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# Farming in the Lincolnshire Limestone Areas

1936 to 1947

by

J. H. SMITH, M.Sc.

and

PRUDENCE P. RICHARDSON, B.Sc. (Econ.)



University of Nottingham School of Agriculture  
Department of Agricultural Economics  
Sutton Bonington  
Loughborough.  
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1950

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## FOREWORD.

In the Spring of 1949, a study was made of the impact of war-time conditions on the Nottinghamshire Sand area<sup>(1)</sup>.

The report was planned as the first of a series describing the regional types of farming in the East Midlands of England. This report, the second in the series, describes conditions in the Limestone areas of Lincolnshire and shows the way in which farmers on those soils tackled the production problem presented to them both during the war and during the difficult years after the war.

In the same way that the Sand Land farmer in Nottinghamshire will be faced with major problems of re-adjustment in the event of a move towards a pre-war price pattern, so the Lincolnshire Limestone farmers will have their problems. In many ways the difficulties will be similar. In both areas the major economic obstacle is the inherently low fertility of the soil and the difficulty of maintaining fertility when price conditions are unfavourable. On more fertile and adaptable soils farmers have a wide range of choice when faced with a reorganisation in response to unfavourable price conditions. But the choice of Sand and Limestone farmers is strictly limited by their environment.

There are a few occasions and conditions when farming is merely a matter of coaxing nature in the interests of mankind. But mostly it is a stern and arduous task. And nowhere is the fight harder than on the infertile soils. Every weapon in the armoury is required for the battle. Particularly important is a recognition of the nature of the resources of the area and an understanding of the economic possibilities of soil and climatic conditions.

Such a knowledge emphasises the importance of building up a store of fertility and provides the data for reorganisation when this becomes necessary. A false step in reorganisation on fertile soil may be saved from itself by the bounty of nature. A similar step on poor land may result in disaster.

In this report the economic possibilities of the Lincolnshire Limestone areas are discussed and a picture is presented of returns under the various conditions that operated between 1936 and 1947. It is published in the hope that the information contained, supplemented by the technical advice available from other sources, and most of all by the practical skill of the farmers and farm workers in the areas, may enable Limestone farming to do its part in weathering whatever storms are ahead.

WILLIAM E. HEATH.

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(1) *E. Meier, M.Sc., (Wilno)*. Sand Land Farming. University of Nottingham School of Agriculture. 1949.

## CHAPTER I.

### INTRODUCTION.

This report presents some economic and financial information collected from farms situated in the Kesteven and Lindsey Limestone areas of Lincolnshire. It covers a period of 12 years between 1936 and 1947 and shows the effect of war-time conditions and controls upon the profitableness of farming in these areas.

For more than a quarter of a century agricultural economists in this country have been engaged in studying problems connected with the production and marketing of agricultural products. In the early years the range of investigations was restricted, but from the commencement there has been active co-operation between farmers and agricultural economists. There was no difficulty in finding farmers willing to help despite the fact that in doing so they have been required to spend a good deal of time keeping detailed records of various kinds, and the scope of the enquiries was limited by the financial resources made available to Departments.

Up to 1934 the economists at the 11 separate provincial centres in England and Wales <sup>(1)</sup> planned their own programmes of investigations and no formal arrangement existed for co-ordinated schemes of work. There was general appreciation that national schemes of investigation were desirable but the time of staffs was fully occupied in dealing with important problems of local interest. In 1934, however, the first step in the development of national enquiries into the economics of agriculture was taken and a co-ordinated scheme of investigation into the costs of milk production was started, involving the collection of data from 600 dairy herds in different parts of England and Wales.

In 1936 the Farm Management Survey Scheme was started. The object of this scheme was to provide more comprehensive information on the economic conditions in the agricultural industry. The State was providing financial assistance to agriculture, and it was necessary to have information with which to judge the effect of this assistance. This became more necessary when war-time controls were placed on production and prices. The scheme was also expected to provide material for research into wider problems of farm management.

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(1) Since 1947 there are only 10 centres.



In the first year information was obtained from 1,493 farmers and in each subsequent year the number of co-operating farmers has steadily increased and in 1947 nearly 2,900 operators occupying farms of different types and sizes throughout the country gave the necessary information.

The physical and financial data obtained from such a large sample of farms, representing as they do all the most important systems of farming found in England and Wales, is an extremely important addition to our knowledge of the economics of farming.

The value of the information obtained from these investigations is appreciated by farmers as is shown by the co-operation which many of them have given continuously over the last 12 years.

At the present time the Department of Agricultural Economics, University of Nottingham School of Agriculture, collects information under the Farm Management Survey Scheme from 300 farmers in the East Midland Province, and the purpose of this report is to bring together the information collected from farmers in the Kesteven and Lindsey Limestone areas during the period 1936 to 1947.

An examination of the financial position of farming during this period must take into account the general economic conditions of the time. In the early 1930's farming profits were extremely low and many farmers suffered heavy financial losses. The number of bankruptcies increased from 5,900 in 1929 to 7,321 in 1932, but the position improved after 1932. Even before the outbreak of war in 1939 a change of policy towards agriculture had occurred. The passing of the Wheat Act in 1932 was followed, in 1934, by the introduction of a subsidy on home fattened cattle, a higher subsidy being paid on cattle that had been both reared and fattened in the United Kingdom. In 1937 the Agriculture Act was passed which gave, amongst other things, financial aid to growers of oats and barley and also through the Land Fertility Scheme made contributions towards the cost incurred by farmers in adding lime or basic slag to their land. These contributions amounted to one half of the cost of lime and one quarter of the cost of basic slag.

In addition to receiving direct financial assistance farmers were given the opportunity under the Agricultural Marketing Acts of 1931 and 1933 to exercise greater control over the movement of supplies of agricultural produce. Schemes were brought into operation in the case of milk, potatoes, pigs and hops which enabled farmers,

in varying degrees, to avoid the worst consequences of uncontrolled production and marketing. Also the Import Duties Act of 1932 was passed with the object of enabling an increase in the home production of many agricultural products by the reduction of total imports. A greater share of the imports into the United Kingdom was given to Empire countries, but imports from foreign countries decreased.

The national investigation into farm income and expenditure which commenced with the 1936 crop year and which covered a wide range of farming types in England and Wales, showed that because of the restricted purchasing power due to mass unemployment nearly one fifth of the farmers in 1936 and 1937 failed to obtain any net cash income from their farms, and in the following year the proportion increased.

The recent white paper on personal incomes<sup>(1)</sup> shows that in 1938 the total profits from farming in the United Kingdom amounted to £60 millions, that is considerably less than £200 per farmer. From this small income farmers had to meet interest payments on bank overdrafts and mortgages, and the balance represented the amount going to farmers for investments in tenant's capital as well as for the manual and managerial work done by themselves and their wives. A reasonable assumption would be that interest at five per cent on all farming assets—personal and borrowed—would account for more than one third of the total farm profits and the balance, say less than £140 per farmer, represents payment for manual and managerial responsibilities. This was the general position but many small farmers and farmers on the poorer soils were in receipt of incomes appreciably lower than the average wage earned by farmworkers.

With the outbreak of war in 1939 attention had to be directed to increased production of human foodstuffs. Much grassland was ploughed up, and drastic changes in policies relating to the production of livestock and their products were imposed on the industry. These changes involved farmers in increased expenditure, and also imposed upon many of them risks of financial loss due to the discouragement of some livestock enterprises, particularly those of sheep, pigs and poultry.

Few farmers had the necessary capital resources for an expansion of milk and crop production. Farm profits, therefore,

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(1) National Income and Expenditure of the United Kingdom 1946 to 1948. Cmd. 7649. H.M.S.O.

were deliberately increased in order to provide the industry with the money to invest in farm equipment. The increased profits, to a considerable extent, have been invested in the industry and farmers have in recent years increased their borrowings from banks for land purchase as well as for investment in tenant's capital. In the early part of 1946 banks had £78 million on loan to agriculture and by August, 1949, these loans had increased to £142 million.

In 1936 the general level of farm prices was nearly 20 per cent below the average ruling in 1927-29 and, even when the subsidy payments on wheat, milk and beef are taken into account, the level was nearly 18 per cent below the average of 1927-29. Some improvement in prices occurred after 1936 but in 1939 farm values were still nearly 10 per cent lower than in 1927-29.

A substantial improvement in farm prices was made in 1940 when they were increased by more than a third. In the following two years slightly smaller proportionate increases were obtained and over the three years 1943 to 1945, inclusive, they were only equal to that obtained in 1942. After 1945 further substantial improvements in farm prices were secured and the general level in 1947 was 135 per cent higher than that in 1939.

Prices of individual farm products did not all undergo the same proportionate change and Table 1 shows the yearly price indices for the most important crops grown in the Limestone areas. The five most important price indices to study are those of wheat, barley, sugar beet, fat cattle and fat sheep. The outstanding feature is the abnormal increase in the price of barley which occurred during the middle war years. Prices of barley were not controlled prior to the sale of the 1942 crop, and the average price realised for all barley sold in 1942—mainly the 1941 crop—was more than four times greater than in 1938, but after 1942 it fell gradually. Comparing prices obtained for other products in 1947 with those of 1938 it will be seen that the price of wheat doubled, and that of sugar beet increased nearly two and a half times. Prices of fat cattle nearly doubled and those of fat sheep nearly trebled.

Official information relating to prices of all the various items of farm requisites is not available but evidence suggests that unit prices have not increased to the same extent as market values of farm produce. Prices of fertilisers increased by less than 50 per cent, the price of nitro-chalk and sulphate of ammonia increased by one

TABLE 1.  
INDEX NUMBERS OF AGRICULTURAL PRICES.  
(1927-29 = 100).

Year	Wheat	Barley	Oats	Potatoes	Sugar beet	Fat cattle	Fat sheep	Bacon pigs	Poultry	Eggs	General
1936	91	86	70	122	74	83	80	78	78	78	83
1937	96	109	92	120	78	92	90	83	82	83	90½
1938	94	84	79	87	86	95	69	84	86	85	90½
1939	98	105	79	82	93	97	76	87	88	87	90½
1940	120	180	151	108	122	122	102	125	113	133	125½
1941	140	251	158	142	127	127	110	133	139	159	150½
1942	154	354	163	147	161	137	120	153	153	174	161
1943	171	273	170	150	159	141	124	155	153	170	163
1944	183	236	177	151	152	144	129	154	141	170	169
1945	190(1)	225	176	157(1)	167	148	137	160	153	174	172½
1946	180(1)	223	177	165(1)	170	156	147	177	194	191	183
1947	191(1)	219	197	181(1)	208	183	180	209	235	204	213(1)

(1) Provisional.

Source : Ministry of Agriculture and Fisheries.

TABLE 2.  
AVERAGE PRICES PER TON OF FEEDING STUFFS(1).

Commodity	1936	1937	1938	1939	1940	1941	1942
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Middlings (Weatings)	6 14 0	8 7 0	7 9 6	5 17 6	8 1 6	8 12 6	8 16 0
Bran (British)	6 8 6	7 16 0	7 6 6	6 3 0	8 1 6	8 12 6	8 16 0
Maize meal	5 18 0	7 7 0	7 10 6	6 18 6	10 12 6	11 7 6	11 5 6
Barley meal	7 2 6	9 7 6	7 19 0	6 16 0	12 19 0	16 10 0	16 3 6
Linseed cake	8 2 6	9 11 0	9 13 6	9 0 6	10 18 0	11 5 0	11 5 0
Cotton seed cake (English)	5 5 6	6 3 0	5 18 0	5 18 6	7 3 6	7 17 6	7 17 6
Cotton seed cake (Egyptian)	4 18 3	5 12 0	5 7 6	5 8 0	7 1 0	7 15 0	7 17 6
Dried ale grains	5 2 0	5 18 6	6 0 6	5 9 6	6 17 0	6 19 0	7 12 6

Commodity.	1943	1944	1945	1946	1947	1948
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Middlings (Weatings)	8 18 0	9 0 0	9 0 0	9 0 0	9 4 0	9 10 0
Bran (British)	8 18 0	9 0 0	9 0 0	9 0 0	9 4 0	9 10 0
Maize meal	11 5 0	11 5 0	11 6 0	11 7 6	11 15 0	12 5 0
Barley meal	16 17 6	16 17 6	16 17 6	16 17 6	17 2 0	17 12 6
Linseed cake	11 5 0	11 5 0	11 5 0	11 5 0	11 5 0	11 5 6
Cotton seed cake (English)	7 17 6	7 17 6	7 17 6	7 17 6	7 17 6	7 18 0
Cotton seed cake (Egyptian)	7 17 6	7 17 6	7 17 6	7 17 6	7 19 6	8 5 0
Dried ale grains	7 12 6	7 12 6	7 12 6	7 12 6	7 12 6	7 13 0

(1) Source : Ministry of Agriculture and Fisheries.

third, that of basic slag by one fifth and that of superphosphate by three fifths.

During the period covered by this survey farmers have been encouraged to increase their use of fertilisers, particularly of lime and basic slag. In 1940 the general level of prices of fertilisers was increased by a third, and after 1941 no further change was made until 1946. The average price in 1947 was 44 per cent higher than that ruling in the immediate pre-war years. The policy of stabilising prices of fertilisers other than lime has cost annually, since 1941-42, between £6 million and £8 million in subsidies. The provision of lime to farmers at half its cost price reduced the total cost to farmers in a recent year by £4 million<sup>(1)</sup>.

No general price index for feeding stuffs is available for the years from 1939 onwards. With the outbreak of war supplies of animal feeding stuffs were greatly restricted and a scheme of rationing had to be introduced. The prices were controlled and only increased slightly after 1941. The available information is given in Table 2.

The policy of stabilising prices of feeding stuffs has been made possible by the Treasury meeting the extra costs. In 1948 the annual cost of subsidies on imported feeding stuffs amounted to £65.9 million and that on home grown feeding stuffs to £600,000.

In general farmers in the Limestone areas are more interested in the purchase than the sale of store animals; they are more interested in the effect of prices of store animals upon their farm costs than upon farm receipts. Before the war one seventh of the total farm expenditure was in respect of purchases of livestock but in recent years the proportion has been under 10 per cent. The official information as given in Table 3 shows that by 1947 prices of store cattle and sheep were twice as high as in 1936-38.

Between 1939 and the end of the 1947 harvest, cropping had been controlled by means of directions issued by the County War Agricultural Executive Committees (now the County Agricultural Executive Committees) acting as agents for the Minister of Agriculture and Fisheries. The production of livestock products has been effectively controlled through the rationing of animal feeding stuffs. There has also been control of the disposal of the more important products with guaranteed prices and a guaranteed market for all produce subject to price controls.

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(1) Hansard, (Written Answers). 27th July, 1948. H.M.S.O.

TABLE 3.  
INDEX NUMBERS OF PRICES OF STORE LIVESTOCK.  
(1936-38 = 100).

Year	Store cattle	Store sheep	Store pigs
1936	90	101	94
1937	105	112	100
1938	106	88	107
1939	109	93	119
1940	128	108	115
1941	148	129	141
1942	159	147	158
1943	163	155	184
1944	169	168	214
1945	167	181	170
1946	180	187	193
1947	197	211	293

Source : Ministry of Agriculture and Fisheries.

In the early years of control of prices the three agricultural departments<sup>(1)</sup> and the producers' organisations discussed costs, production programmes and prices before adjustments were made to the control of prices, and out of this grew the present price fixing procedure which commenced in February 1945. Each February a close examination is made of the general financial conditions of the industry and of the national requirements from our own agriculture. Assessments are made of the effect of changes in wages and prices of farm requisites upon the total farm expenditure and consideration is given to any necessary adjustments in the relationship between the prices of the review commodities.

The responsibility for fixing prices of the review commodities, i.e. wheat, barley, oats, rye, potatoes, sugar beet, fat cattle, fat sheep, pig-meat, eggs and milk, rests with the Government, but review procedure provides the essential opportunity for consulting producers on matters connected with changes in farm costs. It enables the Government to obtain producers' views on the conditions necessary to achieve the required output.

In addition to the guaranteed market for final sale products at prices which are known well in advance farmers have also had in recent years the advantage of knowing the minimum prices of live-stock, milk and eggs for a forward period of four years.

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(1) The Ministry of Agriculture and Fisheries, the Department of Agriculture for Scotland and the Ministry of Agriculture, Northern Ireland.

As a means of providing the necessary financial incentives to increase production with the minimum upset to the retail prices of consumer goods an extensive use has been made of subsidies. The question of whether these are consumer or producer subsidies is largely irrelevant since in all cases their purpose is to provide the nation with the maximum amount of human foodstuffs without causing any serious increase in the direct cost of food to the consumer. It was recently<sup>(1)</sup> estimated that the current yearly cost of those subsidies relating to home grown foods amounted to over £283 million.

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(1) Hansard, (Oral Answers). 21st September, 1948. H.M.S.O.



## CHAPTER II.

### DESCRIPTION OF THE AREA.

The two Limestone areas occupy approximately seven per cent of the total area of Lincolnshire. They form a continuous ridge of high land extending from the south-western corner of the county to Winteringham, near the River Humber, in the north. The width of this ridge varies from about nine miles in the south to two miles in the north. The western edge forms a regular scarp with a height of over 300 feet at Grantham but falling gradually to 100 feet in the north, and broken only in two places, namely, at Lincoln by the Witham Gap and at Ancaster by the Honington Gap. In its northern part the area is known as the Lincoln Cliff, whilst south of Lincoln it is known as the Heath. The eastern side of the ridge is a gradual, undulating slope with small streams, such as the River Sleas, cutting shallow valleys into the limestone and flowing eastwards into the Lincoln Clay Vale.

Geologically, the area is one made up of Jurassic rocks. The different rocks run in parallel strips from north to south, and the eastern beds are of a later origin, being laid down on top of those to the west. Commencing to the west of the area with the older rocks, the western lowland is of Lias (Lower Jurassic Series) consisting of alternating bands of clay and shale. The lower slope of the scarp is formed of the Upper Lias with the Middle Jurassic rocks above. The Middle Jurassic rocks can be divided into three series; the Inferior Oolite, the Great Oolite and the Cornbrash. These three consist mainly of limestone but have some intervening bands of sand and clay. To the east the lowland is formed of Upper Jurassic rocks, namely Oxford and Kimeridge Clay.

The soils of the area are of three types; those yielded by the underlying rock, the boulder clays brought by glacial action and the windblown sands. The maps on Pages 20 and 21 show the distribution of the different soil types and also the location of the sample farms. The lowlands to the east and west of the Heath consist of a heavy clay soil, which is cold and more suitable for pasture than for arable farming. This soil, however, is often masked by boulder clay. The Oolitic Limestone yields a light, well drained soil, rich in mineral plant food but deficient in organic matter. The Inferior Oolite yields a soil of medium thickness and of good though not first class fertility.

The soil of the Great Oolite is similar, though thinner and more liable to scorch in hot weather. The Cornbrash forms only a narrow belt and yields a relatively deep and fertile soil, but being on the lower, eastern side of the ridge it is seldom free from glacial drift.

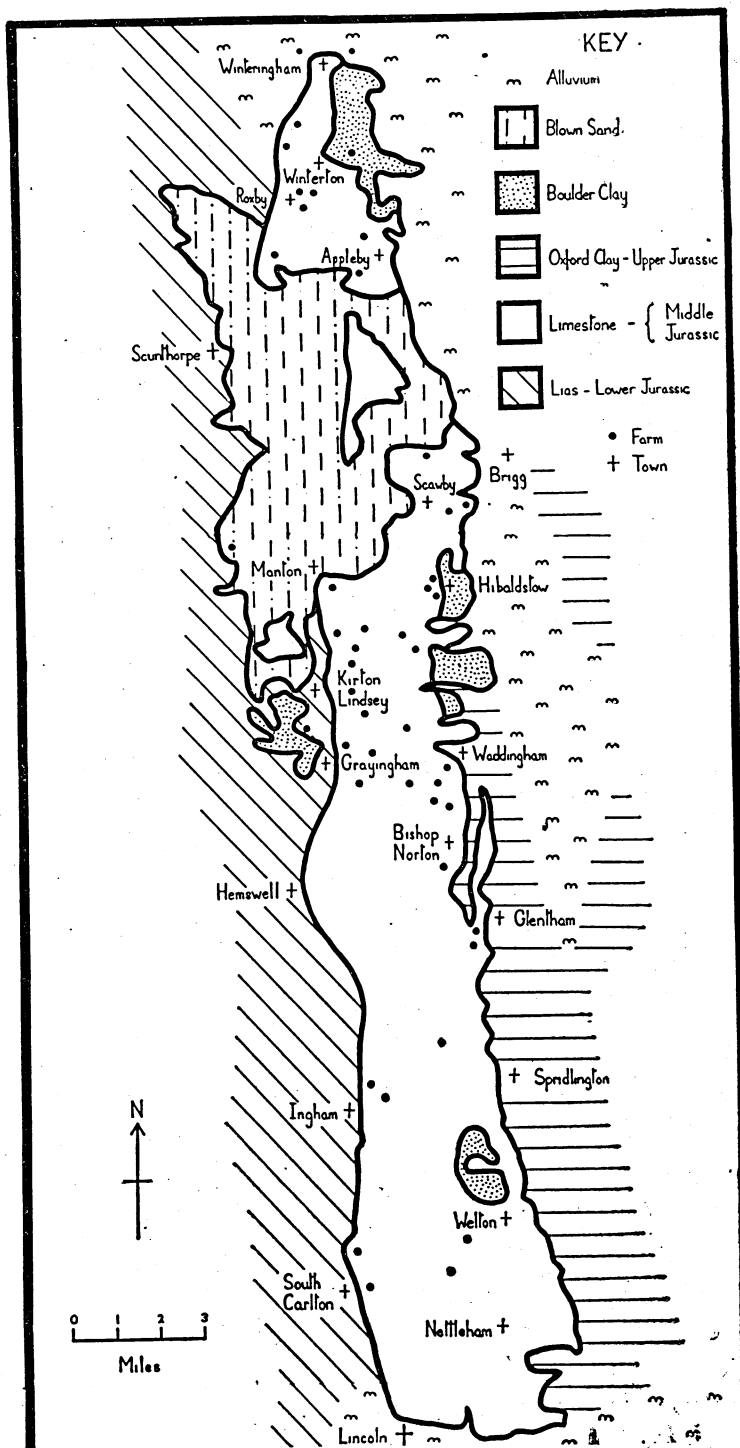
The deposits brought to the area in glacial times have been largely removed from the northern part of this Limestone ridge by subsequent erosion and there are now only isolated pockets of boulder clay left. But south of Grantham glacial drift covers the greater part of the Limestone. Boulder clays are generally of good fertility as they contain a mixture of soils brought from different localities. Sands have been blown eastwards from the Trent Valley and now mask the Jurassic rocks over areas between Kirton Lindsey and the Humber. These sands form very poor infertile land. In areas where they overlie the porous Limestone the soil is dry and infertile, and much of it has been planted by the Forestry Commission with mixed deciduous and coniferous woods. There is a poor ill-drained region in the Scunthorpe area where the sand covers the impervious clay, and it is not suitable for arable cultivation.

#### *Climate.*

Compared with the more western parts of Britain, Lincolnshire receives a small rainfall and has a relatively wide range of temperature during the year. The Heath receives an average annual rainfall of a little over 25 inches, slightly more than the surrounding lowlands due to the increased altitude. This low precipitation is suitable for cereal cultivation. In common with the rest of Britain there is little variation in the average rainfall from year to year. The seasonal averages show the summer months, June, July and August, to be the wettest whilst spring is the driest season. This summer maximum, although due in part to thunderstorms, is mainly the result of the increased influence of cyclones in eastern England during these months. The rainfall is thus distributed throughout the year in a way least advantageous to farmers; there is a comparatively dry season in the spring when moisture is needed for plant growth and an increased amount of rain at harvest time when dry, cloudless weather is required.

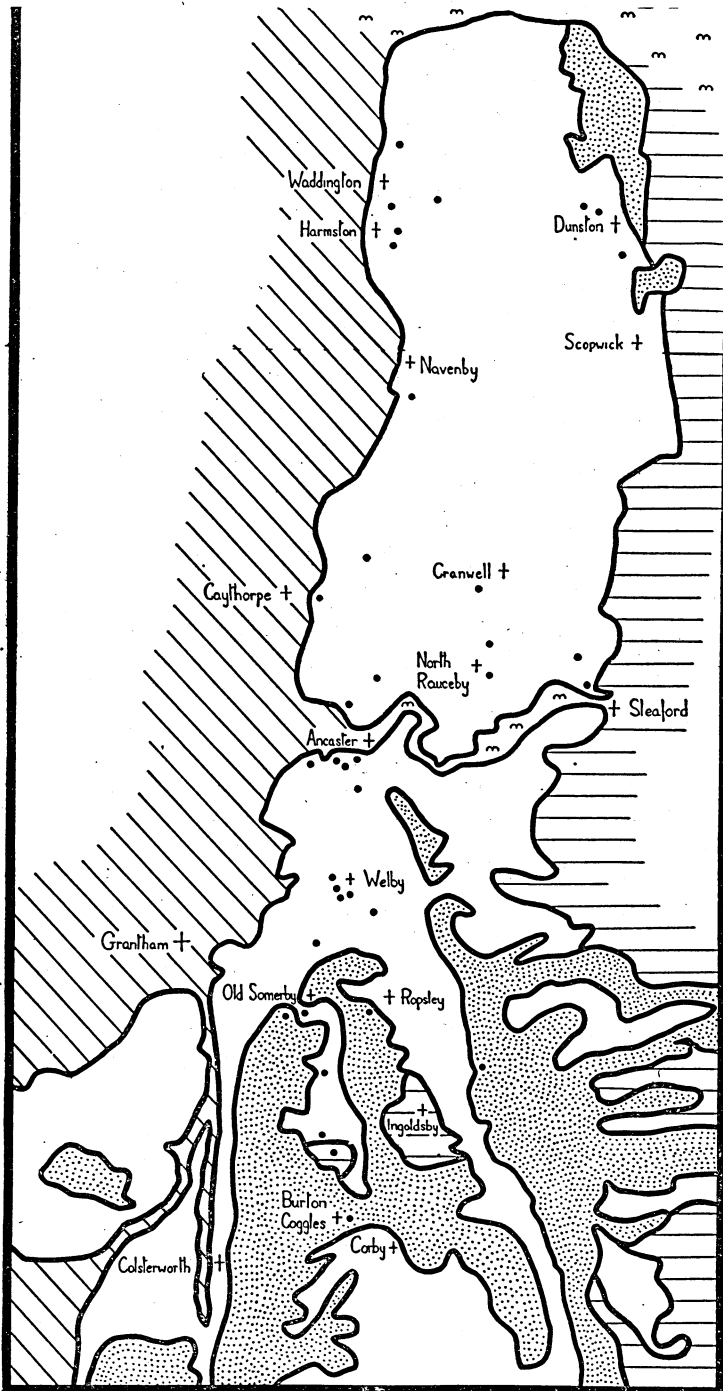
In measuring the degree of humidity of any district, rainfall is not the only factor to be taken into account. Other factors of importance are the amount of evaporation, depending mainly on sunshine, and the permeability of the soil and underlying rock. On the Heath where the underlying rock is porous and the soil relatively

MAP SHOWING SAMPLE FARMS IN RELATION TO SOIL TYPES



A. LINDSEY LIMESTONE AREA.

(MAP—continued.)



B. KESTEVEN LIMESTONE AREA.

thin and lacking in humus, an important moisture retaining agent, little water is conserved at the surface and dry weather has serious effects upon plant growth. It has been estimated that fifteen days without rain may constitute a drought. Snowfall figures for Cranwell show 23 days of snow and sleet per annum with 13 days when snow is lying on the ground.

For the whole county the mean temperature is about 39°F. in January and 61°F. in July. This range of 22°F. is a high figure for Britain. At Cranwell, on the Heath, the range of temperature, as given by an average for the years 1920 to 1939, was from a minimum of 4°F. in December to a maximum of 90°F. in July. At Lincoln the last screen frost is usually in April and the first in October; over the years 1911 to 1929 there was no frost between May 14th and September 30th. Another factor of importance to farmers is the hours of sunshine per day. At Cranwell the mean daily duration for June is 6.7 hours and for December 1.5 hours, but this decreases slightly to the north of the county.

The winter temperatures of this area have rarely been low enough to have any serious effect upon the hardy type of plant, although the winters of 1939-40 and 1946-47 were exceptions. There is a tendency for the Limestone area to be relatively free from plant diseases and insect pests. Weather conditions largely determine the extent to which these attack the crops. Fungus diseases, such as potato blight, only germinate under warm moist conditions. Such conditions may be found in Lincolnshire during July and August at the time when the crops are most susceptible to the fungus. But the Limestone area appears to be less susceptible to these diseases than the lower-lying parts of Lincolnshire. Aphides and greenfly, which carry virus diseases, although finding suitable temperature and moisture conditions in the summer, are probably discouraged by the wind on the unsheltered Heath. Similarly these climatic conditions are not favourable for the attack of insect pests, and the Limestone district remains relatively free from diseases.

#### *Village Settlements.*

A line of villages is situated on or at the foot of the western scarp where streams issuing from the Limestone at its junction with the underlying impervious rock determined the original site of these settlements. Also these sites offered more shelter than the dry windswept Heath and avoided the marshy clay lowlands. The settlements include

Kirton Lindsey, Ingham, Navenby, Caythorpe and Grantham. The Witham and Honington Gaps, and the valley of the Upper Witham, which have cut through the Limestone to the underlying clay offer similar hillside sites, sheltered and on the line of springs. Lincoln is thus situated on the Witham Gap and Ancaster on the Honington Gap, whilst there are numerous villages, such as Colsterworth, in the valley of the Upper Witham. There is another line of settlements on the lower eastern slopes of the Heath, suitable sites being provided by the shallow valleys of streams flowing into the Clay Vale. Examples of these settlements are Hibaldstow, Welton, Dunston and Sleaford on the River Sleä. There are few villages situated on the dry unsheltered Heath north of Grantham. A number of the parishes have little or no piped water and isolated farms obtain their supply from the underlying impervious rocks by means of wind or hand pumps. These supplies, however, are not always adequate, and in some parishes, for example North Rauceby, a dry season like the summer of 1947 makes water carting necessary. Although it is possible to provide sufficient water for household needs, carting for livestock becomes a problem. South of Grantham the number of villages actually on the Heath increases probably due to the attraction of fertile patches of boulder clay covering the Limestone, and the shelter offered by the valleys of numerous streams flowing south and east. Examples of these villages are Ingoldsby, Burton Coggles and Ropsley.

Except for the regions immediately near to Lincoln there are few parishes completely served by a public water supply. There are some exceptions, such as the parish of Appleby, where most farms have a piped supply of water. A project of main water laying is in hand in the south of the county around Corby from Revesby Reservoir which will supply villages in the southern part of the area. The numerous aerodromes on the Heath are provided with an adequate water supply, and it is probable that these supplies will be made available to surrounding districts.

The towns and villages of the area are to a great extent dependent upon agriculture and there are few other industries apart from those connected with agriculture. The Lindsey area has ironstone mining works at Appleby, and several industries at Lincoln including agricultural engineering and brewing. In the Kesteven Limestone area there are large agricultural and railway engineering works at Grantham, and Sleaford has malting and seed packing industries. Apart from this there is some ironstone mining and a little quarrying and limeburning. At Ancaster freestone is quarried for building purposes.

### *Markets.*

The livestock and corn markets of the area have declined in importance with the change in systems of marketing brought about by war-time regulations. However, market days are still regarded as important and are regularly attended by local farmers and country housewives. The most important livestock markets of the Limestone area in the order of their pre-war sales are those of Sleaford, Lincoln and Grantham. Many farmers also go to the more distant markets such as those at Stamford, Melton Mowbray, Gainsborough and Newark. Before the war wool sales took place at Sleaford, Stamford and Brigg, but wool was also sold privately to buyers from the Yorkshire woollen industry. At present although the Government purchases all wool the buyers' agents still make their purchases by contacting farmers in the market towns.

Wheat and barley are sold to the millers and brewers whose agents or travellers visit the farms or meet farmers at the Corn Exchanges which are situated at Grantham, Sleaford, Lincoln, Brigg, Gainsborough and Scunthorpe. Sugar beet is sent to the factories at Brigg, Bardney and Newark. The largest wholesale market in the area for fruit and vegetables, including potatoes, is at Lincoln. But most of this type of produce is sent to the industrial areas of the North and Midlands, or south to London. Wholesale merchants from these areas buy the produce direct from the farmers on the Heath.

### *Communications.*

There are four railway routes crossing the Limestone ridge. In Lindsey the Scunthorpe to Brigg line crosses near Appleby in the north where the ridge is only 100 feet in height and partly masked by the blown sands. The Gainsborough to Brigg route avoids the high land by means of a tunnel at Kirton Lindsey. The Witham Gap provides the best route across the ridge and is a junction for the lines from Mansfield, Newark, Market Rasen and Boston, and to the south in Kesteven the Nottingham to Sleaford line utilises the only other break in the ridge, the Honington Gap. In addition to these there is a line at the foot of the scarp from Grantham to Lincoln. There are two main roads running from north to south in the area. One is the Roman Ermine Street, which utilises the top of the Heath and thus connects up very few places of habitation. The other road is from Grantham to Scunthorpe connecting up the villages at the foot of the scarp. Frequent roads cross the ridge but the main routes

converge on the Witham Gap at Lincoln. The Great North Road crosses the Limestone area in south Kesteven utilising the valley of the upper Witham. Bus services are good around Lincoln but in north Lindsey and south Kesteven they are infrequent. On most routes special buses are run to connect up with towns on market days.

*The Farms in the Sample.*

As shown on the maps the majority of the farms included in the sample used in this report are situated on the light soil of the Limestone region. The others, though near the Heath, are actually situated on the clay of the eastern and western lowlands, on the boulder clay or on the blown sand area to the north around Roxby. Many Cliff and Heath farms extend to include lower lying land to the east and west of the Limestone area. In these cases the farms have arable land on the Limestone soil and pasture in the Clay Vale.

Table 4 shows the number of farms included in the survey each year. In 1936 the number of farms included in the sample from the two Limestone areas in Kesteven and Lindsey was 40. In subsequent years the numbers were increased and in 1939 information was obtained from 73 farms but because of the need to extend the enquiry to other types of farming in the province, the numbers included from these areas in recent years have been reduced. In 1947 the sample included 36 farms.

TABLE 4.  
NUMBER OF FARMS IN THE SAMPLE.

Year	Kesteven Limestone		Lindsey Limestone	
	No. of records collected	New contacts	No. of records collected	New contacts
1936	15	15	25	25
1937	21	12	28	6
1938	26	7	44	23
1939	35	15	38	2
1940	27	2	31	1
1941	27	1	31	2
1942	24	—	28	2
1943	21	—	26	—
1944	21	—	23	2
1945	18	—	22	—
1946	19	1	18	—
1947	18	—	18	2



TABLE 5.  
SIZE DISTRIBUTION OF SAMPLE FARMS.

Year	Kesteven Limestone				Lindsey Limestone			
	No. of farms				No. of farms			
	Total	Up to 100 acres	100 to 300 acres	Over 300 acres	Total	Up to 100 acres	100 to 300 acres	over 300 acres
1936	15	8	5	2	25	1	9	15
1937	21	8	8	5	28	—	12	16
1938	26	11	10	5	44	9	13	22
1939	35	11	13	11	38	9	11	18
1940	27	8	11	8	31	7	10	14
1941	27	8	11	8	31	6	9	16
1942	24	7	9	8	28	6	10	12
1943	21	7	6	8	26	6	9	11
1944	21	7	6	8	23	5	7	11
1945	18	7	5	6	22	3	7	12
1946	19	7	5	7	18	2	6	10
1947	18	6	5	7	18	2	6	10

During the earlier years of the enquiry the sample changed a good deal from year to year. In the early stages of the investigation it was more difficult to persuade farmers to remain in the scheme after the first year, and each year between one quarter and one third of the co-operating farmers dropped out and had to be replaced by others. But now farmers have become familiar with the nature and purpose of the enquiry and fewer changes are made. Small losses occur each year due mainly to deaths and retirements, and in recent years the new recruits have been limited to replacing this normal wastage. The present sample from Kesteven includes 15 and that from Lindsey 14 farmers who have co-operated with this Department over the last nine years and there are 12 who have provided information continuously since the commencement of the investigation in 1936.

The information had to be obtained from farmers willing to co-operate and it is not presumed that the results are representative of general conditions within the two areas. The purpose of this report is to present the information collected from the co-operating farmers in order to indicate some of the factors which have affected the financial position of farming in the Lincolnshire Limestone areas.

In seeking the co-operation of farmers no attempt has been made to select farms of different sizes in proportion to their importance in the two areas. Table 5 shows that in recent years the Kesteven group of farms was fairly evenly distributed over the three size groups. The Lindsey group has contained the higher proportion of farms with over 300 acres and this difference in the size distribution of the farms within the two groups is one of the factors to bear in mind when making comparisons of the financial information from farms within the two areas.

It is necessary to point out that in some cases changes have occurred in the size of the farms occupied by farmers who have been in the scheme for several years. Some have been increased and others reduced in size. The reasons for these changes are varied. Some of the younger farmers seek increased responsibility by taking more land whilst some older farmers naturally seek to lessen their responsibilities by reducing the size of their farms. In some years a farmer may rent accommodation land, and occasionally a farmer may let some of his farm to a neighbour as accommodation land. These are some of the reasons why farms vary in size from year to year, and it is very difficult to have any sizeable sample of farms which remains completely identical over a period of 10 to 12 years.

## CHAPTER III.

### LAND UTILISATION.

#### *Distribution of Arable and Grassland.*

Both Kesteven and Lindsey are counties with a high proportion of land under tillage crops. In the immediate pre-war years about one half of the land was under annual crops and between eight and 10 per cent under rotational grasses. Permanent pasture accounted for nearly two fifths of the total cultivated area. After 1939 the land under tillage crops was increased; in Kesteven it increased to about two thirds and in Lindsey to about three fifths of the total area of crops and grass. The area under rotation grasses did not increase in importance until towards the end of the war when it became necessary to seed down land which needed resting from corn and root crops. In the last few years rotation grasses have accounted for between 10 and 11 per cent of the arable land. As a result of the increase in the arable acreage, permanent pasture now represents less than one quarter of the cultivated area of Kesteven, and just under three tenths of that of Lindsey. Table 6 shows the changes in land use in the two counties of Kesteven and Lindsey.

TABLE 6.  
LAND UTILISATION IN THE COUNTIES OF KESTEVEN AND LINDSEY.  
(% of total area).

Year	Tillage		Rotation grasses		Permanent pasture	
	Kesteven	Lindsey	Kesteven	Lindsey	Kesteven	Lindsey
1936	52.2	51.0	7.7	8.9	40.1	40.1
1937	50.0	49.4	9.7	10.3	40.3	40.3
1938	52.0	51.2	7.8	8.3	40.2	40.5
1939	50.6	50.2	9.7	9.6	39.7	40.2
1940	53.5	53.6	9.5	9.0	37.0	37.4
1941	60.2	56.6	6.6	8.7	33.2	34.7
1942	60.3	57.5	9.7	9.6	30.0	32.9
1943	64.8	59.6	9.3	10.0	25.9	30.4
1944	67.3	60.6	9.3	10.2	23.4	29.2
1945	65.8	59.7	11.4	11.1	22.8	29.2
1946	65.4	59.7	11.6	10.9	23.0	29.4
1947	65.0	59.8	11.7	10.9	23.3	29.3

Information on land utilisation for the farms in the two Limestone groups is given in Table 7. Before 1939 rather more than one half of the land attached to the Kesteven Limestone group of farms

was under tillage crops. The proportion increased and in the two years 1944 and 1945 was two thirds, but it is now slightly less. Similar changes were made by the Lindsey group of farmers. Before the war between 55 and 60 per cent of the land was sown with tillage crops but the proportion has been increased and is now just under two thirds.

TABLE 7.  
LAND UTILISATION IN THE KESTEVEN AND LINDSEY  
LIMESTONE AREAS.  
(Sample farms : % of total area).

Year	Tillage		Rotation grasses		Permanent pasture	
	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
	%	%	%	%	%	%
1936	54.4	62.2	10.3	10.1	35.3	27.7
1937	50.7	56.4	14.3	13.6	35.0	30.0
1938	51.8	54.6	13.9	12.3	34.3	33.1
1939	55.5	55.1	15.5	13.1	29.0	31.8
1940	56.3	58.7	14.7	11.9	29.0	29.4
1941	64.9	61.0	10.9	11.1	24.2	27.9
1942	58.4	60.6	18.0	13.9	23.6	25.5
1943	62.9	65.2	15.6	12.9	21.5	21.9
1944	67.0	65.5	13.4	13.3	19.6	21.2
1945	67.7	65.1	13.8	13.0	18.5	21.9
1946	64.0	65.8	15.5	12.0	20.5	22.2
1947	64.3	66.2	15.0	11.8	20.7	22.0

The ploughing-up campaign reduced the permanent pasture from a third to a fifth of the land attached to the Kesteven Limestone group and reduced that attached to the Lindsey group from under a third to between a fifth and a quarter.

One of the ways in which farmers tried to meet the changing conditions resulting from the war was by growing more cash crops. The traditional Norfolk four course system even before 1939, had been greatly modified, and during the war the length of rotation was extended by the inclusion of extra cash crops. In some cases no set form of rotation was practised.

Between 1936 and 1939 temporary grasses occupied only about 20 per cent of the arable land in the Kesteven Limestone area and 18 per cent in the Lindsey Limestone. The war made further reductions necessary and between 1945 and 1947 the proportions were reduced to about 18 per cent and 16 per cent of the arable land.

Of the tillage crops, wheat, barley, potatoes and sugar beet are the most important. The survey farms in both Kesteven and Lindsey had more of their land under cereals than was general for their respective counties. Before the war the acreage sown with wheat by the occupiers of the Lindsey farms was twice as large as that sown with barley but in recent years the two crops have been of about equal importance. In contrast the acreage sown with barley by the farmers in the Kesteven sample has generally been two or three times larger than that sown with wheat. The broad differences in the importance of cereal crop acreages for the two groups is shown in Table 8.

TABLE 8.  
PROPORTION OF TOTAL LAND UNDER WHEAT AND BARLEY  
(Sample Farms).

Year	Wheat		Barley	
	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
	%	%	%	%
1936	10.5	20.3	21.2	8.1
1937	12.7	17.1	17.2	7.8
1938	14.4	18.2	17.5	9.4
1939	13.8	18.2	20.2	8.4
1940	12.5	15.6	22.2	13.4
1941	9.5	13.8	26.3	12.0
1942	10.1	14.4	21.5	11.5
1943	15.9	18.6	21.1	12.6
1944	12.7	16.8	23.2	12.9
1945	9.1	13.1	27.5	16.5
1946	7.0	14.2	26.4	17.3
1947	10.2	17.0	26.3	16.1

Potato growing on farms in the Kesteven Limestone area was less important than in the county generally but in Lindsey the Limestone farmers had relatively more land under potatoes than was general for their county. Both groups of farms surveyed tend to show higher proportions of land under sugar beet than was common for their respective counties. In the early years of the survey, however, the Kesteven Limestone farms had a lower proportion of land under sugar beet. The Lindsey sample of farms had a greater proportion of the farm acreage under both sugar beet and potatoes. On the Lindsey Limestone a considerably greater acreage of potatoes than of sugar beet is grown and on the Kesteven Limestone the order of importance of the two crops is reversed. The information from the Lindsey Limestone area shows that over the 12 years the proportion

of land under potatoes has varied between eight and 13 per cent while that under sugar beet has been between six and eight per cent of the total land attached to these farms. The Kesteven group, on the other hand, shows that before the war less than one per cent of the land was under potatoes. Just over three per cent of the land attached to the present sample of farms is under potatoes. The sugar beet acreage has also been increased; before the war it accounted for between three and four per cent and now accounts for between seven and eight per cent of the farms surveyed.

TABLE 9.  
PROPORTION OF TOTAL LAND UNDER POTATOES AND SUGAR BEET.  
(Sample farms).

Year	Potatoes		Sugar beet	
	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
	%	%	%	%
1936	.3	11.8	10.5	8.6
1937	.4	10.3	4.0	6.3
1938	.8	8.6	3.0	5.5
1939	1.3	8.8	3.4	6.4
1940	1.4	8.3	2.9	6.1
1941	1.2	9.7	3.4	6.6
1942	1.8	10.7	4.5	6.6
1943	2.4	12.0	5.5	6.2
1944	2.4	13.4	7.0	6.9
1945	2.9	13.2	7.5	6.2
1946	3.2	12.7	8.5	6.5
1947	3.5	12.2	7.3	6.1

Feed crops, consisting of oats and root crops other than potatoes and sugar beet, are of importance in the two Limestone areas. The oat crop is grown mainly for feeding to livestock and only very small quantities are sold. Between 1937 and 1939 feed crops occupied approximately 10 per cent of the total land in both the areas. The proportion increased during the war and in 1942 was just over 12 per cent. Recently there has been a decline to seven per cent in the Kesteven Limestone area and to eight per cent in the Lindsey area.

#### *Livestock.*

The official information relating to cattle in the counties of Kesteven and Lindsey shows that the numbers have increased during the years 1936 to 1947. There were just under 16 head of cattle per 100 acres of crops and grass in Kesteven before the war and in

TABLE 10.  
NUMBERS OF CATTLE PER 100 ACRES.

Year	Kesteven				Lindsey			
	County		Limestone (sample farms)		County		Limestone (sample farms)	
	Cows	All cattle	Cows	All cattle	Cows	All cattle	Cows	All cattle
1936	3.8	15.2	1.7(1)	10.1	4.9	17.5	3.3(1)	16.3
1937	3.9	15.5	3.3(1)	15.4	4.9	17.4	2.7(1)	17.4
1938	3.9	15.8	3.6	16.2	5.1	17.6	3.3	18.1
1939	3.9	16.3	4.4	15.0	5.1	17.9	3.1	18.0
1940	3.9	17.2	3.8	16.5	5.1	18.5	3.5	18.0
1941	3.9	16.0	3.4	14.8	5.1	17.9	3.2	14.5
1942	3.7	15.9	3.8	17.4	5.0	17.6	3.4	16.1
1943	4.1	16.9	3.7	17.0	5.3	18.5	3.1	17.4
1944	4.1	16.9	4.4	19.0	5.3	19.1	3.3	17.9
1945	4.0	17.1	4.4	19.8	5.4	19.6	3.1	17.7
1946	4.0	17.0	4.6	19.5	5.4	19.4	3.0	16.3
1947	3.9	16.9	5.0	18.6	5.2	19.0	2.9	14.8

(1) Including bulls.

Lindsey the number varied between 17 and 18. Since 1939 the numbers in Kesteven have increased to 17 per 100 acres and the increase in Lindsey is slightly larger. Table 10 shows the numbers of cows and of total cattle per 100 acres for the two counties and for the sample farms within the two Limestone areas.

The group of farms on the Kesteven Limestone have rather more cattle in relation to land area than is common for the county, while the Lindsey Limestone farms have a lower density of cattle than the county. A good deal of rearing and fattening is done on some but not on all the farms from which information was obtained. Yard feeding during the winter is very common.

The production of milk is of no great importance in either of the Limestone areas. In 1936 sales of milk from each group of farms accounted for less than two per cent of farm receipts. Since then the income from milk on the Kesteven group of farms has increased and in 1947 it was six times greater than in 1937 and 1938, and represented seven per cent of total sales. No important change has been shown in the relative importance of sales of milk from the Lindsey group. In both groups milk production was concentrated on a few farms. Other farms produced little or no milk, in some cases a few cows being maintained to supply the farmhouse and farm cottages and to rear calves.

TABLE 11.  
NUMBERS OF SHEEP PER 100 ACRES.

Year	Kesteven		Lindsey	
	County	Limestone (sample farms)	County	Limestone (sample farms)
1936	37.1	51.7	42.4	50.4
1937	38.4	66.9	44.3	53.4
1938	41.5	74.1	47.7	55.6
1939	40.5	62.7	48.1	50.4
1940	41.8	59.3	46.6	54.1
1941	32.7	67.5	39.7	47.9
1942	31.4	53.7	37.1	45.8
1943	28.9	38.7	36.1	36.9
1944	22.2	31.8	32.3	32.7
1945	21.7	18.9	31.3	24.6
1946	19.8	26.6	27.1	15.6
1947	17.2	17.8	23.6	11.9

In 1936 when the Farm Management Survey commenced, the numbers of sheep in both the counties of Kesteven and Lindsey were lower than they had been at any time since 1921 when the statis-



tics were first given separately for each of the divisions of Lincolnshire. But after 1936 they began to increase, and by the outbreak of war the number had risen by more than 10 per cent. As previously noted, sheep farming on lowland farms was discouraged after the outbreak of war, and the annual statistics for each year following 1940 show a steady decline in numbers.

Table 11 shows that sheep are more important in Lindsey than in Kesteven. In 1940 Lindsey had 47 and Kesteven 42 sheep per 100 acres of crops and grass. The collected information, however, shows that the farms on the Kesteven Limestone had more sheep per 100 acres than did those on the Lindsey Limestone. In 1938 the Kesteven group had 74 sheep per 100 acres of which 31 were ewes and rams, and the Lindsey group had 56 sheep per 100 acres consisting of 30 ewes and rams and 26 other sheep. The number of ewes decreased at about the same rate in both groups, but that of other classes of sheep declined more rapidly in the Kesteven Limestone than in the Lindsey Limestone area. The severe weather conditions during the winter 1946-47 caused heavy losses in sheep. Ewe flocks were reduced by deaths due to snowstorms and floods and the yield of lambs in 1947 from the surviving ewes was very low. In the Limestone areas some losses in ewes and in lambs were experienced but the reduction in the supply of store sheep from the uplands was a more important factor affecting the numbers of sheep on the Limestone farms in 1947.

Farmers are able to make fairly rapid adjustments to the numbers of pigs maintained and changes in the size of herds are, therefore, closely associated with the relationship between prices of fat pigs and costs of feeding stuffs. Farmers in both Kesteven and Lindsey have in general shown less interest in pigs than might have been expected considering the supplies of home grown grain and potatoes available. In the immediate pre-war years farmers in Kesteven had about nine and those in Lindsey nearly 13 pigs to every 100 acres of crops and grass. After 1940, however, drastic reductions are made in both rearing and fattening. Some increase in size of herds has been achieved in the last few years but they are still below those of the pre-war years.

The impression gained from an examination of the collected information is that farmers are not greatly interested in poultry. The numbers on the farms in the two samples are, relatively to land area, very much below those for their respective counties. But the

TABLE 12.  
NUMBERS OF PIGS AND POULTRY PER 100 ACRES.

Year	Pigs				Poultry			
	Kesteven		Lindsey		Kesteven		Lindsey	
	County	Limestone (sample farms)	County	Limestone (sample farms)	County	Limestone (sample farms)	County	Limestone (sample farms)
1936	10.0	4.5	14.4	20.9	148.0	68.1	235.8	84.5
1937	9.3	9.5	13.0	20.8	136.3	47.2	210.1	80.1
1938	8.9	14.9	12.4	18.2	130.8	57.8	208.1	43.1
1939	9.2	10.5	12.7	10.6	129.3	53.4	214.3	73.4
1940	8.9	9.8	11.8	7.4	127.9	57.1	210.2	71.1
1941	4.6	5.8	6.9	4.6	108.4	43.7	156.7	33.7
1942	4.4	6.4	5.8	3.9	90.8	26.1	126.8	28.7
1943	3.5	5.9	5.0	3.5	74.4	22.9	104.0	25.2
1944	4.0	7.0	5.7	4.5	80.8	26.8	115.0	27.9
1945	5.3	8.8	6.7	5.2	94.0	36.0	131.7	25.3
1946	4.2	5.6	5.6	4.9	104.3	36.0	143.1	30.6
1947	3.5	9.1	4.5	4.7	111.2	40.0	148.2	28.9

TABLE 13.  
NUMBERS OF HORSES PER 1,000 ACRES.

Year	Work horses				Other horses			
	Kesteven		Lindsey		Kesteven		Lindsey	
	County	Limestone (sample farms)	County	Limestone (sample farms)	County	Limestone (sample farms)	County	Limestone (sample farms)
1936	21	21	24	23	9	1	10	5
1937	21	19	24	21	9	6	10	7
1938	21	19	24	21	9	5	9	9
1939	21	16	23	21	8	5	10	8
1940	20	17	23	21	8	4	9	6
1941	20	16	23	19	7	5	8	6
1942	17	15	20	21	9	4	10	8
1943	19	16	22	20	6	4	7	7
1944	17	14	20	19	6	3	8	7
1945	16	13	19	19	6	3	8	4
1946	16	11	18	17	6	2	7	5
1947	14	10	17	16	5	1	6	3

farms in each of the samples are larger than the majority in their respective counties and it is likely that the number of poultry per unit of land on these farms is comparable to that generally found on farms of the same size in their respective counties.

One of the consequences of mechanisation has been the decline in both the use of horses in agriculture and in the breeding of horses for town use. The change has had two main consequences. In the first place it has enabled farmers to secure some increase in the physical efficiency of farm production. Secondly it has released land, previously required to produce feed for horses, for the production of crops for sale or for feed to other classes of livestock. In England and Wales the number of work horses on farms has declined since 1936 by about a third.

Table 13 gives the numbers of work horses and other horses in Kesteven and Lindsey counties and in the respective Limestone areas. In 1936, Kesteven had 30 and Lindsey 34 horses to every 1,000 acres of crops and grass and 21 of the former and 24 of the latter were work horses employed in agriculture. By 1947 the total number of horses in the two counties had fallen to 19 and 23 per 1,000 acres respectively and the numbers of work horses fell to 14 and 17 respectively.

The two Limestone areas have about the same relative density of work horses as their respective counties and they show the same important decline.

## CHAPTER IV.

### TENANT'S CAPITAL.

The provision of tenant's capital is highly dependent upon the individual savings of farmers. No general appeal is made to the public for capital as is the case in other industries, where businesses tend to be capitalised under the joint stock principle. Farmers obtain some of their capital requirements by means of private loans and mortgages, by bank overdrafts and delays in settling outstanding accounts. Small farmers frequently obtain loans on definite security, such as buying tractors on the hire purchase system and livestock on the same system or by loans from dealers. But an important characteristic of agriculture is its general tendency to be under capitalised and to have out of date equipment. Although many farmers commencing business on their own account take a farm of the type and size which has a capital requirement within the limits of their own resources, a large number start farming with inadequate capital to equip and operate their farms efficiently and hope to be able to use their profits to increase the equipment.

The lack of capital in agriculture is due in part to farmers' preference for investing some of their money outside the industry, in part to the reluctance of some older farmers to borrow capital and in part to the reluctance of lenders to loan capital on long term for investment in tenant's stock and equipment at rates of interest which farmers can afford to pay. Tenant farmers are in a particularly difficult position since they have no collateral to offer which is not itself subject to wide changes in market values.

For a long time now the level of rents of farms has been too low to provide landlords with sufficient income to maintain the buildings of their agricultural estates in good repair, and necessary improvements, additions and extensions have been neglected. Although rents have been rising since 1938 the increase has not been large, and the increase in costs of repairs has taken a far greater proportion of the rent. The landlord is left with little that he could re-invest in capital improvements and extensions. According to the recent White Paper<sup>(1)</sup> the landowner's share in the National Income is diminishing. Rents of land and buildings, both urban and rural, amounted to 8.5 per cent of the

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(1) National Income and Expenditure of the United Kingdom 1946 to 1948. Cmd. 7649. H.M.S.O.

National Income in 1938 but by 1948 this proportion had declined to 4.4 per cent. Only about one tenth of this rent was derived from agricultural property.

The lack of an adequate supply of capital was one of the reasons for the relative poverty of the agricultural industry in the inter-war years. Without capital farming cannot be efficiently mechanised and the necessary improvements to layout of farms, drainage and the electrification of farm buildings, farmhouses and cottages cannot be effected. Too often the farmer has been obliged to use worn, out-of-date and ill-adapted equipment because of his lack of capital and his inability to borrow money from other persons or institutions at interest charges which he can afford.

The amount of tenant's capital required for any particular farm depends upon its size and the type of farming. In the case of farms in the Limestone areas the amount required per 100 acres will be less than for some other areas within the counties of Kesteven and Lindsey where the farming is more intensive. Unfortunately, the available information does not show the total amount of capital which the farmers on the Limestone have invested in their farms much less the amount which would be required by a new entrant into the industry.

In the years 1936 to 1939 no attempt was made to collect information on the value of unsold or unconsumed crops on the recorded farms at the end of the year. The income from the sale of crops was adjusted to cover the value of sale crops produced in the financial year. As regards the feed crops it was assumed that in general stocks on hand did not vary greatly from year to year.

From 1940 onwards the returns contain statements of estimated values of unsold and unconsumed crops, of livestock and of implements and machinery on the farms at the beginning and end of each financial year.

In the case of new entrants into the scheme it was not always possible to obtain an initial opening valuation particularly in the case of small farmers who did not need to keep accounts for income tax purposes. These have been excluded from this section of the report. The valuations do not include anything for cultivations done in preparation for the following year's crops. Implements and machinery are included in the valuation at their depreciated original cost, that is at their original cost less the annual amounts written off as wear and tear allowances.

TABLE 14.  
FARM VALUATIONS.  
(Sample farms : £ per 100 acres).

Year	Crops		Livestock		Implements and machinery		Total	
	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
1936	(1)	(1)	327.5	523.8	165.8	178.6	493.3(2)	702.4(2)
1937	(1)	(1)	466.7	586.4	123.8	177.8	590.5(2)	764.2(2)
1938	(1)	(1)	452.8	497.3	129.6	148.4	582.4(2)	645.7(2)
1939	(1)	(1)	489.5	546.7	182.9	161.4	672.4(2)	708.1(2)
1940	379.4	676.1	525.1	581.8	202.2	179.4	1,106.7	1,437.3
1941	531.1	777.5	584.0	551.3	226.1	169.3	1,341.2	1,498.1
1942	596.9	958.3	594.3	614.6	271.1	227.2	1,462.3	1,800.1
1943	509.0	929.1	565.0	622.4	315.9	232.6	1,389.9	1,784.1
1944	455.7	782.6	592.9	606.5	372.2	268.3	1,420.8	1,657.4
1945	382.7	677.8	565.5	559.6	402.9	295.1	1,351.1	1,532.5
1946	501.6	817.4	633.9	516.8	463.7	334.6	1,599.2	1,668.8
1947	273.3	407.8	598.3	505.7	457.3	427.1	1,328.9	1,340.6

- (1) Not available.  
(2) Excluding crops.

The collected data do not include any statements on cash balances held by farmers or by banks for farmers. In the arable districts where a large part of the farm revenue is obtained from crops farmers have, for several weeks in the year, to expend large sums of money week by week on current outgoings whilst they have little or nothing coming in from the sale of farm produce. Farmers need to have, therefore, a large balance of cash with which to meet these outgoings between the spring sowings and the autumn harvests. In most cases the valuations were made in the spring when most of the sale crops had left farms, and the information provided shows the minimum amount of tenant's capital invested in farm assets. Valuations would be very much higher if they had been taken in the autumn before the sale of crops commenced and if the various items left out had been included. The chief value of the figures given in Table 14 lies in the variations from year to year.

The sample of records collected from the Kesteven Limestone area in 1940 showed that the valuations amounted to nearly £1,107 per 100 acres. The sample for 1946 showed a figure of £1,599 and that for 1947 a figure of £1,329 per 100 acres. In general the data from farms in the Lindsey Limestone area showed higher valuations per 100 acres than that for the Kesteven Limestone. The average valuation was £1,437 per 100 acres in 1940, £1,669 in 1946 and £1,341 in 1947. The reason for the marked decrease in the 1947 figures compared with those of 1946 was the low yield of crops in 1947 which followed the floods in the spring of 1947 and the drought conditions in the succeeding summer. This resulted in the farms being left with very low stocks of crops at the end of the farming year.

Table 15 provides comparative data on livestock valuations for each of the 12 years. There are no outstanding differences to be noted. Fluctuations in the yearly figures from each area are to some extent due to changes in the samples. The changes in the valuation of livestock need also to be considered in relation to changes in numbers as given in earlier tables.

The increase in the value per head of sheep on farms at the valuation dates was not sufficient to offset the substantial reductions in size of flocks and the average value of the flocks in 1947 was very much lower than that of the pre-war years. The reduction in numbers of horses has been partly offset by the increase in value per head, and the increase in market value of pigs and poultry has completely offset the reduction in their numbers.



TABLE 15.

VALUATION OF LIVESTOCK.  
(Sample farms : £ per 100 acres).

Year	Cattle		Sheep		Pigs and poultry		Horses	
	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
1936	117.6	213.2	135.5	149.6	21.9	76.2	52.5	84.8
1937	201.5	254.9	174.3	167.7	35.1	83.3	55.8	80.5
1938	192.9	230.3	145.6	136.4	61.2	61.7	53.1	68.9
1939	229.4	271.2	161.3	142.7	46.5	56.1	52.3	76.7
1940	262.8	289.4	157.7	176.1	50.1	45.2	54.5	71.1
1941	275.2	261.4	204.5	171.5	41.9	38.8	62.4	79.6
1942	310.1	295.1	170.9	179.3	43.0	34.5	70.3	105.7
1943	310.1	338.5	137.1	145.0	46.7	34.4	71.1	104.5
1944	338.3	331.7	139.9	130.0	50.6	39.8	64.1	105.0
1945	376.8	332.3	71.6	97.2	63.4	37.9	53.7	92.2
1946	408.6	326.8	113.5	61.2	68.5	47.5	43.3	81.3
1947	401.1	341.6	80.0	50.0	81.3	52.7	35.9	61.4

## CHAPTER V.

### FARM EXPENSES.

In the first year of the enquiry the total expenses of farms in the Kesteven Limestone area amounted to £574 and those of the Lindsey group amounted to £1,045 per 100 acres. Since then farm expenditure has steadily increased due in part to the increase in unit costs of all important items of farm expenditure and in part to the increase in the quantities of some items. As a result of the higher farm profits capital has been available for investment in more and better implements and other farm equipment, more labour has been employed and fertilisers have been more widely used. In 1947 the total farm expenses of the Kesteven farms were £1,934 and those of the Lindsey group £1,948 per 100 acres. The wide difference in expenses shown by the two groups in 1936 is due in part to the difference in the proportion of small farms in the samples. The Kesteven group had at first a large proportion of small family farms and most of the manual work on these farms was done by the occupiers and their wives and the cost of this labour is excluded from the expenses. After 1939, however, the sample was increased by the addition of more of the larger farms. It must also be remembered that before the war the Lindsey group of farms had the higher proportion of land under potatoes and sugar beet and these two crops are expensive in labour.

#### *Labour.*

The cost of labour, which includes an estimate of the value of work done by unpaid workers but nothing for manual work done by the farmers and their wives, is the most important single item of cost. During the period covered by this enquiry the minimum rate of weekly wages for an ordinary adult male worker has increased from 32s. 0d. to 90s. 0d. and on the Lindsey farms the increase in cost of labour per 100 acres is of the same order. The Kesteven farms, however, show a very much larger increase in cost per 100 acres but, as noted above, in the early years of the enquiry a high proportion of these farms were small and little hired labour was employed. In 1936 only eight out of the total of 15 farmers in this area employed full time hired workers. In 1939 the sample was greatly changed by the inclusion of larger farms employing hired workers, and 26 out of the sample of 35 farmers provided work for regular hired or family

TABLE 16.  
EXPENDITURE ON LABOUR.  
(Sample farms).

Year	Average of minimum rates for ordinary adult male workers	Cost of labour per 100 acres		Index of change in cost of labour		
		Kesteven Limestone	Lindsey Limestone	Wage rates	Kesteven Limestone	Lindsey Limestone
	s. d.	£	£			
1936	31 11	157.0	270.2	100	100	100
1937	32 6	158.0	263.5	102	101	98
1938	34 5	160.6	257.8	108	102	95
1939	34 6	209.8	249.0	108	134	92
1940	43 2	228.0	294.2	135	145	109
1941	49 0	270.8	330.8	154	172	122
1942	60 0	368.6	467.1	188	235	173
1943	60 2½	440.1	517.8	189	280	192
1944	65 0	463.3	589.4	204	295	218
1945	69 2	570.2	616.7	217	363	228
1946	74 7	649.1	620.3	234	413	230
1947	83 4	674.8	722.5	261	430	267

workers. In no year has the Lindsey sample contained more than two farms which did not provide employment for regular hired and family workers. The farms in this group are larger; the farmers have less time for manual work which has, therefore, to be done by paid labour. However, the most important reason for the higher cost of labour on the Lindsey farms is the proportion of land under potatoes and sugar beet.

Table 16 shows the average minimum rate of wages and the cost of labour per 100 acres in each of the last 12 years. The general rate of farm wages went up slowly during the years from 1936 to 1939. Since 1939, however, considerable increases have been made. Between early 1936 and September 1947 the minimum weekly wage of an ordinary adult male worker has increased by 161 per cent. The cost of labour on the Kesteven farms more than trebled between 1939 and 1947 while on the Lindsey farms the cost during the same period has almost trebled.

It is obvious from the table that the increase in the rate of wages was only one of the causes of the increased cost of labour after 1939. The need to increase the acreage under tillage crops necessarily meant more work and the extra labour needed was obtained partly by an increase in the numbers of regular workers employed, partly by an increase in the direct employment of casual workers by farmers and partly by an increase in the use of workers provided by private contractors and County War Agricultural Executive Committees.

It must also be noted that in recent years there has been some reduction in the length of the normal working week to which the minimum wage relates and farmers have been obliged to ask workers to do an increasing amount of overtime work at the higher rates of pay.

The available information on the employment of workers in these groups is limited to that of numbers of regular workers on the farm at the time the visits were made each year. With a small sample of farms these numbers tend to vary a great deal from year to year. In particular the information relating to any one class of worker may be very misleading since a farmer's judgement as to the distinction between men and youths and between regular and casual workers may vary from year to year.

Table 17, however, shows an increase in the total number of regular workers employed and in particular an increase in the

TABLE 17.  
CHANGES IN NUMBERS EMPLOYED.  
(Identical farms).

Year	Regular workers			Family workers			Farmer	Farmer's wife	Total male(1)	Total female(2)	Total all(3)	Cost of casual labour
	Men	Boys	Female	Men	Boys	Female						
Kesteven Limestone (15 farms)												
1939	54	1	—	—	—	—	13	1	55	—	69	£ 967
1940	43	1	—	—	1	—	13	1	45	—	59	1,198
1941	45	1	1	—	1	—	13	1	47	1	62	1,392
1942	40	4	4	1	1	—	13	1	46	4	64	2,202
1943	42	1	3	1	1	—	13	1	45	3	62	3,561
1944	45	—	7	—	1	1	13	3	46	8	70	3,375
1945	47	2	4	1	1	3	14	7	51	7	79	4,799
1946	39	7	3	1	4	3	14	10	51	6	81	6,679
1947	47	2	6	2	4	4	14	11	55	10	90	4,990
Lindsey Limestone (14 farms)												
1939	71	12	—	5	—	—	14	—	88	—	102	1,948
1940	73	7	—	5	—	—	14	—	85	—	99	2,227
1941	69	10	5	4	—	—	12	—	83	5	100	3,305
1942	76	13	8	3	—	—	12	—	92	8	112	3,004
1943	74	15	12	3	—	—	12	—	92	12	116	4,506
1944	69	17	10	5	—	5	13	2	91	15	121	5,451
1945	75	22	14	4	—	1	14	4	101	15	134	5,132
1946	94	7	10	4	2	2	14	5	107	12	138	2,835
1947	86	12	5	4	3	2	14	4	105	7	130	6,693

- (1) Excluding farmer.  
(2) Excluding farmer's wife.  
(3) Including farmer and wife.

employment of women and girls. In the two years 1939 and 1940 no women or girls were regularly employed, whereas in recent years they have accounted for about one eighth of the total number of hired workers. There has also been an increase in the number of men and boys.

In the early years of the enquiry the cost of labour represented about one quarter of the total of farm costs and now accounts for more than one third. Because of the importance of this item of cost it is interesting to examine the farm receipts per £100 expenditure on labour (see Table 18).

TABLE 18.  
FARM RECEIPTS PER £100 EXPENDITURE ON LABOUR.  
(Sample farms).

Year	Kesteven Limestone	Lindsey Limestone
	£	£
1936	416.6	451.9
1937	493.0	429.2
1938	477.0	363.5
1939	391.3	418.5
1940	560.1	476.2
1941	445.3	461.0
1942	478.8	396.5
1943	453.3	432.4
1944	363.0	354.4
1945	426.0	373.0
1946	322.1	342.6
1947	333.7	331.2

The figures show year to year differences due partly to changes in the sample of farms and partly to the effect of yearly variations in crop yields. But the more general downward trend is due to the relatively greater increase in the cost of labour. This trend is found in both groups.

#### *Rent.*

Farm rents have increased much more slowly and to a much smaller extent than most other items of farm costs. The statutory as well as the close personal relationships of landlord and tenant have greatly restricted the upward movement in rents, and reports from different parts of the country suggest that since 1939 rents have been increasing at the yearly rate of about one per cent. This, however, has not always been to the advantage of either landlord or tenant, the low level of rents has often meant that landlords have not obtained

from their estates sufficient income to maintain farm houses and buildings in good repair, much less to undertake improvements and extensions necessary for the modern requirements of man and beast. Landlords have been able to increase rents only at the end of a tenancy or, when agreed improvements and extensions are carried out, an increase in rent equal to five per cent of the capital cost can be made. Often landlords were unable to borrow the necessary capital at rates which would justify the expenditure and many tenants fearing that increased farm rents would not be justified have not agitated for capital improvements. During recent years shortage of materials has also been a factor restricting improvements and extensions.

The two samples of farms included in this report show that rents have increased by more than a quarter since 1939. The rents were fairly stable during the period 1936 to 1939, and the year to year differences for this period were due largely to changes in the sample. Information on rents in the Kesteven and Lindsey Limestone areas is given in the Appendix in Tables 3 and 4.

In the pre-war years it was generally reckoned that rent represented one tenth of the farm costs. The Lindsey Limestone group showed this relationship, but the rents of the Kesteven group represented a higher proportion. In both groups, however, there is a steady decline in the importance of rent as an item of farm cost due to the relatively greater increases in costs of other items of farm expenditure.

#### *Feeding Stuffs.*

In the pre-war years purchased feeding stuffs were the second most important item of farm expenditure. The Lindsey group of farms show an expenditure which before 1939 amounted to over £200 per 100 acres and in 1947, despite the higher prices, it amounted to about £60. The position as shown by the Kesteven sample is different, and the expenditure in 1947 was not greatly different from that of pre-war years. This group, however, showed lower expenditure on this item during the middle war years. The Kesteven farmers were able to maintain their expenditure on feeding stuffs due to the increase in their production of milk. The increase in milk sales meant a corresponding increase in their rations of purchased feeding stuffs.

TABLE 19.  
EXPENDITURE ON FEEDING STUFFS.  
(Sample farms).

Year	Kesteven Limestone		Lindsey Limestone	
	£ per 100 acres	% of total expenditure	£ per 100 acres	% of total expenditure
1936	75.2	13.1	215.6	20.6
1937	139.0	21.1	210.8	19.5
1938	181.4	25.3	220.4	23.5
1939	124.8	15.7	148.0	16.9
1940	197.8	20.4	211.0	19.2
1941	144.4	14.4	128.2	11.6
1942	101.8	8.0	87.4	6.3
1943	102.0	7.2	68.1	4.4
1944	110.3	7.3	69.3	4.3
1945	174.0	10.1	61.2	3.7
1946	154.8	8.2	63.8	3.6
1947	153.0	7.9	59.4	3.1

During recent years the State has subsidised feeding stuffs as an aid to the stabilisation of prices. Despite this the average price per ton of starch equivalent purchased by farmers has doubled since 1939. Before the Feeding Stuff (Prices) Order 1949 came into operation the estimated yearly cost of the subsidy was £66.5 million and it was stated in Parliament that the effect of the removal of the subsidy would be to increase the cost of feeding stuffs to farmers by £15 18s. 3d. per ton<sup>(1)</sup>. Under the new order which came into operation on the 1st April, 1949, the subsidy on feeding stuffs has been reduced by approximately 50 per cent and prices have increased accordingly. For example by July 1949 the price of dairy cakes and meals had risen by about £5 10s. 0d. per ton and that of flaked maize by about £8 per ton. The reduction in the subsidy has been made in order to bring prices of purchased feeding stuffs more in line with the costs of producing home grown concentrates and thereby to remove any disincentive against increased production of home grown foods.

The supplies of feeding stuffs have been rationed. For dairy herds the rations have been based on the proved sales of milk two months previously. For other livestock the quantities of feeding stuffs going to individual farmers have been related to numbers and classes of animals attached to each farm in 1939. Conditions governing the rationing scheme have been varied over the period of control but in the main the supplies of purchased foods have been made

(1) Hansard, (Written Answers). 24th September, 1948.



TABLE 20.

INCOME FROM LIVESTOCK PER £1 EXPENDITURE ON FEEDING STUFFS.  
(Sample farms).

Year	Kesteven Limestone			Lindsey Limestone		
	Income from livestock and their products	Expenditure on feeding stuffs	Income per £1 expenditure on feeding stuffs	Income from livestock and their products	Expenditure on feeding stuffs	Income per £1 expenditure on feeding stuffs
	£ per 100 acres			£ per 100 acres		
1936	289.7	75.2	£ 3.9	460.4	215.6	£ 2.1
1937	394.0	139.0	2.8	437.3	210.8	2.1
1938	415.7	181.4	2.3	413.3	220.4	1.9
1939	374.9	124.8	3.0	389.9	148.0	2.6
1940	520.8	197.8	2.6	535.6	211.0	2.5
1941	562.8	144.4	3.9	502.8	128.2	3.9
1942	596.9	101.8	5.9	454.7	87.4	5.2
1943	615.8	102.0	6.0	471.0	68.1	6.9
1944	590.8	110.3	5.4	468.1	69.3	6.8
1945	671.1	174.0	3.9	417.4	61.2	6.8
1946	601.4	154.8	3.9	509.9	63.8	8.0
1947	677.1	153.0	4.4	452.3	59.4	7.6

available only for a proportion of the requirements of dairy cows, calves, pigs and poultry. The numbers of pigs and poultry on most farms in the Kesteven and Lindsey Limestone areas are too small to qualify for supplies of rationed foods. Farmers have, however, been able to get coupons for purchased foods against their sales of seed oats and in more recent years against sales of barley.

The returns from the Kesteven Limestone farms show that in the years before the rationing of feeding stuffs became fully effective the sales of livestock and their products realised, each year, amounts varying between two and four times the yearly expenditure on feeding stuffs. At this time the Lindsey group of farmers purchased more feeding stuffs relative to the sale value of livestock and livestock products. After the introduction of the rationing scheme farmers generally became more dependent upon home grown foods and the effect on the Limestone farms is seen in Table 20. It will be seen that apart from the three years 1942 to 1944 inclusive the relationship between expenditure on feeding stuffs by the Kesteven group of farmers and their income from livestock and livestock products underwent no important change. But the Lindsey group shows a very different story. The farmers in this group lost their supplies of purchased foods and made large reductions in their livestock enterprises. Before the war these farmers were selling £2 of livestock for every £1 expended on foods and now their sales amount to eight times their expenditure on foods.

*Seeds.*

TABLE 21.  
EXPENDITURE ON SEEDS.  
(Sample farms).

Year	£ per 100 acres of total area		£ per 100 acres of arable land	
	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
1936	26.1	53.0	40.4	73.3
1937	33.2	48.8	51.1	69.7
1938	25.0	32.1	38.1	48.0
1939	38.5	40.3	54.2	59.1
1940	41.2	63.9	58.0	90.5
1941	56.5	81.3	74.5	112.6
1942	87.3	123.5	114.3	165.8
1943	136.2	142.4	173.5	182.3
1944	109.2	149.8	135.8	190.1
1945	142.5	160.1	174.8	205.0
1946	108.7	137.5	136.7	176.7
1947	146.1	205.7	184.2	263.7

The increases in the acreage under tillage crops and in prices of seeds are shown clearly in the increased expenditure on farm seeds. The Kesteven Limestone farms show a fivefold and those on the Lindsey Limestone show a fourfold increase in expenditure on this item. In Table 21 the expenditure on seeds is given per 100 acres of total area and per 100 acres of arable land.

As would be expected the increase in cost per 100 acres of arable land is proportionately smaller than that of the cost per 100 acres of total area. In general the expenditure on seeds forms less than 10 per cent of the total farm expenditure.

### *Fertilisers.*

There has been a very large increase in the use of fertilisers during the years covered by the review. This is due in part to the increase in the area under tillage crops, but more particularly to the improved financial position of farming and to the subsidies on fertilisers. Before the war, farmers in the Limestone areas had great difficulty in meeting their farm expenses from farm receipts and there was a general reluctance to incur heavy expenditure on fertilisers. At this time any fertilisers used were devoted mainly to root crops.

However, there has been an increase in the use of fertilisers since the introduction of the subsidy in 1937 on lime and basic slag, which amounted to half the cost of lime and to a quarter the cost of basic slag. The increased farm profits after 1939 further encouraged the use of fertilisers, and their use spread to cereals and other crops. A high proportion of the fertilisers used during the war were of the nitrogenous type as these could be manufactured in this country and were thus in greater supply. The most recent information shows that lime subsidies in 1948 cost the state £4 million<sup>(1)</sup>. Prices of other fertilisers have been under strict control since 1940 and the increased costs of manufacture have been covered by subsidies which in a recent year cost £8.3 million.

During the first year of the war the general level of prices of fertilisers was increased by a third and subsequent increases during the years between 1940 and 1944 were only small. In 1947 the prices were 41 per cent above those of 1939. Table 22 shows the actual expenditure per 100 acres on fertilisers alongside the change in prices. During the first three years of the survey the accounts from the Kesteven

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(1) Hansard, (Written Answers). 27th July, 1948.

Limestone area showed an expenditure on fertilisers of just over 6s. 0d. per acre. Since 1938 this has increased steadily, and in the last two years exceeded 36s. 0d. per acre. The farmers on the Lindsey Limestone were spending, before the war, under £1 per acre on fertilisers and are now spending more than twice that amount. Since 1940 the main part of the increase in expenditure on fertilisers has been due to an increase in quantities used.

TABLE 22.  
EXPENDITURE ON FERTILISERS.

Year	Index of prices of fertilisers 1936-38 = 100	Expenditure per 100 acres.	
		Kesteven Limestone (sample farms)	Lindsey Limestone (sample farms)
1936	—	£ 32.0	£ 93.6
1937	99	32.5	91.0
1938	102	32.5	74.0
1939	102	52.6	86.7
1940	133	79.0	109.6
1941	138	78.6	147.1
1942	137	136.3	152.2
1943	138	142.3	171.8
1944	138	161.6	170.9
1945	138	159.8	176.3
1946	141	186.0	208.0
1947	144	181.6	212.3

Before the war the expenditure on fertilisers by the Kesteven Limestone farmers accounted for from five to seven per cent of total expenditure and it is now in the region of 10 per cent. The Lindsey group shows that fertilisers accounted for eight to nine per cent of total expenditure before the war and now accounts for 11 per cent.

#### *Implements.*

In the immediate pre-war years the estimated value of machinery and implements, as shown in the collected farm accounts, varied between £120 and £180 per 100 acres in the Kesteven Limestone area and between £150 and £180 in the Lindsey Limestone area. In 1947 the values were about £460 and £430 respectively.

During the years following 1939 farmers in both groups have increased their annual expenditure on new equipment. Before the war the farmers in the Kesteven sample spent annually less than £30 per 100 acres on machinery and now are spending almost £150.

The Lindsey sample showed an expenditure varying from £30 to £50 per 100 acres before the war, as compared with £150 in 1947.

The higher level of farm profits had provided farmers with the means and the incentive for increased expenditure on farm machinery and equipment. Yearly expenditure is not the same thing as yearly cost and the correct method of ascertaining the yearly cost of implements and machinery is a matter upon which opinions differ. There are those who argue that the yearly charge made against a business for maintenance of equipment should allow for changes in the costs of replacements. This view receives strong support from business people particularly during periods when costs of replacements are steadily rising. The principle, if accepted must operate during periods of rising and of falling prices. The accepted method of calculating wear and tear allowance makes no provision for charging against profits the cost of replacements but charges against the business an allowance calculated on the book value of implements and machinery at the beginning of the financial year. This allows no untaxed profits to be set aside to meet any increased costs of capital replacements. But in order to assist owners of businesses who have to incur capital expenditure on replacements or on extensions, an initial allowance is made as a deduction from profits in the year in which the expenditure occurs. This initial allowance was formerly 20 per cent on all capital expenditure but by the Finance Act, 1949, it was raised to 40 per cent.

In this study the annual cost of machinery depreciation and implements is calculated by the second method and the actual rates of yearly write-down used vary between one farm and another and are not necessarily the same as those allowed by Inspectors of Taxes. The intention is that the rates used should relate to actual conditions on individual farms, both as regards the yearly changes in the physical condition of machines and implements, and as regards the usefulness of the equipment for specific farm tasks. Changes in farm organisation and in systems of farming may cause specific items of farm equipment to become obsolete long before they have become worn out, and the intention is that the cost of equipment shall be reduced at a rate each year which ensures that its scrap value is reached by the time it is worn out or has become obsolete.

The yearly cost of machinery and implements as shown in these statements does not include the permitted initial allowance of 20 per cent on capital expenditure nor any necessary charge needed to cover the higher costs of replacement. When examining the

level of farm incomes it is, therefore, necessary to bear in mind the increased capital expenditure imposed on farmers as a result of rising prices and the urgent need to increase the capital equipment of farms.

The yearly cost of farm equipment consists of two parts; the yearly depreciation in its physical condition and the yearly expenditure on repairs and replacement of worn parts. Table 23 shows the yearly cost of these two items in the Kesteven and Lindsey Limestone areas.

TABLE 23.  
YEARLY COST OF FARM EQUIPMENT.  
(Sample farms: £ per 100 acres).

Year	Kesteven Limestone		Lindsey Limestone	
	Depreciation	Repairs(1)	Depreciation	Repairs(1)
1936	—	15	—	31
1937	28	16	18	32
1938	26	22	34	26
1939	26	31	18	27
1940	37	34	30	32
1941	38	38	29	48
1942	47	59	43	67
1943	56	73	45	85
1944	64	73	51	80
1945	68	90	56	100
1946	84	140	65	116
1947	84	138	80	123

(1) Includes all expenditure on farm repairs incurred by farmers.

The information for the pre-war years shows that the cost of machinery depreciation amounted to between 4s. 0d. and 6s. 0d. per acre and at the present time it amounts to about 16s. 0d. per acre.

In the early years of the survey no attempt was made to obtain separately the details of the cost of repairs of machinery and implements from those of other farm equipment. In the last five years, however, costs of repairs to machinery have been obtained and are shown in Table 24.

It will be seen that the costs are more or less evenly divided between the annual charge in respect of wear and tear and the costs of repairs and replacement of worn parts, and the cost which in 1943 was in the region of £1 per acre now exceeds 30s. 0d. It was generally assumed in the immediate pre-war years that the total cost of machinery and implements was equal to about one third of the farm rent; the

TABLE 24.  
 YEARLY COST OF FARM MACHINERY.  
 (Sample farms : £ per 100 acres).

Year	Kesteven Limestone			Lindsey Limestone		
	Depreciation	Repairs <sup>(1)</sup>	Total	Depreciation	Repairs <sup>(1)</sup>	Total
1943	56	47	103	45	50	95
1944	64	39	103	51	48	99
1945	68	58	126	56	62	118
1946	84	99	183	65	72	137
1947	84	86	170	80	80	160

(1) Relates only to repairs to farm implements and machinery.

two are now almost equal. Because of this increase in the cost of machinery it is necessary that farmers should give careful thought to changes in organisation which will enable fuller use to be made of each of the different items of farm equipment.

There is always a danger that farms will become over-mechanised and that machines will be lying idle for part of their potential working time. The increase in the initial allowance from 20 to 40 per cent of the purchased price will probably encourage further mechanisation. Before buying new equipment farmers should consider carefully whether the new machines would be fully utilised, and before making a purchase they should examine the relative economic advantages and disadvantages of hiring equipment from contractors.

#### *Livestock.*

Before 1939 the yearly expenditure on livestock by the Kesteven group of farmers represented about 17 per cent of their total farm expenditure. That incurred by the Lindsey group was in all but one year relatively less important. In both groups purchases of cattle represented the most important part of the total expenditure on livestock.

There has been some increase in farm expenditure on livestock but it is less important than the increase in prices thus indicating that farmers have, in recent years, been buying less stock. In the last two years the purchases have accounted for less than 10 per cent of farm expenditure.

This decline in purchases was due to the lack of feeding stuffs. With the shortage of imported feeding stuffs farmers became more dependent upon home produced feed ; there was increased depend-

TABLE 25.  
EXPENDITURE ON ALL CLASSES OF LIVESTOCK.  
(Sample farms).

Year	Kesteven Limestone		Lindsey Limestone	
	£ per 100 acres	% of total expenditure	£ per 100 acres	% of total expenditure
1936	94.9	16.6	156.3	14.9
1937	112.5	17.0	200.8	18.7
1938	121.7	17.0	115.6	12.2
1939	122.3	15.4	96.9	11.2
1940	154.7	15.9	111.0	10.1
1941	158.0	15.9	111.4	10.0
1942	188.6	14.8	162.3	11.6
1943	154.4	11.0	194.2	12.6
1944	187.5	12.5	168.5	10.5
1945	176.0	10.2	132.7	7.8
1946	163.8	8.7	137.0	7.8
1947	132.2	6.9	121.4	6.2

ence upon bulky foods with the result that cattle took longer to fatten and the actual turnover of cattle was lower. A very high degree of interdependence between crops and livestock exists in the Limestone areas, and the effect of any change in numbers or management of livestock may affect the maintenance of soil fertility. The increased dependence of cattle upon home grown foods may cause no reduction in the amount of farmyard manure produced, but the absence of an adequate supply of high quality concentrates for feeding to cattle will cause a serious reduction in the quality of the manure.

Some trading in livestock within each of the two areas is done by farmers, but the majority of expenditure on livestock relates to store cattle and sheep purchased in the autumn from outside these areas; the cattle for yard feeding and fattening and the sheep for folding on roots and green fodder crops.

The main incentive for maintaining cattle on many of these farms has been the need to convert straw into farmyard manure. But cattle fitted into the farming system, they utilised labour during the winter months when demand by other enterprises was low, and they consumed the oat and barley straw which would otherwise be wasted. It is probably true that on the basis of full costings cattle failed to show any profit but it cannot be doubted that they did in fact make, indirectly, an important contribution to the farm profits.

Farmers have in recent years reduced the numbers of store stock purchased and as a consequence the increase in total expenditure



TABLE 26.  
EXPENDITURE ON LIVESTOCK.  
(Sample farms).

Year	Cattle			Sheep			Other livestock	
	Index of prices of store cattle 1927-29 = 100	Expenditure in £ per 100 acres		Index of prices of store sheep 1927-29 = 100	Expenditure in £ per 100 acres		Expenditure in £ per 100 acres	
		Kesteven Limestone	Lindsey Limestone		Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
1936	78	52.6	84.3	76	29.1	51.3	13.2	20.7
1937	91	48.2	117.7	84	48.6	49.1	15.7	34.0
1938	92	48.9	69.4	66	57.4	30.4	15.4	15.8
1939	95	67.2	57.5	70	38.4	22.5	16.7	16.9
1940	111	69.7	59.3	81	68.2	32.1	16.8	19.6
1941	129	57.7	51.1	97	82.0	43.1	18.3	17.2
1942	138	106.1	77.6	110	65.4	49.9	17.1	34.8
1943	142	72.1	120.3	116	63.7	36.7	18.6	37.2
1944	147	97.9	103.5	126	50.9	34.7	38.7	30.3
1945	145	101.4	106.6	136	45.4	5.6	29.2	20.5
1946	157	96.3	103.9	140	54.2	12.0	13.3	21.1
1947	171	80.7	85.9	158	25.1	9.8	26.4	25.7

is less than the increase in price. Prices of livestock have more than doubled since 1936 and the expenditure on cattle by farmers in the Kesteven group in 1947 was only half as much again as that shown for 1936 and the Lindsey group shows no important change in the amount of expenditure.

The Kesteven Limestone farmers incurred higher comparative expenditure on sheep during the period covered by the enquiry. They increased their expenditure on sheep during the early war years but since 1941 it has been declining. Similarly since 1942 the Lindsey farmers have been steadily reducing their purchases of sheep. This decrease in expenditure on sheep has occurred despite the fact that the price of store sheep has increased to more than double its 1936 level. This trend denoted an important decrease in the numbers of sheep in the Limestone areas. This decrease has been due in part to the decline in the area of pasture available, and in part to the fact that farmers have increased their acreage under potatoes and sugar beet whilst decreasing their acreage under other root crops, and not all the farmers fold sheep on the sugar beet tops. The number of sheep has declined because the fodder crop acreage has had to give way to cash crops necessary for human consumption.

#### *Miscellaneous Expenses.*

In addition to the main items of expenditure noted above, there are many others which now amount to about 12 per cent of the total expenditure. In the immediate pre-war years the cost of these miscellaneous items on the Kesteven farms amounted to just over 10s. 0d. per acre and the sample for 1947 shows a cost of just under 50s. 0d. per acre. On the Lindsey farms these miscellaneous costs have not increased quite so much. In the pre-war years the cost was between 14s. 0d. and 16s. 0d. per acre as compared with just over £2 in 1947.

#### *Summary of Farm Expenditure.*

The outstanding feature of the period surveyed is the very great increase that has taken place in expenditure on labour, machinery, seeds and fertilisers made possible by the increase in farm profits. The need to increase the acreage under crops for sale inevitably resulted in an increase in expenditure as the labour requirements per acre are greater for crops than for livestock. The increased acreage of crops

required greater expenditure on seeds, and the amount expended on fertilisers also increased due partly to the increase in price but mainly to the increase in quantities used. The period was one in which horses have been steadily replaced by tractors and motor transport, this trend being partly responsible for the increase in expenditure on machinery. The increase in the acreage under sale crops has resulted in a decrease in the output of fat cattle and sheep. The farms have become more self contained and are now less dependent upon outside supplies of feeding stuffs and store livestock. Despite the decline in numbers of animals purchased, the expenditure on livestock has increased as a result of the higher prices. Feeding stuffs expenditure has remained fairly stable, the higher price counteracting the decrease in amounts purchased. Rents have only increased slowly and this was not a real advantage to the tenant farmer since landowners were not acquiring enough capital to maintain equipment and carry out improvements.

Between 1936 and 1947 total expenses per 100 acres nearly trebled in the Kesteven Limestone and nearly doubled in the Lindsey Limestone area. In 1936 total expenses for the Lindsey group were double those for the Kesteven group but now the two figures are nearly equal. The discrepancy in the early years was due to the fact that the Lindsey sample contained larger farms than the Kesteven sample.

## CHAPTER VI.

### FARM RECEIPTS.

As previously mentioned the increases in farm receipts are due, mainly, to increases in prices of farm produce, and Table 27 shows the changes in farm prices alongside changes in total sales per 100 acres from farms in the two Limestone areas.

TABLE 27.  
PRICES AND SALES OF FARM PRODUCE.

Year	General index of farm prices 1927-29 = 100	Kesteven Limestone		Lindsey Limestone	
		Sales (sample farms)		Sales (sample farms)	
		£ per 100 acres	Index	£ per 100 acres	Index
1936	83	654	100	1,221	100
1937	90½	779	119	1,131	93
1938	90½	766	117	937	77
1939	90½	821	126	1,042	85
1940	125	1,277	195	1,401	115
1941	150½	1,206	184	1,525	125
1942	161	1,765	271	1,852	152
1943	163	1,995	305	2,239	183
1944	169	1,682	257	2,089	171
1945	172½	2,429	371	2,300	188
1946	183	2,091	320	2,125	174
1947	213(1)	2,252	344	2,393	196

(1) Provisional.

Close measurements of changes in farm receipts should not be made from these figures because the samples are small and are affected by changes in composition which occurred in the early years of the enquiry. In the early years the sample of farms from the Kesteven Limestone showed very low receipts per 100 acres; they were very much lower than those of the Lindsey group of farms. But since 1940 the sales from the two groups have been more comparable.

The Lindsey group of farms were in general situated on better class land and the occupiers were able to plant fairly large areas with potatoes and sugar beet. This difference in the quality of the land is the main reason for the higher receipts per 100 acres shown by this group as compared with the receipts from the Kesteven group. Income from potatoes and sugar beet in the immediate pre-war years accounted

TABLE 28.

PERCENTAGE DISTRIBUTION OF FARM RECEIPTS.  
(Sample farms).

Year	Kesteven Limestone				Lindsey Limestone			
	Wheat and barley	Potatoes and sugar beet	Other crops	Livestock and their products	Wheat and barley	Potatoes and sugar beet	Other crops	Livestock and their products
	%	%	%	%	%	%	%	%
1936	32.2	19.2	4.4	44.2	16.0	42.6	3.8	37.6
1937	32.0	10.9	6.4	50.7	17.6	39.3	4.4	38.7
1938	29.7	9.6	6.5	54.2	16.0	34.7	5.2	44.1
1939	36.0	10.7	7.6	45.7	24.6	32.0	6.0	37.4
1940	39.5	12.0	7.9	40.6	21.5	35.2	5.0	38.3
1941	34.2	11.3	7.9	46.6	20.0	40.9	6.3	32.8
1942	44.7	13.9	8.0	33.4	24.1	40.9	10.4	24.6
1943	43.6	16.2	9.2	31.0	26.3	41.9	10.8	21.0
1944	34.4	20.3	10.2	35.1	27.5	41.9	8.2	22.4
1945	42.0	20.1	10.4	27.5	25.6	47.6	8.7	18.1
1946	32.1	26.2	12.9	28.8	22.9	45.6	7.5	24.0
1947	29.7	28.0	12.2	30.1	26.5	44.8	9.9	18.8

for between one third and two fifths of the total receipts from the Lindsey farms and since 1940 more than two fifths of the total income has been obtained from these two crops. Sales of wheat and barley accounted for one sixth of the pre-war income as compared with about one quarter at the present time. Receipts from the sale of livestock and their products have declined in importance from between 38 and 44 per cent in the pre-war years to between 18 and 24 per cent in the three years 1945 to 1947.

The information from the Kesteven Limestone area shows that in the pre-war years the income from potatoes and sugar beet was small and varied greatly in importance; in 1938 it represented less than one tenth of the total income. Information from farms in this area in the last two years shows that these two crops have provided more than one quarter of the farm income. The barley crop is much more important here than in the Lindsey Limestone area. In the pre-war years wheat and barley provided just under one third of the total farm receipts. After 1939 these two crops increased in importance and in the middle war years they contributed more than two fifths of the total farm income. The Kesteven group of farmers have generally obtained a higher proportion of their income from livestock and livestock products than have farmers in the Lindsey Limestone area and the former obtained in 1937 and 1938 more than half their income from these sources.

Table 28 shows the percentage distribution of receipts from the main groups of items of farm produce. Full details of the sources of receipts and their relative importance are given in the Appendix in Tables 7 to 10 inclusive.

### *Crops.*

The important sale crops in the Lincolnshire Limestone areas are wheat, barley, potatoes and sugar beet. In 1936 these crops accounted for 43 per cent of the cultivated land attached to the Kesteven group and for 49 per cent of that attached to the Lindsey group of farms. The data for 1947 show that the proportions of cultivated land occupied by these four crops were 47 and 51 per cent respectively.

Table 29 shows the estimated yield per acre of these four crops for the Kesteven and Lindsey Limestone areas, for their respect-

ive counties and for England and Wales. From this it will be seen that the average yield of wheat and potatoes on the Limestone is lower than that for the counties or for England and Wales whilst the yield of barley is higher. The yield of sugar beet is higher than that for England and Wales. No other important cash crops are grown, and most of the remaining tillage area is planted with oats and root crops for stock feed.

TABLE 29.  
ESTIMATED YIELD PER ACRE OF WHEAT, BARLEY, POTATOES  
AND SUGAR BEET.

Area	Average of years	Wheat	Barley	Potatoes	Sugar beet
		cwts.	cwts.	tons	tons
Kesteven Limestone	1936-47	17.8	17.8	6.8	9.6
Lindsey Limestone	1936-47	17.2	17.6	6.6	9.6
Kesteven County	1934-43	19.2	16.1	7.9	(1)
Lindsey County	1934-43	18.6	17.1	7.5	(1)
England and Wales	1934-43	18.5	16.7	7.0	9.2

(1) Not available.

*Wheat.* The soils of the Limestone areas are less suitable for wheat production than the heavier soils found in Kesteven and Lindsey but the financial assistance given to wheat growing under the Wheat Act, 1932, encouraged farmers on these thin soils as well as those elsewhere to increase their wheat acreage which after 1932 was increased at the expense of barley. Between 1932 and 1933 the wheat acreage in the county of Kesteven had risen by 13,000 acres whilst the barley acreage had fallen by 12,000 acres. Similarly in Lindsey the wheat acreage increased by 28,000 acres and that of barley fell by 19,000 acres. The same sort of change occurred in the Limestone areas. The records show that in the immediate pre-war years income from the sale of wheat accounted for between one eighth and one ninth of the total farm income. Allowing for year to year fluctuations in the acreage sown with wheat the information from the Kesteven area shows no important change in wheat acreage during the period between 1936 and 1947, and the decline in wheat acreage shown by the Lindsey Limestone farms may have been due in part to changes in the sample. Appendix Tables 9 and 10 show for the two groups the importance of income from the sale of wheat. Table 30 shows returns per acre of wheat grown alongside indices of prices and yields per acre. From this it will be

TABLE 30.  
 YIELDS AND RECEIPTS PER ACRE OF WHEAT GROWN.  
 (Sample farms).

Year	Index of prices of wheat 1927-29 = 100	Kesteven Limestone			Lindsey Limestone		
		Acreage of wheat per farm	Yields per acre grown	Receipts per acre grown	Acreage of wheat per farm	Yields per acre grown	Receipts per acre grown
1936	91	12.8	12.6	7.0	66.4	15.7	7.6
1937	96	26.6	17.7	8.3	59.8	17.4	7.4
1938	94	28.4	20.6	6.9	57.1	20.5	6.1
1939	98	36.2	16.9	8.0	53.8	17.3	9.8
1940	120	25.4	15.4	15.5	43.7	13.2	11.2
1941	140	19.5	14.6	10.1	43.2	14.9	8.8
1942	154	21.0	20.1	12.8	38.6	18.6	11.7
1943	171	34.2	19.9	17.2	48.6	18.6	14.4
1944	183	27.2	19.0	14.2	46.5	18.7	17.2
1945	190(1)	18.0	19.4	21.9	38.5	16.6	20.0
1946	180(1)	14.7	25.9	22.2	43.0	20.4	13.0
1947	191(1)	21.8	11.0	11.9	52.9	12.8	15.1

(1) Provisional.



seen that the price of wheat doubled between 1936 and 1947, but during this period the receipts per acre were very variable.

In examining the receipts per acre of crop grown it is necessary to take into account both the yield per acre and the price per cwt. It must also be noted that since 1939 the receipts per acre relate to sales of wheat during the particular year and in some years the amount of grain sold may be more, in other years it may be less than the quantities produced in the respective year. Generally there will be unthreshed grain on some farms at the end of the financial year and stocks of unthreshed grain at the end of the financial year vary greatly from year to year. No adjustments have been made for variations between stocks of grain on the farm at the beginning and the end of the financial year. Another point to remember is that in the pre-war years farmers were under no obligation to sell their wheat, and the proportion of the total crop sold probably varied a great deal from year to year.

Starting with the 1940 crop farmers were obliged to sell their wheat to registered merchants. They were allowed to retain wheat required for seed, to retain tailings and screenings and to retain for stock feed any wheat certified as non-millable. The certifying authority could, however, issue an instruction that non-millable wheat should not be used for feeding to livestock without the consent of the appropriate County War Agricultural Executive Committee. The essential point is that the proportion of the total crop represented by tailings and non-millable wheat varied from year to year, and this together with variations in stocks on hand accounts for discrepancies between annual yields, prices and returns per acre.

*Barley.* In both the Kesteven and Lindsey Limestone areas the income from the sale of barley has increased considerably due mainly to the great improvement in the price of barley. In 1942 barley sold at more than four times the price received in 1936. During the early war years the price of malting barley was uncontrolled and this accounts for the very large increase in market value. Barley was the most important cash crop on the thin Limestone soils and the high prices obtained enabled the farmers who in the pre-war years had experienced extremely difficult financial conditions, to secure the capital necessary for improving the productivity of their land. Whether intentional or not the high price was an incentive to farmers to invest capital in improving the fertility of their soil. Since 1943 the price has

TABLE 31.  
YIELDS AND RECEIPTS PER ACRE OF BARLEY GROWN.  
(Sample farms).

Year	Index of prices of barley 1927-29 = 100	Kesteven Limestone			Lindsey Limestone		
		Acreage of barley per farm	Yield per acre grown	Receipts per acre grown	Acreage of barley per farm	Yield per acre grown	Receipts per acre grown
			cwts.	£		cwts.	£
1936	86	25.9	14.4	6.5	26.7	16.7	5.0
1937	109	35.9	14.2	8.4	27.1	16.1	9.6
1938	84	34.5	20.2	7.3	29.7	20.8	4.2
1939	105	52.8	19.8	9.2	24.8	19.3	9.2
1940	180	44.9	14.6	13.9	37.4	13.8	9.5
1941	251	54.1	13.2	12.1	37.4	14.1	15.2
1942	354	44.6	20.4	30.2	30.9	18.6	24.2
1943	273	45.3	20.8	28.3	33.0	18.2	25.6
1944	236	49.6	17.3	17.2	35.7	17.9	22.1
1945	225	54.2	22.0	29.8	48.6	19.9	20.0
1946	223	55.5	18.7	19.6	52.2	19.7	17.5
1947	219	55.7	16.9	20.8	50.0	15.5	23.3

been lower but has still been relatively higher than that of wheat and has acted as a strong incentive to farmers to increase the acreage sown. The increase would, however, have been very much greater but for the fact that the County War Agricultural Executive Committees exercised control over acreages sown.

The Kesteven group of farmers had a higher proportion of their land under barley and, over the period covered by the survey, the proportion varied from 17 to 28 per cent of the total area. Before the war about one twelfth of the land attached to the recorded farms on the Lindsey Limestone was sown with barley. Since 1939 the proportion has increased to about one sixth.

Yields of barley have been widely variable during the twelve years. They were low in 1936 and 1937 and in 1940, 1941 and 1947. Good yields were obtained in 1938 and, in the case of the Kesteven farms, in 1942, 1943 and 1945.

Before the introduction of controls on the sale of grain all barley of malting quality was sold and, in general, the rest was retained on the farms for livestock. After the controls came into operation farmers had to offer all their barley for sale. As with wheat, variations in the stocks of grain unsold at the valuation dates affect the receipts per acre of crop grown as shown in Table 31.

In 1942 both yields and prices were exceptionally good and the sales of barley in that year amounted to £30 per acre grown by the Kesteven Limestone farmers and to £24 per acre of crops grown by the Lindsey group of farmers. In 1947 yields were low and the average price realised by the crop was lower than in any year since 1940, but farmers, particularly those on the Lindsey Limestone, sold in 1947 more grain than was produced in that year and the stocks of grain unsold at the end of the financial year were very much lower than at the beginning of the year.

*Potatoes.* The two groups of accounts show, for the pre-war years, marked differences in the importance of the potato crops. The Kesteven group of farmers had less than two per cent of their land under potatoes and the income from the crop in the pre-war years represented less than four per cent of total farm income. In contrast the Lindsey group had each year between nine and 12 per cent of land under potatoes and between one fifth and three tenths of the total receipts came from this crop.

After the outbreak of war the Kesteven farmers made the larger increase in land under potatoes. In 1939 the group had average receipts from this crop amounting to £28 per 100 acres of all land farmed, in 1943 it amounted to £129 and in 1947 to £267 per 100 acres. In 1936 the income from potatoes obtained by the Lindsey group was £362 per 100 acres and in 1939 it was £217. After 1939 the receipts increased each year and in 1947 amounted to nearly £738 per 100 acres of total land. The income obtained by the Lindsey group of farmers from potatoes in 1947 was nearly three times as important as that obtained by the Kesteven group.

Table 32 shows that the acreage of potatoes on both groups of farms has been increased, the Kesteven group having doubled their acreage since 1939 and the Lindsey group having made an increase of nearly 50 per cent. Another important factor accounting for the increased income obtained from potatoes by the two groups of farmers over the years between 1936 and 1947 was the increase in unit values. The unit value of potatoes which takes account of the acreage payments was, in 1947, nearly 50 per cent higher than the average market price obtained in 1936 and more than double that obtained in 1938 and 1939. The price of potatoes in 1936 was comparatively high due to low yields that year, whilst in 1938 and 1939 the yield was higher resulting in a lower price.

The receipts per acre of potatoes grown by the Kesteven group in 1936 amounted to £10 while for the Lindsey group they amounted to £31. The reason for the very low income shown by the Kesteven group is that most of the potatoes produced on the small area planted were consumed on the farm and in the farmhouse. The Lindsey farmers grew larger acreages and had, therefore, potatoes to sell.

Yields varied considerably from year to year and were particularly low in 1947 after the severe weather conditions during the winter of 1946-47. Table 32 shows that the income from the sale of potatoes off the Kesteven farms has increased from just over £10 per acre of crop grown in 1936 to over £76 in 1947. The Lindsey group shows an increase from £31 to over £60 per acre of crop grown.

*Sugar Beet.* Before the war this crop accounted for from 10 to 12 per cent of the total receipts from the Lindsey group of farms and, in general, or less than 10 per cent of the receipts obtained from the Kesteven group. Before 1944 the Kesteven sample of farms showed

ABLE 32.  
YIELDS AND RECEIPTS PER ACRE OF POTATOES GROWN.  
(Sample farms).

Year	Index of prices of potatoes 1927-29 = 100	Kesteven Limestone			Lindsey Limestone		
		Acreage of potatoes per farm	Yield per acre grown	Receipts per acre grown	Acreage of potatoes per farm	Yield per acre grown	Receipts per acre grown
1936	122	.3	tons 5.9	£ 10.3	38.5	tons 5.4	£ 30.7
1937	120	.9	6.7	27.3	36.0	6.3	31.1
1938	87	1.6	6.5	22.0	27.1	6.5	26.8
1939	82	3.4	8.3	21.7	26.0	6.1	24.7
1940	108	2.8	7.8	42.3	23.2	9.0	35.4
1941	142	2.4	7.5	33.7	30.5	7.1	47.5
1942	147	3.6	6.1	41.8	28.7	7.3	49.8
1943	150	5.2	6.6	53.7	31.3	5.9	52.8
1944	151	5.2	6.0	43.2	37.2	6.0	47.9
1945	157(1)	5.6	7.6	47.6	38.8	7.7	58.9
1946	165(1)	6.6	7.4	49.0	38.4	6.7	52.1
1947	181(1)	7.3	5.1	76.2	38.0	4.8	60.5

(1) Provisional.

TABLE 33.

YIELDS AND RECEIPTS PER ACRE OF SUGAR BEET GROWN.  
(Sample farms).

Year	Index of prices of sugar beet 1927-29 = 100	Kesteven Limestone			Lindsey Limestone		
		Acreage of sugar beet per farm	Yield per acre grown	Return per acre grown	Acreage of sugar beet per farm	Yield per acre grown	Return per acre grown
1936	74	12.8	tons 8.1	£ 11.7	27.9	tons 10.3	£ 18.3
1937	78	8.4	7.5	18.6	22.2	9.9	19.7
1938	86	5.8	6.6	18.5	17.4	7.9	17.2
1939	93	8.8	11.6	17.7	19.0	10.5	18.2
1940	122	5.9	9.9	32.5	17.0	9.9	32.6
1941	127	6.9	11.3	27.9	20.5	9.4	24.1
1942	161	9.4	10.4	37.9	17.7	9.2	34.1
1943	159	11.9	9.0	35.6	16.3	9.7	49.0
1944	152	15.1	8.5	34.2	19.2	8.4	34.0
1945	167	14.8	10.3	46.6	18.4	10.9	51.0
1946	170	17.9	11.2	46.0	19.7	10.1	47.5
1947	208	15.4	8.5	50.0	18.9	8.5	54.5

the lower, but for 1944 and subsequent years, they have had the higher proportion of land under this crop. In 1947 the sugar beet crops on the Kesteven farms yielded £362 and those on the Lindsey farms £333 per 100 acres of all land farmed.

In the early years of the investigation the prices paid for sugar beet were well below those ruling during the years 1927-29 but between 1939 and 1942 they nearly doubled. After 1942 no further increase occurred until 1946 and the price in 1947 was more than double that obtained in 1939.

Table 33 shows for each of the years the relationship between prices, yields and returns per acre of sugar beet grown. In the pre-war years the returns varied between £12 and £19 per acre grown in the Kesteven area and £17 and £20 in the Lindsey area. In each of the three years 1945 to 1947 inclusive it varied between £46 and £50 for the Kesteven group and between £48 and £55 per acre for the Lindsey group.

The table does not show the yearly variations in the sugar content of beet, a factor which also had an important influence on the returns per acre. The relatively low returns received from the 1941 crop were due to the low sugar content. The information in the table also suggests that in 1943 the beet from the Kesteven group of farms had a low sugar content. In the following year both groups showed low yields and low returns per acre.

#### *Livestock.*

The number of livestock in the Limestone areas was reduced during the war years due to the reduction in the quantities of purchased feeding stuffs available. Although the number of store cattle on the Limestone farms was not greatly reduced it had to be retained for longer periods since cattle took longer to fatten. This inevitably meant a smaller turnover of cattle. The number of pigs was reduced rapidly owing to the shortage of feeding stuffs. The decline in available supplies of purchased feeding stuffs could have been offset by increased production of home grown concentrates, but farmers generally considered it more profitable to use the land for producing cash crops.

The Kesteven group of farmers obtained about the same amount of income from cattle as did farmers in the Lindsey Limestone

area, but they obtained larger comparative amounts from sheep and wool. They also obtained more from pigs. Neither poultry nor horses are important sources of farm income, and often poultry are maintained only to provide produce for the farmhouse. The rearing of horses for sale is rapidly disappearing.

The relationship between annual purchases and sales of cattle is variable but the information from both areas shows that in most years the income from sales has been two to three times greater than expenditure on purchases. As regards sheep, however, Table 34 shows widely variable relationships between expenditure on and income from sheep. In both areas the number of sheep maintained has been reduced and income from sheep has barely been maintained. During the years between 1936 and 1944 expenditure on sheep by the Lindsey group showed only small changes, but in the last three years farmers have made only small purchases. The Kesteven group on the other hand have made some reduction in numbers purchased but in general the total expenditure has tended to increase. This accounts for the wide differences shown in the gross sales value per £100 of expenditure on sheep shown by the two groups in recent years.

TABLE 34.  
SALES VALUE OF CATTLE AND SHEEP PER £100 OF EXPENDITURE  
ON THESE TWO CLASSES OF LIVESTOCK.  
(Sample farms).

Year	Cattle		Sheep	
	Kesteven Limestone	Lindsey Limestone	Kesteven Limestone	Lindsey Limestone
1936	£ 233	£ 173	£ 325	£ 178
1937	262	148	250	200
1938	251	219	222	297
1939	161	268	297	376
1940	195	326	234	402
1941	308	374	227	353
1942	143	220	383	255
1943	285	139	367	410
1944	202	204	295	361
1945	207	201	375	1,402
1946	276	241	152	1,074
1947	310	310	544	642

*Summary.*

A general feature of the period covered by this report is the decline in the importance of farm revenue obtained from livestock



and their products. In the pre-war years over 70 per cent of the gross output of farms in England and Wales was provided by livestock enterprises and at the end of the war these provided only one half of the gross output. The change on the farms in the Lincolnshire Limestone areas was less spectacular largely because arable cash crop farming had always been an important characteristic of these areas. Farmers maintained their cattle enterprises but they made very considerable reductions in the number of sheep produced and sold fat.

As regards crops the outstanding feature is the increase in potatoes and sugar beet by the Kesteven group of farms. But despite the increase in receipts from sugar beet and potatoes the Lindsey group still has, in general, the higher receipts from these two crops. This is due to the fact that the Kesteven group of farms are more typical of the true Limestone type of farm than are those of the Lindsey group. Some of the sample farms in Lindsey are situated on, or have part of their land on, the more fertile boulder clay which covers parts of the limestone in the southern part of the area. The area under wheat has not undergone any important change but some increase has been obtained in the acreage sown with barley.

## CHAPTER VII.

### FARM INCOME.

For the individual farmer the important consideration is the size of the farm income. It represents the reward to the farmer and his wife for the manual and managerial work done on the farm and the interest on the capital which he has invested in his business. Over much of the period covered by this investigation a large part of the farm income has been invested by farmers in more equipment and in improvements to land and buildings. The amount of cash income available for expenditure in the home and on pleasure has been much less than that shown in statements of farm income. Little purpose is served by attempting to separate the farm income into its different parts and in fact any separation would be arbitrary. In any case the information on farm capital is not complete and it is not possible to make an estimate of the legitimate interest charge to be made against the farm income.

In examining the size of income it is important to bear in mind that farm incomes have shown relatively less stability than have those of landlords or farm workers. The money incomes that landowners obtain from their estates change only slowly in response to the changing fortunes of agriculture. Before the introduction of statutory control of wages, labourers' earnings were subject to more rapid adjustments than farm rents, but systems of hiring prevented farmers from making frequent adjustments. Farmers could, however, make changes in the numbers of workers employed. Since the introduction of the statutory regulation of wages, farmworkers have secured considerably greater stability in earnings than was previously experienced.

The farmer, on the other hand, is directly and immediately affected by changes in the economic conditions of the industry. Even today, when he has the advantage of guaranteed prices for a number of important commodities, there are still financial risks which he has to bear due to crop failures, to poor quality and to low prices of the non-review commodities.

It has been estimated that in 1938 the United Kingdom total of farm income from agriculture amounted to £60 million and in 1948 to £248 million. Table 35 shows the total estimated income going to farmers and farm workers in the last three years.

TABLE 35.  
FARM INCOME AND COST OF FARM LABOUR. (1)

Year	Farm income	Cost of labour
	£ million	
1946	190	171
1947	203	191
1948	248	212

- (1) National Income and Expenditure of the United Kingdom 1946 to 1948. Cmd. 7649. H.M.S.O. except Cost of labour for 1946 which is from National Income and Expenditure for the United Kingdom 1947. Cmd. 7371. H.M.S.O.

No official estimate of the total of farm wages in 1938 has been given but from an examination of the changes in wages and numbers of workers employed it is difficult to find any evidence that the increase in average earnings of farmworkers during the last 10 years has been as great as that of incomes to farmers. It has to be remembered, however, that farm profits were abnormally low in 1938, and for all farmers in the United Kingdom amounted to less than £200 per farmer. From this low income there would be little capital available for re-investment in the farm. Farm income in 1948 showed an increase of about 30 per cent on that of 1946, an increase equal to that of the cost of farm labour.

The collected information shows that in 1937 farmers on the Kesteven Limestone had an average income of 40s. Od. and those on the Lindsey Limestone had an income of about 46s. Od. for every acre of land farmed.

The year 1938 was a difficult one and a large proportion of farmers suffered financial losses but in 1939 the general level of farm income was on a par with that recorded in 1937. Since 1939 farmers have experienced two difficult years namely 1944 and 1947. In 1944 difficult weather conditions delayed harvesting and reduced both the yield and the quality of crops. An unusually large proportion of the barley crop failed to grade out as malting quality and the average price obtained for all barley sold was appreciably lower than that of preceding years. In general the receipts from the sale of crops, livestock and livestock products in 1944 were lower than in the previous year. The farm expenses were higher and in consequence farm incomes were much lower.

In 1947 farmers had to contend with severe snow storms which caused flooding and delayed spring work. Later a long period

TABLE 36.

EXPENDITURE, RECEIPTS AND FARM INCOME.  
(Sample farms: £ per 100 acres).

Year	Kesteven Limestone						Lindsey Limestone					
	No. of farms	Opening valuation	Expenditure	Closing valuation	Receipts	Farm Income	No. of farms	Opening valuation	Expenditure	Closing valuation	Receipts	Farm Income
1937	9	556	747	642	861	200	21	677	1,192	864	1,238	233
1938	19	605	689	573	735	14	21	785	1,098	718	1,119	- 46
1939	19	590	798	699	910	221	36	604	874	702	1,053	277
1940	26	669	966	728	1,281	374	30	705	1,062	755	1,358	346
1941	26	1,075	988	1,360	1,179	476	30	1,342	1,095	1,521	1,502	586
1942	24	1,252	1,279	1,462	1,763	694	28	1,508	1,396	1,800	1,852	748
1943	21	1,429	1,407	1,390	1,995	549	26	1,792	1,538	1,784	2,235	689
1944	21	1,239	1,511	1,421	1,682	353	22	1,815	1,615	1,690	2,090	350
1945	18	1,510	1,725	1,351	2,429	545	22	1,550	1,677	1,533	2,300	606
1946	18	1,351	1,870	1,641	2,099	519	18	1,474	1,761	1,669	2,125	559
1947	18	1,523	1,934	1,329	2,252	124	16	1,592	1,924	1,308	2,373	165

TABLE 37.  
DISTRIBUTION OF FARMS BY SIZE OF FARM AND BY SIZE OF FARM INCOME.  
(Sample farms : In £ per farm).

Year	Farms over 300 acres					Farms 100 to 300 acres					Farms under 100 acres				
	Losses		Gains			Losses		Gains			Losses		Gains		
	Over 500	Up to 500	Up to 1000	1000-2000	Over 2000	Over 200	Up to 200	Up to 500	500-1000	Over 1000	Over 200	Up to 200	Up to 200	200-400	Over 400
Kesteven	Limestone														
1937	—	—	1	—	—	—	—	2	1	—	—	1	4	—	—
1938	—	3	1	—	—	—	2	5	—	—	—	2	6	—	—
1939	—	—	3	1	—	—	—	3	3	—	—	1	3	3	2
1940	—	—	3	3	2	—	—	5	2	3	—	—	3	4	1
1941	—	—	2	3	2	—	—	3	5	3	—	—	3	3	2
1942	—	—	—	3	5	—	—	2	1	6	—	—	1	3	3
1943	—	—	1	2	5	—	—	—	3	3	—	—	1	3	3
1944	—	—	4	1	3	—	—	2	3	1	—	—	1	5	3
1945	—	—	2	1	3	—	1	—	2	2	—	—	1	5	1
1946	—	1	1	1	3	—	—	2	1	2	—	—	1	3	3
1947	3	—	3	—	1	1	—	2	2	—	1	—	3	2	—
Lindsey	Limestone														
1937	—	—	7	3	3	1	1	4	1	1	—	—	—	—	—
1938	5	3	4	1	—	3	3	—	1	—	—	—	—	—	—
1939	—	—	6	9	2	—	1	2	5	2	—	—	—	—	4
1940	—	—	3	8	2	—	—	5	2	3	—	—	—	2	3
1941	—	—	—	2	13	—	—	1	6	2	—	—	—	2	4
1942	—	—	—	2	10	—	—	—	2	8	—	—	—	2	4
1943	—	—	—	2	9	—	—	—	5	4	—	—	—	1	5
1944	—	1	2	4	3	1	—	2	2	2	—	1	—	3	2
1945	—	—	—	4	8	—	1	—	2	2	—	—	—	2	2
1946	1	—	1	1	7	—	—	1	3	2	—	—	—	1	2
1947	2	1	2	3	2	2	—	1	—	1	—	—	—	—	2

of drought caused further difficulties both as regards the yield of crops and of grass. The effects of low yields were offset to some extent by the increase in prices and acreage payments but even so incomes were abnormally low. The cash income from the Kesteven group was £318 and that for the Lindsey group £445 per 100 acres but at the end of the year stocks of sale crops on the farm were very low. Table 36 shows that the valuations at the end of the year for the Kesteven group were £2 per acre lower and for the Lindsey group the closing valuations were nearly £3 per acre lower than those at the beginning of the 1947 financial year. When account is taken of these changes in valuation the farm incomes are shown as £124 per 100 acres for the Kesteven and £165 per 100 acres for the Lindsey group of farms.

A high proportion of the farmers suffered financial losses in the years between 1936 and 1939, particularly those on the smaller farms. In 1939, however, only one farmer on the Lindsey Limestone and one on the Kesteven Limestone failed to make a profit, and in the next three years all farmers made profits. One farmer made a loss in 1943 and, as Table 37 shows, some financial losses were suffered in each of the subsequent years. In the middle war years the general level of the incomes from agriculture was greatly improved but in recent years some losses have been experienced and the general level of profits has been lower.

Charts A and B show net farm incomes as recorded in the two Limestone areas. In each case they relate to 15 farms which had been in the survey at least eight years. The farms are arranged in order of size of farm and the individual farm incomes are indicated by horizontal lines. The charts relate to total farm incomes and not to farm incomes per 100 acres, the purpose being to demonstrate the full extent of the fluctuation in farm incomes from agriculture. It follows that the occupiers of the larger farms have expectations of higher total incomes than do those who occupy the smaller farms and they face the risks of wider fluctuations in the size of the farm income. For example a small farmer growing say five acres of potatoes has, assuming a yield of seven tons of marketable potatoes per acre, 35 tons to sell and if the yield falls to five tons his sales are reduced by 10 tons. The larger farmer with 50 acres of potatoes will have with a yield of seven tons 350 tons, and with a yield of only five tons 250 tons, to sell; he loses the income on 100 tons while the small farmer loses income on only 10 tons. Differences in year to year yields of crops and of live-stock products though similar on the large and small farm account for the wider fluctuations in farm incomes earned by the occupiers of the larger farms.

CHART A.  
NET FARM INCOMES AS RECORDED FROM FARMS IN  
THE KESTIVEN LIMESTONE AREA.

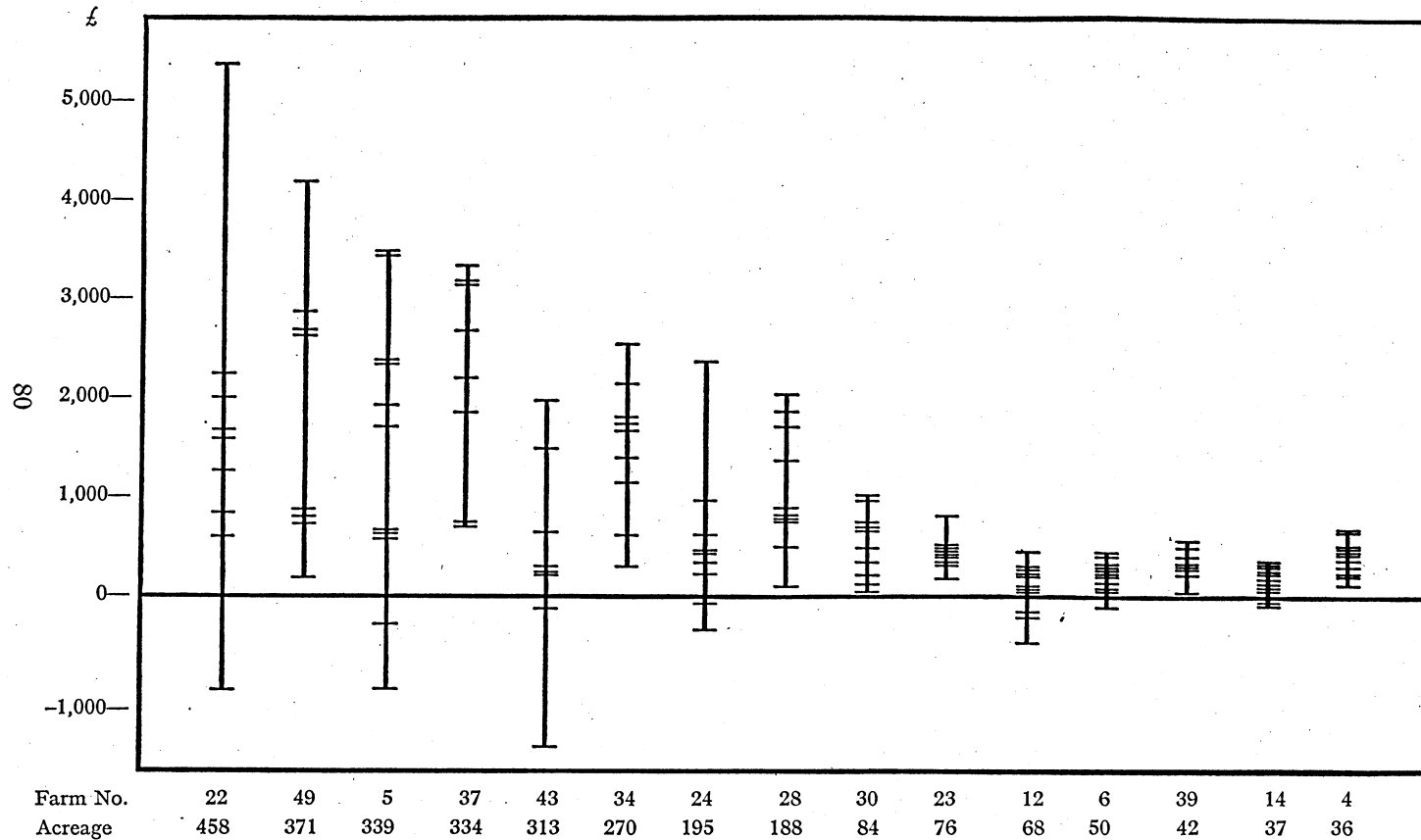
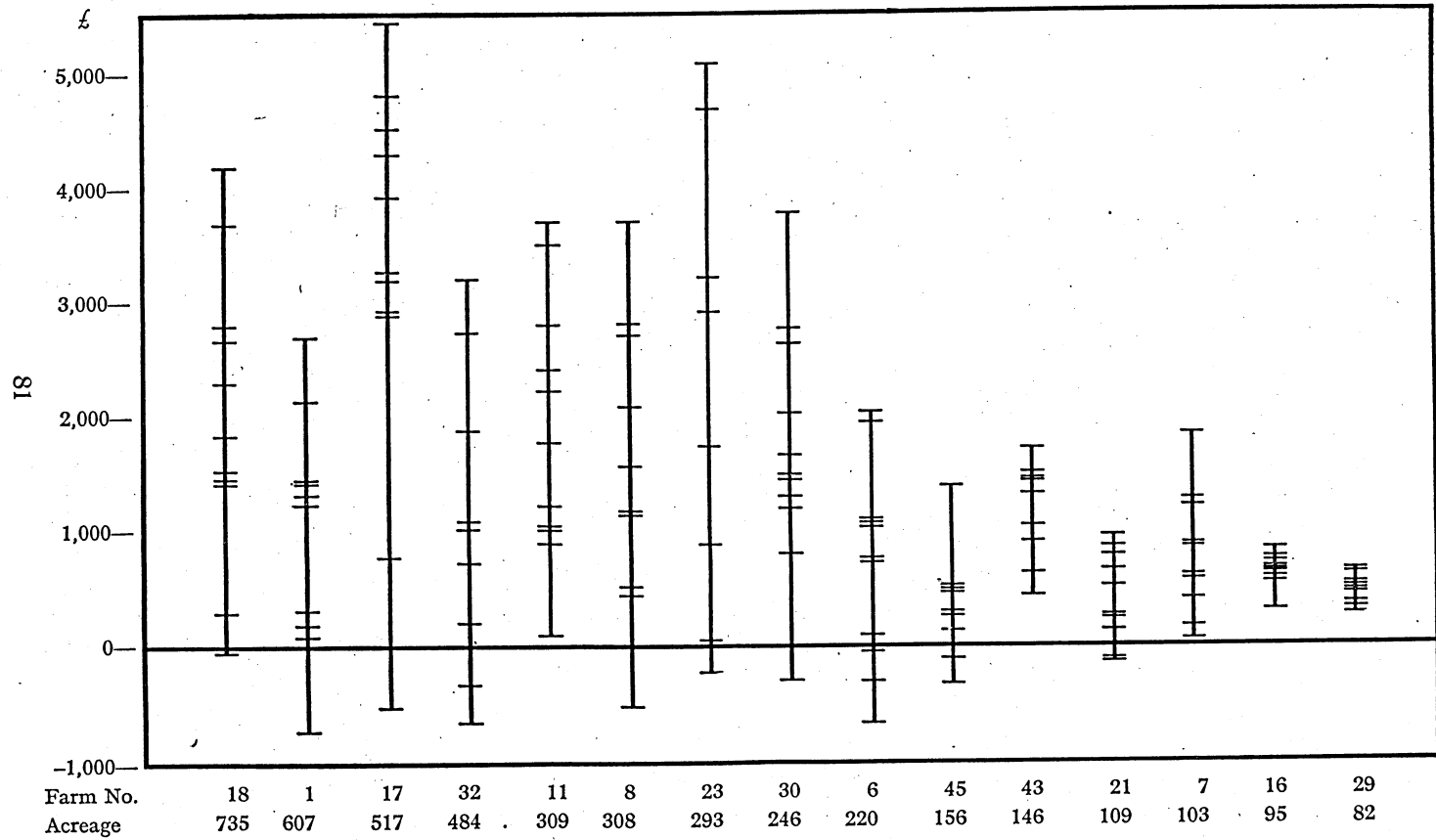


CHART B.  
NET FARM INCOMES AS RECORDED FROM 15 FARMS IN  
THE LINDSEY LIMESTONE AREA.





One farmer on the Kesteven Limestone with a farm of 458 acres made a profit of over £4,500 in one year and had a loss of £800 in another year. Another farmer with only 36 acres had no losses, but the highest profit earned was just under £600. Similar examples can be obtained from the Lindsey Limestone area where a farmer with 735 acres made a loss of £1 in one year and in each of the others had a profit ranging up to £4,200, and another farmer with 82 acres had a smaller but more stable income ranging from £270 to £650.

In examining the information given in this section it is necessary to bear in mind that the abnormally high profits earned in the early war years were deliberately planned. The agricultural expansion programme necessitated by war required increased capital expenditure and this was to a considerable extent provided by farmers from their increased farm profits.

#### *Social Income.*

For the purpose of this report the term social income is confined to rent, wages and farm income, and does not cover the net earnings of all persons employed in the industry. The earnings of private contractors and of those members of their staffs who were in charge of machinery on hire to farmers as well as the earnings of employees of the County War Agricultural Executive Committees who were in charge of machines hired to farmers are excluded. The wages of workers hired directly or indirectly by farmers are included. Wages include the farmer's share of insurances.

Table 38 shows the relative importance of the three parts of social income. Over the three years, 1937 to 1939 inclusive, the social income for the Kesteven group amounted to just over £400 per 100 acres of crops and grass. Wages accounted for just over two fifths, rent for just over one fifth and farm income for about three tenths. The Lindsey groups over the same period showed an average social income of over £500 per 100 acres. In this case wages accounted for over one half, rent for a fifth and farm income for about one quarter of the total.

Since 1939 the absolute amount going to workers in the form of wages has steadily increased and this together with the increase in numbers of workers employed resulted in the total cost to farmers being trebled. Rent has also steadily increased in amount though the overall increase is relatively small. The wide variation in the

TABLE 38.

DISTRIBUTION OF THE AGRICULTURAL INCOME.  
(Sample farms: £ per 100 acres).

Year	Kesteven Limestone							Lindsey Limestone						
	Wages		Rent		Farm income		Total	Wages		Rent		Farm income	Total	
	£	%	£	%	£	%	£	£	%	£	%	£	%	£
1937	158	35.3	90	20.1	200	44.6	448	264	43.9	105	17.4	233	38.7	602
1938	161	60.5	91	34.2	14	5.3	266	258	80.3	109	34.0	- 46	-14.3	321
1939	210	40.3	90	17.3	221	42.4	521	249	39.3	108	17.0	277	43.7	634
1940	228	32.7	96	13.7	374	53.6	698	294	39.0	113	15.0	346	46.0	753
1941	271	32.2	95	11.3	476	56.5	842	331	32.2	110	10.7	586	57.1	1,027
1942	369	31.7	100	8.6	694	59.7	1,163	467	35.1	115	8.6	748	56.3	1,330
1943	440	40.4	100	9.2	549	50.4	1,089	518	39.0	122	9.2	689	51.8	1,329
1944	463	50.5	101	11.0	353	38.5	917	589	55.6	121	11.4	350	33.0	1,060
1945	570	46.7	106	8.7	545	44.6	1,221	617	45.6	129	9.6	606	44.8	1,352
1946	649	50.6	116	9.0	519	40.4	1,284	620	47.2	136	10.3	559	42.5	1,315
1947	675	73.8	116	12.7	124	13.5	915	723	70.4	138	13.5	165	16.1	1,026

yearly amounts going to farmers causes wide fluctuations in the proportionate amounts of the social income going to each of the three recipients, landlords, farmers and workers. Whenever the absolute amount for one item rises more rapidly than the other two, as happened in the case of farm profits in the early war years, the relative proportions going to the other two fall.

In considering the distribution of the social income from agriculture it is necessary to bear in mind that neither the rent nor the farm income represents net income to the recipients. The amount charged in the accounts as rent represents the gross amounts going to landlords. Information relating to landlords' outgoings on estate management and maintenance was not obtained, but it will be appreciated that their expenses must be deducted in order to arrive at a figure of net income to landowners. In the report of an enquiry carried out by the Department of Agriculture for Scotland<sup>(1)</sup> it was calculated that 49 per cent of the rent (based on 1946 rentals) was expended by landlords on maintenance and improvements during the years 1940-41 to 1944-45. In 1945-46 the proportion was 69 per cent which is an increase of about two fifths. The farm income represents not merely the returns to the farmer and his wife for manual labour, for managerial ability and for interest on occupier's capital, but also the interest which the occupier must pay for borrowed capital other than those interest charges hidden in the prices paid for goods purchased on credit.

It may be argued that the wages paid to workers are gross amounts and that out of their weekly earnings they have to meet expenses directly incurred in connection with their employment. This is true but in general these expenses represent a very small proportion of their total earnings.

The distribution of the social income as shown in Table 38 must be considered in relation to numbers of landowners, farmers and workers. It is not possible to indicate the relative number of persons in receipt of each of the three parts of the social income but it will be appreciated that the portion going to wages has to be shared by a considerably larger number of persons than does either of the other two portions going to landowners and to farmers.

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(1) Department of Agriculture for Scotland. *Scottish Farm Rents and Estate Expenditure. 1948.* H.M.S.O.

## CHAPTER VIII.

### CONCLUSION.

The low inherent fertility of soil is, in common with the other poorer soil areas in the East Midlands<sup>(1)</sup>, the main problem of the Limestone farming. The significance of this problem must be stressed strongly because it can only be solved by following patiently a long term policy of building up fertility and by carefully balancing the farm crop and livestock production in relation to the resources and requirements of the land. The impact of war-time conditions, which extended well beyond the actual cessation of hostilities, introduced a great measure of artificiality into farming in the area, in spite of the fact that in an arable farming area the relationship between grass and arable land was not greatly changed.

As instruments of the war-time agricultural policy the controls of cropping, guaranteed prices and assured markets for agricultural products resulted in high farming profits and fulfilled their part in increasing agricultural production. But at the same time these measures enabled even the inefficient farmers on poor soils to make profits, and the fundamental need to formulate a system of farming which offered reasonable prospects to efficient managers under the normal conditions of a free market were pushed into the background. Farmers who, for many years, have grown accustomed to having their industry subsidised in various ways, now realize that the existing economic conditions cannot last indefinitely, and that they will again be faced with the difficult problem of trying to produce for a competitive market products from land which has only a limited agricultural use and which must be carefully managed if fertility is to be maintained.

The infertility of the Limestone soils is due not so much to mineral deficiencies as to the lack of humus and the unfavourable annual distribution of rainfall. In other words fertility of the Limestone soils is highly dependent on the supply of muck which is one of the humus building and humidity retaining agents available to farmers. This involves a high degree of interdependence between crop and livestock production. In the past the farming system in the area was based on production of wheat, barley, potatoes and turnips.

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(1) *E. Mejer, M.Sc. (Wilno). Sand Land Farming. University of Nottingham School of Agriculture. 1949.*

Turnips and swedes were folded by sheep. Sheep, horses, store cattle and pigs supplied the manurial requirements of the soil. But the introduction of frozen mutton and lamb from Australia and New Zealand in the second half of the 19th century seriously undermined the profitability of arable sheep farming. Also changes in consumer tastes adversely affected the rearing and feeding of the heavier breeds of sheep which were commonly found in the Limestone areas. Farmers had, therefore, to make important changes in the traditional systems of farming. The numbers of sheep began to decline, and following the 1914-18 war sugar beet was grown on an increasing scale as a substitute for turnips and swedes.

In the background of the Limestone farming there was always anxiety over the shortage of capital and inability to maintain profits at a desired level, and State assistance when it began to operate during the depression period of the 1930's stimulated the development of cash crops at the expense of feeding crops and livestock production, and war conditions accentuated the unbalanced relationship between crop and livestock production.

At the present time the farming system in the area is based on tillage cropping in which wheat, barley, sugar beet and potatoes are the most important crops. As regards livestock, the sheep population shows a decline to about one third of the 1936 numbers in the Kesteven area and an even greater reduction in the Lindsey Limestone area. The rate at which farmers could rear and fatten cattle has been greatly reduced as a result of the shortage of purchased concentrates. Numbers of pigs and poultry flocks are reduced mainly owing to the shortage of feeding stuffs and numbers of horses declined as a consequence of mechanisation. During the war there was some increase in milk production, but milk production in the area is confined to relatively few farms on which there is an adequate water supply and good grazing.

The effects of these changes are reflected in the relationships of the share of crops and livestock in the total annual receipts of farms in the area.

In the Kesteven Limestone area in 1936 crops accounted for just over 52 per cent of total receipts and livestock for about 44 per cent. The highest proportion of receipts from crop sales was reached in 1945 (69.5 per cent crops and 27.5 per cent livestock), but in 1947 crops still amounted to 64.5 per cent and livestock to only just over 30 per cent of the total.

In the Lindsey Limestone area the share of crop sales in the total farm receipts was always higher than on the Kesteven farms and it increased from 60 per cent in 1936 to nearly 78 per cent in 1947, and receipts from livestock declined during that time from 38 per cent to only 19 per cent.

Since 1939 the incomes of those engaged in agriculture have increased but the value of these incomes and of farmers' profits cannot be properly assessed without taking note of at least two other important factors, namely changes in the purchasing power of the currency and the effect of existing farming methods upon the fertility of the land and its future productive capacity.

Information is not available to show what proportion of profits made by farmers was put aside in savings. During the recent years there was a steady decline in the purchasing power of the £ and this fact combined with the increasing incidence of lower financial returns to farmers indicates that many farmers may have to draw on their savings to meet the rising costs of production and to maintain their living standards. Even more important, however, is the other point. High profits were due to the increased emphasis on the production of arable cash crops and reductions in the size of livestock enterprises. The records show that there has been increased expenditure on labour and on capital equipment and that the increased expenditure on manures and seeds has been relatively unimportant. There has also been some reduction in numbers of livestock and in the expenditure on feeding stuffs which reduced not only the quantity but also the quality of dung available. Thus, the indications are that farmers have not been putting back into the land the fertility lost annually by the sale of crops. In other words, the expansion of cash crop production was achieved by increased expenditure on those resources which were necessary to cope with the extended arable area, and resulted in some neglect of the fertility of these thin soils.

The decline in fertility of soil is difficult to ascertain and it becomes apparent only with a gradual exhaustion of the natural resources stored in the soil. The risk of lowering fertility by inadequate replacement of minerals taken from the soil by plants is very real on any land. But it is particularly dangerous on thin lands deficient in humus where not only mineral composition should remain well balanced but the organic structure must be continuously built up by adequate supplies of dung and by the cultivation of crops suitable for improving the "body" of the soil.

In the last year or two farming profits have declined and, in view of the general economic situation, a fall in farming costs is unlikely to take place in the near future. Another factor to bear in mind is that a downward revision of State assistance to farming in the form of subsidies is possible.

Farmers should, therefore, begin to make those adjustments in the organisation and management of their farms which are necessary for improving their chances of withstanding reductions in profit margins.

The fundamental problem in the Limestone areas is to obtain a better balance between cash crop and livestock enterprises, and unless this can be achieved there is real risk that the fertility of these soils will be exhausted. Some farmers have already made reductions in the acreage sown under sale crops but in general the acreage is still higher than it was in 1939. One of the points which all Limestone farmers will have to consider is the relative technical and economic advantages of keeping cattle or sheep and of increasing the number of pigs and poultry maintained. At the present level of prices cattle appear to be more profitable than sheep but many farmers may consider an increase in the sheep flock a smaller risk than an increase in a self-contained rearing and feeding herd of cattle. In either case the possibilities of extending pig and poultry enterprises should be seriously considered.

The whole question of the increased livestock production is dependent on the adequate supply of food. Some small increase in the acreage under leys has been made but there is still scope for development of ley farming in the area. The progress made in the field of agricultural research should make possible the selection of grass mixtures best suited to the Limestone soil. Local experiments with the varieties of feed crops resistant to drought and suited to poor soils should prove most useful in increasing the supply of home grown food for livestock. An extension of leys at the expense of both the permanent pastures and arable fodder crops can be made to increase the stock carrying capacity of farms during both the summer and winter periods and at the same time increase the humus content of the soil.

The shortage and the high cost of purchased feeding stuffs is discouraging farmers from the development of pig and poultry enterprises. But the arable type of farming, characteristic of the area, offers opportunities for an increase in the pig and poultry population and farmers should seek to fit these enterprises into the general pattern

of their farm organisation. Pigs and poultry could make important direct contributions to the farm receipts and, by adding to the fertility of the land, indirectly increase the income from cash crops.

At present there does not seem to be much scope for the development of dairy production in the area with the exception of farms situated advantageously as regards supplies of water and facilities for disposal of the milk.

Farmers in the Limestone area must realise that the process of re-organisation of their farms along the lines suggested by this report will be neither rapid, nor simple and easy. Farming poor lands is never an easy task and it calls for considerable resourcefulness and hard work. Every possibility, however small, of improving the land and augmenting the farm income must be explored, the existing advantages of the farm must be fully utilised and all farm enterprises well balanced and fitted into the organisation of the farm as a whole.

The degree of shrewdness and relentlessness in pursuing a farm policy which avoids waste and fully exploits all farm resources without lowering the productive capacity of the land will provide the proof of farmers' ability to stand up to the adversities. Once a high degree of economic resistance is achieved, the periods of high prosperity of farming created by the abnormal conditions in the national economy may constitute a welcome change, but their end need not fill farmers with apprehension or despair.



TABLE 1.  
LAND UTILISATION OF THE KESTEVEN LIMESTONE AREA.  
(Sample farms).

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
No. of farms	15	21	26	35	27	27	24	21	21	18	19	18
	%	%	%	%	%	%	%	%	%	%	%	%
Wheat	10.5	12.7	14.4	13.8	12.5	9.5	10.1	15.9	12.7	9.1	7.0	10.2
Barley	21.2	17.2	17.5	20.2	22.2	26.3	21.5	21.1	23.2	27.5	26.4	26.3
Oats	3.7	3.7	2.5	2.9	5.2	5.8	5.1	4.6	5.0	5.3	5.0	4.2
Other corn	.2	—	—	—	—	.4	.5	—	.2	—	—	—
Total cereals	35.6	33.6	34.4	36.9	39.9	42.0	37.2	41.6	41.1	41.9	38.4	40.7
Sugar beet	10.5	4.0	3.0	3.4	2.9	3.4	4.5	5.5	7.0	7.5	8.5	7.3
Potatoes	.3	.4	.8	1.3	1.4	1.2	1.8	2.4	2.4	2.9	3.2	3.5
Other root crops	4.3	6.9	8.2	7.9	7.0	8.8	7.3	7.1	6.9	5.2	3.5	2.5
Total roots	15.1	11.3	12.0	12.6	11.3	13.4	13.6	15.0	16.3	15.6	15.2	13.3
Beans and peas	1.1	1.7	2.2	1.7	.4	3.7	3.4	2.9	4.6	4.9	5.8	4.5
Other tillge crops	1.8	.4	1.8	2.9	2.9	4.3	2.6	2.3	2.6	2.3	2.3	2.8
Bare fallow	.8	3.7	1.4	1.4	1.8	1.5	1.6	1.1	2.4	3.0	2.3	3.0
Total tillage crops	54.4	50.7	51.8	55.5	56.3	64.9	58.4	62.9	67.0	67.7	64.0	64.3
Temporary grass for hay	7.4	10.3	5.9	8.0	6.9	4.0	8.3	6.7	6.5	8.8	9.4	9.2
Temporary grass for grazing	2.9	4.0	8.0	7.5	7.8	6.9	9.7	8.9	6.9	5.0	6.1	5.8
Total temporary grass	10.3	14.3	13.9	15.5	14.7	10.9	18.0	15.6	13.4	13.8	15.5	15.0
TOTAL ARABLE.	64.7	65.0	65.7	71.0	71.0	75.8	76.4	78.5	80.4	81.5	79.5	79.3
Permanent grass for hay	.6	5.2	4.4	5.1	2.7	3.8	2.4	2.1	1.7	1.7	1.4	1.5
Permanent grass for grazing	15.4	28.3	27.9	22.7	24.8	19.4	20.0	18.6	16.9	15.6	17.4	17.2
Total permanent grass	16.0	33.5	32.3	27.8	27.5	23.2	22.4	20.7	18.6	17.3	18.8	18.7
Rough grazings	19.3	.1	.8	.4	.6	.7	.9	—	—	—	.2	.2
TOTAL CROPS	100.0	98.6	98.8	99.2	99.1	99.7	99.7	99.2	99.0	98.8	98.5	98.2
Woodlands	—	.1	.8	.1	—	.1	—	.3	.3	.3	.5	.5
Buildings, roads, etc.	—	1.3	.4	.7	.9	.2	.3	.5	.7	.9	1.0	1.3
TOTAL ACREAGE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 2.  
LAND UTILISATION OF THE LINDSEY LIMESTONE AREA.  
(Sample farms).

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
No. of farms	25	28	44	38	31	31	28	26	23	22	18	18
	%	%	%	%	%	%	%	%	%	%	%	%
Wheat	20.3	17.1	18.2	18.2	15.6	13.8	14.4	18.6	16.8	13.1	14.2	17.0
Barley	8.1	7.8	9.4	8.4	13.4	12.0	11.5	12.6	12.9	16.5	17.3	16.1
Oats	6.5	4.9	5.4	5.8	6.6	7.4	7.9	6.4	5.5	6.5	6.3	5.9
Other corn	.1	.1	.3	—	.1	1.7	.6	.9	1.1	1.4	.9	.8
Total cereals	35.0	29.9	33.3	32.4	35.7	34.9	34.4	38.5	36.3	37.5	38.7	39.8
Sugar beet	8.6	6.3	5.5	6.4	6.1	6.6	6.6	6.2	6.9	6.2	6.5	6.1
Potatoes	11.8	10.3	8.6	8.8	8.3	9.7	10.7	12.0	13.4	13.2	12.7	12.2
Other root crops	4.7	3.7	4.7	3.8	4.7	4.7	4.6	4.1	4.2	3.2	2.6	2.2
Total root crops	25.1	20.3	18.8	19.0	19.1	21.0	21.9	22.3	24.5	22.6	21.8	20.5
Beans and peas	1.0	1.3	1.0	.8	.3	2.2	2.7	2.2	2.5	2.3	2.1	2.8
Other tillage crops	.5	.7	.3	.7	1.4	1.7	1.0	.7	.6	.6	1.1	1.2
Bare fallow	.6	4.2	1.2	2.2	2.2	1.2	.6	1.5	1.6	2.1	2.1	1.9
Total tillage crops	62.2	56.4	54.6	55.1	58.7	61.0	60.6	65.2	65.5	65.1	65.8	66.2
Temporary grass for hay	4.6	7.8	4.9	6.7	5.8	5.5	8.0	8.8	8.7	9.2	7.6	8.6
Temporary grass for grazing	5.5	5.8	7.4	6.4	6.1	5.6	5.9	4.1	4.6	3.8	4.4	3.2
Total temporary grass	10.1	13.6	12.3	13.1	11.9	11.1	13.9	12.9	13.3	13.0	12.0	11.8
TOTAL ARABLE	72.3	70.0	66.9	68.2	70.6	72.1	74.5	78.1	78.8	78.1	77.8	78.0
Permanent grass for hay	5.6	4.7	4.0	5.6	3.5	3.1	3.8	2.4	1.9	2.1	3.1	1.8
Permanent grass for grazing	21.6	23.4	25.1	21.9	25.5	21.4	20.4	18.5	18.1	19.1	18.7	19.7
Total permanent grass	27.2	28.1	29.1	27.5	29.0	24.5	24.2	20.9	20.0	21.2	21.8	21.5
Rough grazings	.2	1.1	3.5	3.9	.3	3.3	1.2	.8	.9	.3	—	—
TOTAL CROPS	99.7	99.2	99.5	99.6	99.9	99.9	99.9	99.8	99.7	99.6	99.6	99.5
Woodlands	.2	.2	.2	.2	—	—	.1	—	—	—	—	.2
Buildings, roads etc.	.1	.6	.3	.2	.1	.1	—	.2	.3	.4	.4	.3
TOTAL ACREAGE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.  
FARM EXPENSES IN THE KESTEVEN LIMESTONE AREA.  
(Sample farms: £ per 100 acres).

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
No. of farms	12	24	26	35	27	27	24	21	21	18	19	18
Average size	142.3	181.8	197.4	262.0	202.3	205.6	207.5	214.9	214.6	197.2	209.0	211.8
Cattle	52.6	48.2	48.9	67.2	69.7	57.7	106.1	72.1	97.9	101.4	96.3	80.7
Sheep	29.1	48.6	57.4	38.4	68.2	82.0	65.4	63.7	50.9	45.4	54.2	25.1
Pigs	5.6	6.1	9.5	11.1	8.3	9.7	6.7	7.5	28.4	21.0	8.0	21.6
Horses	6.3	8.7	4.4	4.9	7.2	6.6	9.2	9.7	8.9	5.0	3.4	1.3
Poultry	1.3	.9	1.5	.7	1.3	2.0	1.2	1.4	1.4	3.2	1.9	3.5
<b>TOTAL LIVESTOCK</b>	<b>94.9</b>	<b>112.5</b>	<b>121.7</b>	<b>122.3</b>	<b>154.7</b>	<b>158.0</b>	<b>188.6</b>	<b>154.4</b>	<b>187.5</b>	<b>176.0</b>	<b>163.8</b>	<b>132.2</b>
Foods	75.2	139.0	181.4	124.8	197.8	144.4	101.8	102.0	110.3	174.0	154.8	153.0
Fertilisers	32.0	32.5	32.5	52.6	79.0	78.6	136.3	142.3	161.6	159.8	186.0	181.6
Seeds	26.1	33.2	25.0	38.5	41.2	56.5	87.3	136.2	109.2	142.5	108.7	146.1
Rent	99.3	89.7	91.1	90.3	95.9	95.0	100.0	100.2	101.4	105.5	115.9	116.3
Implements	22.6	27.3	27.7	59.6	58.9	59.8	94.5	96.9	121.3	101.9	172.2	147.3
Repairs	14.8	16.2	22.1	30.8	33.5	38.3	59.2	73.3	72.9	89.5	139.5	137.8
Paid labour	157.0	158.0	160.6	209.8	228.0	270.8	368.6	440.1	463.3	570.2	649.1	674.8
Miscellaneous	52.1	51.6	53.9	65.3	79.0	104.6	142.7	162.6	183.5	205.6	190.0	244.9
<b>TOTAL</b>	<b>574.0</b>	<b>660.0</b>	<b>716.0</b>	<b>794.0</b>	<b>968.0</b>	<b>1006.0</b>	<b>1279.0</b>	<b>1408.0</b>	<b>1511.0</b>	<b>1725.0</b>	<b>1880.0</b>	<b>1934.0</b>

TABLE 4.  
 FARM EXPENSES IN THE LINDSEY LIMESTONE AREA.  
 (Sample farms : £ per 100 acres).

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
No of farms	21	27	41	38	31	31	28	26	22	22	18	18
Average size	316.6	343.5	324.2	287.7	279.1	312.6	268.3	260.9	275.4	294.8	302.2	311.6
Cattle	84.3	117.7	69.4	57.5	59.3	51.1	77.6	120.3	103.5	106.6	103.9	85.9
Sheep	51.3	49.1	30.4	22.5	32.1	43.1	49.9	36.7	34.7	5.6	12.0	9.8
Pigs	7.5	20.3	5.7	7.9	5.6	5.3	7.4	6.6	7.3	5.6	6.6	11.2
Horses	10.1	10.8	7.9	5.7	10.5	8.8	24.7	29.0	19.7	12.4	9.5	9.8
Poultry	3.1	2.9	2.2	3.3	3.5	3.1	2.7	1.6	3.3	2.5	5.0	4.7
<b>TOTAL LIVESTOCK</b>	<b>156.3</b>	<b>200.8</b>	<b>115.6</b>	<b>96.9</b>	<b>111.0</b>	<b>111.4</b>	<b>162.3</b>	<b>194.2</b>	<b>168.5</b>	<b>132.7</b>	<b>137.0</b>	<b>121.4</b>
Foods	215.6	210.8	220.4	148.0	211.0	128.2	87.4	68.1	69.3	61.2	63.8	59.4
Fertilisers	93.6	91.0	74.0	86.7	109.6	147.1	152.2	171.8	170.9	176.3	208.0	212.3
Seeds	53.0	48.8	32.1	40.3	63.9	81.3	123.5	142.4	149.8	160.1	137.5	205.7
Rent	111.3	105.2	109.4	107.6	112.8	110.2	115.2	122.2	121.2	128.5	136.2	137.8
Implements	28.3	45.5	33.5	35.2	54.1	40.5	70.1	69.5	74.8	92.0	141.0	150.7
Repairs	30.5	32.2	25.6	26.8	31.7	48.4	66.5	85.2	80.1	99.9	115.7	122.6
Paid labour	270.2	263.5	257.8	249.0	294.2	330.8	467.1	517.8	589.4	616.7	620.3	722.5
Miscellaneous	86.2	81.2	71.6	82.5	108.7	109.1	151.7	166.8	191.0	210.6	200.5	215.6
<b>TOTAL</b>	<b>1045.0</b>	<b>1079.0</b>	<b>940.0</b>	<b>873.0</b>	<b>1097.0</b>	<b>1107.0</b>	<b>1396.0</b>	<b>1538.0</b>	<b>1615.0</b>	<b>1678.0</b>	<b>1760.0</b>	<b>1948.0</b>





TABLE 7.  
FARM RECEIPTS IN THE KESTEVEN LIMESTONE AREA.  
(Sample farms : £ per 100 acres).

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
Wheat	73.4	105.6	99.4	110.3	193.7	95.5	128.8	273.5	179.9	199.6	155.1	120.9
Barley	137.1	144.4	127.8	185.0	308.4	316.9	650.0	597.5	399.7	819.0	517.6	547.0
Sugar beet	122.3	74.5	55.5	60.2	94.2	95.0	170.7	195.9	239.2	349.5	390.8	361.7
Potatoes	3.1	10.9	17.6	28.2	59.2	40.4	75.3	128.9	103.6	137.9	156.6	266.7
Other crops	5.8	23.4	19.7	24.6	55.4	45.3	83.8	124.8	106.7	180.4	171.4	157.5
<b>TOTAL CROPS</b>	<b>341.7</b>	<b>358.8</b>	<b>320.0</b>	<b>408.3</b>	<b>710.9</b>	<b>593.1</b>	<b>1108.6</b>	<b>1320.6</b>	<b>1029.1</b>	<b>1686.4</b>	<b>1391.5</b>	<b>1453.8</b>
Cattle	122.6	126.1	122.6	108.1	136.0	177.7	151.6	205.5	197.4	209.7	265.8	250.0
Sheep	94.6	121.7	127.3	114.1	159.3	185.9	250.4	233.5	149.9	170.3	82.5	136.6
Pigs	11.8	67.3	95.3	55.4	103.3	64.5	41.3	49.4	94.8	98.2	65.3	70.3
Horses	5.2	2.3	4.8	2.7	12.1	4.8	9.9	11.7	13.6	11.4	7.9	3.7
Poultry and eggs	30.2	17.3	23.3	20.7	33.5	55.1	41.9	22.2	23.2	32.5	35.7	47.1
Wool	6.2	32.2	10.8	8.5	19.9	16.5	18.4	19.2	14.8	10.0	11.3	9.5
Milk	9.3	25.7	25.4	62.0	52.5	55.8	74.9	73.0	97.1	139.0	132.9	159.9
Other dairy products	9.8	1.4	6.2	3.4	4.2	2.5	8.5	1.3	—	—	—	—
<b>TOTAL LIVESTOCK</b>	<b>289.7</b>	<b>394.0</b>	<b>415.7</b>	<b>374.9</b>	<b>520.8</b>	<b>562.8</b>	<b>596.9</b>	<b>615.8</b>	<b>590.8</b>	<b>671.1</b>	<b>601.4</b>	<b>677.1</b>
Miscellaneous	22.6	26.2	30.3	37.8	45.3	50.1	59.5	58.6	62.1	71.5	98.1	121.1
<b>TOTAL</b>	<b>654.0</b>	<b>779.0</b>	<b>766.0</b>	<b>821.0</b>	<b>1277.0</b>	<b>1206.0</b>	<b>1765.0</b>	<b>1995.0</b>	<b>1682.0</b>	<b>2429.0</b>	<b>2091.0</b>	<b>2252.0</b>
Expenditure	574.0	660.0	716.0	794.0	968.0	1006.0	1279.0	1408.0	1511.0	1725.0	1880.0	1934.0
Balance	80.0	119.0	50.0	27.0	309.0	200.0	486.0	587.0	171.0	704.0	211.0	318.0

TABLE 8.  
FARM RECEIPTS IN THE LINDSEY LIMESTONE AREA.  
(Sample farms: £ per 100 acres).

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
Wheat	155.0	125.8	110.9	177.9	174.3	121.8	169.0	268.5	288.1	261.8	184.7	256.0
Barley	40.1	74.7	39.1	77.6	127.7	182.3	277.7	323.1	285.3	329.3	303.3	375.7
Sugar beet	157.2	124.2	94.4	116.7	198.8	159.3	224.8	303.7	234.3	316.3	308.8	332.7
Potatoes	361.7	320.0	230.8	216.8	294.2	460.8	533.2	633.0	642.4	777.2	661.9	737.6
Other crops	14.4	12.2	17.1	29.4	24.3	41.1	123.6	166.7	106.9	138.0	86.0	156.2
<b>TOTAL CROPS</b>	<b>728.4</b>	<b>656.9</b>	<b>492.3</b>	<b>618.4</b>	<b>819.3</b>	<b>965.3</b>	<b>1328.3</b>	<b>1695.0</b>	<b>1557.0</b>	<b>1822.6</b>	<b>1544.7</b>	<b>1858.2</b>
Cattle	145.6	174.3	151.7	153.9	193.1	191.0	170.8	167.0	210.8	214.5	250.9	266.3
Sheep	91.5	98.1	90.4	84.5	128.9	152.3	127.4	150.5	125.2	78.5	128.9	62.9
Pigs	126.6	77.6	101.9	62.1	75.0	41.6	26.2	18.6	13.0	26.2	30.4	31.0
Horses	5.1	5.6	3.6	8.1	13.4	10.0	12.8	35.8	21.2	9.3	16.1	10.8
Poultry and eggs	53.6	39.3	25.3	40.2	65.1	41.6	36.0	29.1	31.6	32.0	30.2	40.5
Wool	13.2	23.8	8.0	14.8	27.0	18.0	21.0	20.3	18.1	12.8	13.6	9.1
Milk	21.7	17.1	29.5	24.3	31.6	47.5	60.2	49.4	48.2	44.1	39.8	31.7
Other dairy products	3.1	1.5	2.9	2.0	1.5	.8	.3	.3	—	—	—	—
<b>TOTAL LIVESTOCK</b>	<b>460.4</b>	<b>437.3</b>	<b>413.3</b>	<b>389.9</b>	<b>535.6</b>	<b>502.8</b>	<b>454.7</b>	<b>471.0</b>	<b>468.1</b>	<b>417.4</b>	<b>509.9</b>	<b>452.3</b>
Miscellaneous	32.2	36.8	31.4	33.7	46.1	56.9	69.0	73.0	63.9	60.0	70.4	82.5
<b>TOTAL</b>	<b>1221.0</b>	<b>1131.0</b>	<b>937.0</b>	<b>1042.0</b>	<b>1401.0</b>	<b>1525.0</b>	<b>1852.0</b>	<b>2239.0</b>	<b>2089.0</b>	<b>2300.0</b>	<b>2125.0</b>	<b>2393.0</b>
Expenses	1045.0	1079.0	940.0	873.0	1097.0	1107.0	1396.0	1538.0	1615.0	1678.0	1760.0	1948.0
Balance	176.0	52.0	- 3.0	169.0	304.0	418.0	456.0	701.0	474.0	622.0	365.0	445.0



TABLE 9.  
 PERCENTAGE DISTRIBUTION OF FARM RECEIPTS IN THE KESTEVEN LIMESTONE AREA.  
 (Sample farms).

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
Wheat	11.2	13.5	13.0	13.4	15.2	7.9	7.3	13.7	10.7	8.2	7.4	8.4
Barley	21.0	18.5	16.7	22.6	24.3	26.3	37.4	29.9	23.7	33.8	24.7	24.3
Sugar beet	18.7	9.5	7.3	7.3	7.4	7.9	9.6	9.8	14.2	14.4	18.7	16.1
Potatoes	.5	1.4	2.3	3.4	4.6	3.4	4.3	6.4	6.1	5.7	7.5	11.9
Other crops	.9	3.0	2.5	3.0	4.3	3.7	4.7	6.3	6.4	7.4	8.2	6.8
TOTAL CROPS	52.3	45.9	41.8	49.7	55.8	49.2	63.3	66.1	61.1	69.5	66.5	64.5
Cattle	18.7	16.3	16.0	13.2	10.7	14.7	9.3	10.3	11.7	8.6	12.7	11.1
Sheep	14.5	15.6	16.6	14.0	12.4	15.4	13.3	11.8	8.9	7.0	4.0	6.1
Pigs	1.8	8.6	12.5	6.7	8.0	5.3	2.4	2.4	5.6	4.0	3.1	3.1
Horses	.8	.3	.6	.3	.9	.4	.6	.6	.8	.5	.4	.2
Poultry and eggs	4.6	2.3	3.0	2.5	2.6	4.6	2.4	1.1	1.4	1.3	1.7	2.1
Wool	.9	4.1	1.4	1.0	1.6	1.4	1.0	1.0	.9	.4	.5	.4
Milk	1.4	3.3	3.3	7.6	4.1	4.6	4.3	3.7	5.8	5.7	6.4	7.1
Other dairy products	1.5	.2	.8	.4	.3	.2	.1	.1	—	—	—	—
TOTAL LIVESTOCK	44.2	50.7	54.2	45.7	40.6	46.6	33.4	31.0	35.1	27.5	28.8	30.1
Miscellaneous	3.5	3.4	4.0	4.6	3.6	4.2	3.3	2.9	3.8	3.0	4.7	5.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0



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