils. A close correlation remains between the distribution of the well drained, light but thin soils of the Lincolnshire Limestone and the occurence of intensive arable farming. (Figure 77).

The contrast remaining between the type of farming associated with the Lincolnshire Limestone 'heathlands' and the neighbouring heavy clay areas shown by the distribution of arable land in 1951 is further emphasized by information collected from specimen farms.

The following details refer to a 506 acre farm on the Lincolnshire Limestone with one permanent pasture field of 20 acres on the Upper Lias Clays. Only 68 acres or nearly 14% of the land is under permanent grass. The chief cash crop, barley, occupies about 200 acres, i.e. 40% of the land. Roots, including kale, rape and turnips, and rotation grasses each occupy 100 acres while the remaining area is under mixed corn or oats. Owing to the thin light character of the soil and the fact that it is easily exhausted a strict four course rotation is followed. The land use of the farm illustrates this. (Figure 78). After one crop of barley, roots are sown on summer fallow; a second crop of barley follows after which, in the fourth year, a one-year seeds ley is sown. Artificial fertilizers and farmyard manure is applied to all the land.

The soil is stony and thin, normally between 3 inches and 5 inches in depth with only small areas reaching 6 or 7 inches.

Light and free-working, it is liable to bake in summer and must be ploughed in autumn to obtain a good tilth. The fields are accessible from roads and tracks and have in some cases been combined to give larger areas more suitable for mechanized farming. An old-established arable and stock farm it is equipped with two sets of buildings and stock yards, with adequate accommodation for storing implements and produce. This summer, 1951, about 90 cattle were on the farm, a breeding herd is kept but additional young stores are bought, usually Red Polls obtained from Scotland or Lincoln Reds from Boston. Cattle are sold fat in Melton Mowbray. More are kept in winter to fill the yards and sold fat in the early summer and the manure obtained is essential for the maintenance of soil fertility.

Two hundred sheep are also normally kept. Cross-breds bought in the autumn and winter folded on kale, rape and other root crops, are sold fat in summer or kept for a second year, grazing in summer on the seeds leys. These likewise assist in the maintenance of the soil for arable crop production.

The system of farming was much the same in the pre-war period but the crop area has been increased and more stock are kept all the year on the farm. Before the war cattle and sheep were received from farms to the south for wintering in yards or on roots and returned in the summer but this practice has been discontinued. The majority of the stock rearing farms produce sufficient quantities of feed and cereal crops for wintering stock retained for the following summer. Before the war also a small

number of cattle were milked and butter sold in the village but this is likewise discontinued and one cow only is milked for the house.

A second farm also on the Lincolnshire Limestone, but only 100 acres in area, is of a less ecomomic size for modern arable farming. In addition the land is particularly poor, as in part of the area solid bed rock is reached 3 inches below the surface and nowhere does it exceed 5 inches. The economy of the farm is similar to that of the one already described but, owing to the expense of arable farming, especially the high labour costs, and the poor yield obtained, little over half the area, viz. 60 acres, is under crops although 80 acres was arable during the war, and dairying is an important activity. The four year rotation practised on the larger farm is also used for the arable land and barley for sale is the chief crop. About 56 cattle were on the holding in the summer of 1951, of which nine were in milk the remainder being young stock for replacements or fattening. Each summer a small number of these are sold as fat or near fat stores. Heifers are preferred for fattening as they finish more easily on the rather poor land.

The farm is equipped with barns, yards and sheds in which both the dairy and other cattle are wintered. On the roots sheep are folded in winter and a flock of about 50 crossbred Suffolks are kept, fewer than before the war. Stores are bought in the autumn and sold fat in the summer, some being kept for a second year.

Little change has taken place since the pre-war period except that dairying has become a more important part of the farming economy. Previously rearing and fattening stock with arable farming were the chief activities. The milk produced is collected by a large east Leicestershire dairy.

Two farms run as one holding illustrate the contrasts in the character of the agriculture now associated with the light land of the Lincolnshire Limestone and the heavier clay loams of the Boulder Clay. The main buildings of both farms, barns, stock yards and sheds are situated with the farmhouses in the village. Both holdings are separate from these, one on the Lincolnshire Limestone and the other of approximately equal area on the heavier land; the total area being about 550 acres. The total permanent grass area on the two farms is 50 acres but almost all this is on the heavy land farm. On this holding the arable land is under wheat, barley, oats, and various roots and green crops, and seeds leys. No strict rotation is practised but wheat is followed by oats and roots as a rule after which the land is put down to a seeds ley. On the light land holding on the other hand the usual four course barley, roots, barley, seeds, rotation is practised and wheat and beans characteristic of the heavier land are absent.

The system of stock farming varies very little from that of the other light land farms already described. Cattle are reared and additional stores bought in autumn to fill the yards. Near fat or fat stores are sold chiefly in spring and sheep are also kept folded on roots in winter and grazed mainly on leys in summer.

During and since the war the summer stock have been reduced as a result of the ploughing of permanent grass. The crop area has been increased particularly on the heavy land holding which before the war was almost entirely under permanent grass.

A farm on the Boulder Clay to the south of the Oolite outcrops, but within the area showing a particular concentration on cash crop production, likewise emphasises the fact that the farming practised on the heavy lands in this area is in many ways similar to that of the heavier lands further south in the county. Two thirds of the total area of 320 acres is under crops and of this nearly two-thirds is under wheat for sale off the farm. Oats, kale and seeds leys with a small area of potatoes accounts for the remaining arable land. No strict rotation is practised but usually one or two grain crops are followed by roots and a two or three year ley.

Dairying is the other main activity and a herd of nearly 100 cattle is maintained. Of these about half are young stock reared for replacements but there is no interest in rearing stores or fattening stock.

The layout of the farm is in some ways unfavourable for arable farming in that it consists of several separate blocks of land. Most fields are, however, reasonably accessible from roads or tracks. The arable land ploughed during the war has been maintained owing to the need for home-produced stock feed and the high price to be obtained for wheat. The main difference in the type of farming practised before the war and at the

present time, apart from the increase in arable acreage, has been the greater specialization in milk production encouraged by the extension of milk collection by a large dairy company into this area where no local market exists. Sheep formerly reared are no longer kept on the farm owing to the reduction of pasture.

Owing to the larger area and specialization only in dairying this farm differs from many in the neighbourhood which are smaller, have a lower percentage of arable land and practise a more mixed type of stock farming, including rearing and fattening beef stores.

The information obtained from field survey and specimen farms leads to the conclusion that the area of land underlain by the Lincolnshire Limestone with its thin, light soils remains as it was before the war, a distinct agricultural region with a characteristic type of farming differing in a number of significant ways from that more usual in the remainder of the county. A further factor which may encourage cash crop grain growing in this part of the county is the existence of a co-operative farmers' association, providing marketing and other facilities of value in arable farming.

ENGLAND AND WALES.

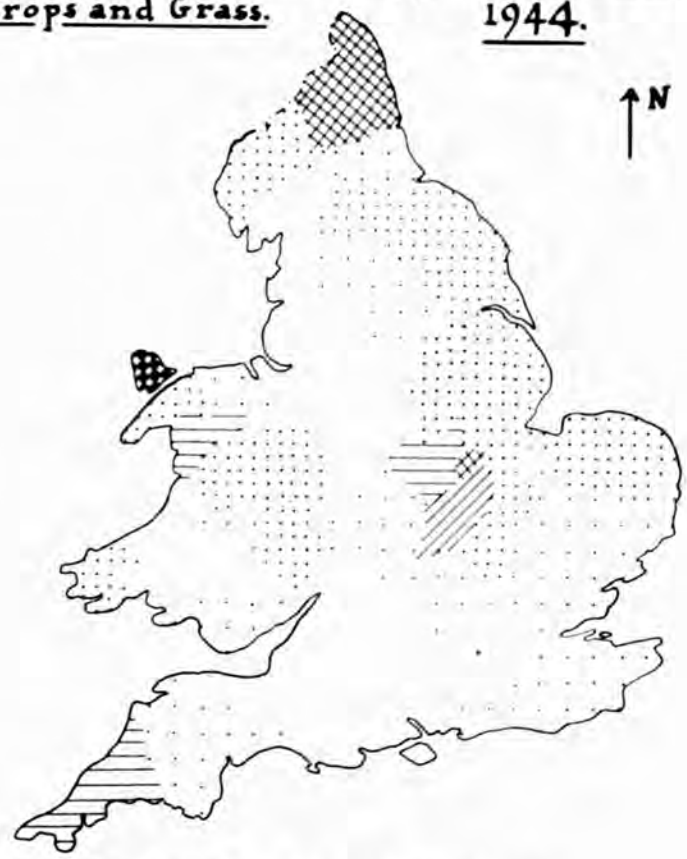
The Percentage of Farm Land Under Permanent Grass 1944.

60 to 69%
50 to 59%
40 to 49%
30 to 39%
Under 30%

Scale 0 — 120 Miles.

Figure 79a.

Bullocks Aged 2 years and over per 1000 acres of Total Crops and Grass. 1944.



60 and over per 1000 acres.
50 to 59
40 to 49
30 to 39
20 to 29
10 to 19
Under 10

79b.

CHAPTER VIII

CONCLUSION

In the pre-war period Leicestershire was remarkable as a lowland grassland county of England resembling in conditions of relief and climate the eastern parts of the country but in farming economy more comparable with the upland counties of the west. By 1944, the last year for which county agricultural statistics are published, it had lost a great deal of its individuality in this respect and appears on the distribution map of arable land not in the same group as the arable eastern lowlands but much more comparable with them. (Figure 79a) Its pre-emininence as a bullock fattening county has also largely disappeared and it is surpassed in numbers of bullocks per acre by several other counties, notably Northumberland, a ley farming area. (Figure 79b) The changes have been a direct result of the introduction of war-time agriculture but a study of the county shows that the war-time changes have remained in the post-war period and have become firmly established in the present-day farming economy.

With regard to the arable farming the most striking feature is its uniformity at the present time. The same changes have taken place in all parts of the county with the exception of the north-east, an area where soil conditions form a decided contrast to those of the rest of the county. The apparent control of land use exercised by soil has largely disappeared. It is, however, clear that distinct correlations remain between the distributions of the more exacting crops and certain natural factors. The depth and lightness of the soil are related to the

production of cash crop potatoes and sugar beet. Roots and barley are of small importance on the heavy lands and are replaced by green fodder crops and wheat better suited to the clay loams.

Arable farming is impracticable in very few areas. The flood plains of the rivers, where the land is too ill-drained for crop production, occupy a very small area of the whole county. They do, however, exercise a distinct control on land use which is most marked in the case of the Welland, Wreake and Soar valleys. However, the difference in land use does not everywhere coincide with a characteristic difference in the farming economy of the area. The specialized bullock fattening is most highly developed in the Welland district but is not restricted to the true valley and a corresponding speciliazation is now largely absent from the Soar valley.

Gradient exerts a second definite influence on land use in various parts of the county but only in one small area, the south-eastern border of the county, does it really affect the agriculture of more than a few scattered farms. Charnwood Forest remains distinct, the relief and soil of the higher areas having discouraged any attempt to reclaim land and increase the area of crops and grass.

The agricultural prosperity of the war and post-war periods has given the farmer power to overcome difficulties of heavy land farming. The high prices to be obtained for cash crops, particularly for wheat, a heavy land crop, and the high price

and shortage of additional stock feed have combined to provide a stimulus and thus the development of mixed stock and arable farming has been brought about in all parts of the county. In the limited areas, already noted, where adverse natural conditions are sufficiently strong to prevent the arable use of part of the land, the farming practised shows modifications but is not fundamentally different from that of the rest of the county.

The crops now grown and the simple and lax rotations practised on the heavy lands are, for the most part, those indicated by the 1801 crop returns or noted by Pitt in his survey. The soils allow a considerable flexibility in cropping and general farm management. In marked contrast the poor light soils of the Inferior Oolite exposures require special treatment and a rigid rotation must be practised if their productivity is to be maintained. It is probable that they were retained largely in arable use during the pre-war depression not primarily owing to their suitability for tillage but to the fact that they were too poor to be farmed under an all-grass system. The ploughing, cleaning and re-seeding involved in the rotation were essential if the land was to be retained in agricultural use.

In all parts of the county, except the limited north-eastern cash crop area, the arable farming is a secondary consideration and the dominant activity is some type of stock farming. Everywhere the modifications occurring from area to area are closely related to the demands of the stock farming economy. The main dairying areas are characterized by a particular emphasis upon the production of nutritious feed crops required for milch cattle.

The areas concerned least with fodder crop growing and relatively more with cash crop and grassland farming are those primarily dealing with summer fattening cattle and wintering small numbers of stores on cheaper, less nutritious feeding stuffs.

The stock farming in its turn is closely related to economic and historical factors. The dairying of the western and northern areas has been a characteristic activity since the Nineteenth Century. Possessing the advantages of a local market it was able to develop before milk collection from remote areas was fully organised. The extension of this type of farming has been a long continued process assisted by the collection of milk for the Leicester and London markets in the thinly peopled eastern parts of the county and encouraged by the war-time demand and the good regular returns to be obtained. The extension of milk collection in the east was partly retarded before the war by the lack of good main roads in this area where considerable numbers of farms ~~are~~, are linked to the roads by long tracks, while many of the roads themselves are narrow, poorly surfaced and obstructed by gates where they pass through unfenced fields.

Where dairying has increased in importance in the east much of the milk is collected by Leicester dairies but in the north-east and along the eastern border of the county near Launde and Loddington, where dairying has expanded particularly, the milk is sent to a collecting depot at John O'Gaunt station on the railway line to London. In the south of the county where a

similar expansion has been noted a depot at North Kilworth receives much of the milk, likewise for the London market.

A variety of factors seems to account for the continuation of mixed stock farming in the eastern districts. Many farmers skilled in rearing and fattening stock prefer to continue with this type of farming while others consider it to be more stable, and through giving greater flexibility to the farming economy, preferable to specialized dairying.

Additional strong influences are concerned with the layout and equipment of the farms. The strip farms, numerous in the grazing areas, and usually lacking buildings which were unnecessary under the pre-war economy, are less well suited to arable or dairy farming, while those of the homestead type, in these areas, though more accessible and well laid out, are also frequently short of buildings. These factors do not prevent the adoption of arable or dairy farming but they are deterrents, adding difficulties or involving great capital expenditure if they are to be overcome.

The lack of farm buildings and their inconvenient grouping in the villages was noticed by Pitt in his survey of the county. He considered that the buildings were so poor that they would soon be rebuilt in more convenient situations. It is probable that the problem of water supply has been largely influencial in causing many of them to remain in the villages.

It is chiefly the lay-out of the individual farms that determines the land use pattern. Those less economic in size, equipment, or lay-out, to be run as arable farms have shown the greatest tendency to return as nearly as possible to the pre-war grassland farming. Where such farms are most numerous, near the "farm villages" for example, the proportion of arable to grassland is definitely reduced. Otherwise, distinct variations are frequently to be related mainly to the particular inclinations of the individual farmer.

The chief features of the farming economy now typical of the county as a whole can be conveniently summarized by reference to a large farm consisting of three combined holdings. The total area is 770 acres and the land forms a continuous and compact block extending from the outskirts of a small industrial town. The land is gently undulating and although heavy clay loams occur over most of the area patches of lighter, gravelly soil are also included.

Before the war nearly 30% of the land was under crops, both for fodder and for sale. This arable area included a considerable acreage of heavy clay land but steam tackle was used and the heavy nature of the soil did not give rise to any difficulties in working the land. Stock were reared and sold as stores for fattening or for dairying and milk was produced for sale in the neighbourhood.

At the present time more than 50% of the land is under tillage. Steam tackle has been abandoned in favour of tractor-drawn machinery. Although the former is efficient two men are

required to work it whereas, for many operations, one man alone can work tractor-drawn implements, with consequent economy in expense.

No fixed rotation is observed but cereals are usually followed by roots or potatoes after which the land is put down to a short seeds ley. Leys are chiefly used for mowing and silage, which involves a great deal of labour, is made only when the season is too wet for the mown grasses to be used for hay. In normal years the following acreages of the various crops are grown: 110 acres of wheat, 110 acres of spring cereals, including oats and barley, 30 acres of kale, 20 acres of mangolds and swedes and 30 acres of potatoes. The remaining area is under seeds leys.

In 1951, owing to the wet autumn in the previous year, only 75 acres of winter wheat could be sown before the winter set in, and a correspondingly larger acreage was subsequently sown with spring cereals. Similarly, the wet and cold spring shortened the working season and only 18 acres of potatoes were planted.

The distribution of the arable land depends chiefly on its accessibility from roads and from the buildings. With regard to individual crops, it is recognized that certain of these, including roots, potatoes and barley, are better suited to the lighter soils but other considerations in many cases are thought to be of greater importance. For example, roots are grown in the fields near the buildings where stock are wintered in order to avoid carting these feeding stuffs long distances on the farm.

Potatoes are grown in roadside fields, to facilitate loading and transporting this cash crop, on that part of the farm nearer to the small industrial town as casual labour for the harvest can thus be more readily obtained.

The yield of wheat has in recent years been improved as strong strawed varieties are available for use on heavy land. Previously additional manuring or fertilizing was likely to give relatively poor returns as the heavy crops so produced were more liable to be laid owing to the weakness of the straw.

Of the stock farming activities, dairying and rearing cattle both continue to be important but milk is no longer sold locally. The retail marketing requirements, involving the installation of pasteurization equipment, have not been met and the milk is collected by a Leicester dairy. A dual purpose herd of 350 cattle is maintained for breeding, rearing anddairying. The farm doesnot possess first class fattening land and beef cattle are sold as stores.

A breeding flock of Kerry Hill sheep is kept and fat lambs and store sheep are sold during the summer. These are grazed on leys and wintered on kale and roots.

During the war pastures on the farm have been cropped for a few years and re-seeded as permanent grassland and the pastures are considered by the farmer to have been improved. However, ley farming has not been adopted and the following reasons are given: Fences in many fields are not in good condition and the expense of repairing these would be great, although main water

is supplied to the house it is not piped to the fields and the provision of supplies for stock in those fields without pits or access to a stream would be so great that it is not considered to be a worthwhile proposition. Thus it is apparent that costs of production are major considerations influencing the farming economy.

It is of interest in this connection that in his writings on the Rural Economy of the Midland Counties in 1790 Marshall stated "Every circumstance which lessens the expense of tillage without lessening its efficacy is of the first consideration in husbandry".

A factor of considerable interest in the county as a whole and possibly related to natural conditions is the correlation between the occurrence of pastures recognized as capable of finishing bullocks and the predominance of summer cattle fattening. Although stock are finished on leys or on some relatively poor pastures, there is still prevalent in the county the belief that certain land will finish bullocks well while other pastures on similar land are not sufficiently good. It has been said to be related to management and this is supported by the occurrence of some of the best pastures on skillfully managed fattening farms. Nevertheless pastures on some of the farms run primarily as dairy farms and managed in the same way as the poorer grasslands are still regarded as capable of fattening bullocks and as being much better quality than others on similar land. Likewise some fattening pastures which have been ploughed and re-seeded continue to be considered better feeding lands that others similarly re-seeded to permanent grass. This may only be

prejudice but it is, nevertheless, surprising that any such prejudice should continue to prevail if there is no scientific basis for it, in these times when the average farmer is well informed of agricultural developments and seems willing to take advantage of the majority of possible improvements.

During the agricultural depression of the 1930s, when the Land Utilization Survey of Leicestershire was carried out, it was found that certain correlations existed between natural factors and the use of the land. However such influence was only indirect and it was chiefly the adverse economic conditions which brought about this adjustment. In view of greatly improved economic conditions in agriculture to-day, however, natural influences might reasonably be expected to play a less obvious part, and to judge from the evidence available this seems in fact to be the case.

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