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A PILGRIMAGE OF BRITISH FARMING

1910–1912

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By A. D. HALL, M.A., F.R.S.

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TO

E. S. BEAVEN

MY DEAR BEAVEN,

TO whom but to you should I dedicate this account of our joint wanderings? For, as I read them afresh, I am always being reminded, sometimes of your methods of dealing with barley problems, the rigour of which may well put us professional men of science to shame, sometimes of the acuity of your criticisms of the work of the same class of pundits. But most of all I think of you as one of the last defenders of the old *laissez-faire* position, a latter-day Athanasius, standing for self-help and honest individual work, and denouncing Government Departments, County Councils, Development Commissions, and all such spoon-feeding agencies, until that ancient thruster—the old Leon Bollée, would boil over with the combined fury of your driving and your arguments! May it be granted to us to review our opinions, years hence, over the same ground!

Yours sincerely,

A. D. HALL.

PREFACE

THE journeys herein recorded were undertaken with the view of learning something of the diversity of British farming, and of the manner in which its practices have been adapted to meet the variations of soil and climate which occur in these Islands. As a scientific man dealing with agriculture I found myself not infrequently called upon for advice which demanded a knowledge of local conditions and methods of farming about which I could find very little information in the text-books. So with Professor T. B. Wood of Cambridge, and Mr. E. S. Beaven of Warminster, a farming tour was planned and begun in 1910, though it eventually took three summers to carry it through to completion. We were helped with numerous introductions, and were received everywhere with such a measure of hospitality and willingness to provide information that we were able to form a pretty definite opinion on the character of the farming of the district we were passing through in spite of the flying character of our visits. Mistakes and omissions there must be in my account, but I am inclined to think they are less due to the hasty nature of the journey than to the fact that no man can get up a case without falling into errors both in his material and in the interpretation he gives to it.

The book consists of a reprint of the articles de-

scriptive of our wanderings which, during the following autumns and winters of 1910–12, appeared in the *Times*. To the proprietors of the *Times* I am indebted for permission to republish. Little has been altered from the original text; a certain amount of pruning and correction, some rearrangement of moods and tenses, and an occasional interpolation have been made; otherwise I found, after various trials, that I should have been compelled to rewrite the whole as a more or less formal account of British farming, to the certain loss of whatever freshness of impression I had gained by setting down straightway what I had seen and the opinions thereby aroused. Had I been persuaded that by greater trouble I could have converted the articles into a more readable book, that effort would have been freely made; for to publish an account of an agricultural tour is to invite an invidious comparison with those two masters of their double craft of farming and writing—Arthur Young and William Cobbett.

My recommendation must be the intrinsic interest of the subject and the fact that these journeys were taken at an instructive time in the development of our agriculture, when the land and its management had somewhat suddenly become a matter of interest to our general population. One outcome of that renewed attention to agriculture on the part of the State had been the Small Holdings Act; other legislative actions were being promised or discussed, the break-up of the great estates seemed to have begun, though it now would appear that the sales of 1910–11 were due

to a combination of more temporary circumstances than to any settled policy on the part of the owners. Not only were the relations of the State to agriculture in debate at that time, but the farming community was just becoming conscious of a return of prosperity that promised to last for some time, and, encouraged thereby, was beginning to take more interest in the applications of science and education to its industry. For these various reasons I am encouraged to hope that this record of the impressions derived from British farming and farmers during the critical years 1910–12 may be of sufficient interest to justify a separate existence in book form.

A. D. HALL.

EWHURST, MERTON, S.W.
August 1913.

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A PILGRIMAGE OF BRITISH FARMING

I

CHALK FARMING IN WILTSHIRE

IT would perhaps be most appropriate to begin a pilgrimage of British farming with Norfolk, for the systematic pursuit of the industry along what we might call modern lines is generally associated with Townshend's turnips and the invention of the four-course system. The writings of Arthur Young, himself an East Anglian, did much to promulgate the idea that Norfolk was the originating county, and the long line of notable farmers it has produced has only fixed the tradition. But in an industry so ancient, so universal, and yet so localized as agriculture, in which the practitioners have rarely been writers, the origin of any custom as a rule antedates any individual to whom it is credited. The recorded names usually belong to men conspicuous by their station or their powers of writing, men who in one way or other gave a general circulation to what had hitherto been a local or occasional practice. Turnips and rotation grasses were grown long before Townshend

wherever the land had been enclosed, and the Norfolk four-course system was in vogue in Herts in the early years of the eighteenth century, having "growed" no one knows how or where.

But without denying Norfolk its pride of place, it was more convenient to begin our journey farther south and west; we were out to see arable farming, and it was therefore well to take the earlier country first, because corn crops cannot be judged until they approach harvest, especially in an abnormal season like that of 1910, in which early promise had not always been fulfilled. So we made our start on the chalk in Wilts, and chalk farming is in many respects the most distinctive feature of English agriculture. No other geological formation is so widely and uniformly developed; from Salisbury Plain to the South Downs and north to the Yorkshire Wolds the chalk country possesses a character of its own both in its contours and its agriculture. It constitutes the earliest settled land in the country; the intrenched camps, the barrows, the dykes, the trackways speak of its pre-Roman inhabitants, while the lynches, terraced on the sides of the steepest slopes that have now generally reverted to grass, are evidence of a former intensity of cultivation in marked contrast with its sparse occupation to-day. It was the open, unwooded surface that drew primitive man to the chalk; elsewhere primitive English land must have been largely scrub and forest where it was not barren heath, and the open country would be settled before clearings were made. The chalk country, too, forms the essential home of the sheep, and British farming systems have mostly been based upon sheep-raising, which is still the characteristic note of our agriculture as compared with that of other countries.

Salisbury Plain forms the heart of the English chalk, and it was on the western edge of the Plain that we saw our first farming. We climbed up to the Battlebury Camp behind Warminster, and at our feet was spread out the structure we were so often to see repeated—the steep scarped face of the down descending to a terrace of Chalk Marl and a narrow valley of Gault Clay; beyond that a ridge, in this case of Upper Greensand, clothed with the Longleat woods, and beyond that again the great vale of Somerset. As is so generally the case, a little stream, rising beyond the chalk area, had cut a gap through the escarpment and flowed in a deep valley through the chalk, though the present contour of the land seemed to offer an easier lateral outlet to the sea. From the Battlebury Camp, now a sheet of waving barley, we could make out the farms running in long strips from the high down to the water meadows bordering the little stream, thus giving each farm its small area of rich pasture, some fields of comparatively heavy land, then a larger portion of "four-field" land lying on the lower slopes, and then a strip of "bake" below the open grass land on the top. This grass land is generally old sheep-walk strewn with the typical chalk flowers, the ladies' bedstraw, the nodding thistle, and the beautiful drop-wort most conspicuous, with rock rose, thyme, and milk-wort below, but sometimes it is newer turf which has only been resown with grass since the great depression brought about a reduction in the arable land even in this specially arable country. Below the down comes the "bake," which is a Wiltshire term for the highest thin arable land and, according to the local derivation, associated with the practice of "baking and burning" the turf when the down was originally taken into cultivation. Whatever

the origin of the name, the bake connotes a thin black soil crowded with small angular flints, with pure chalk below at a depth of four or five inches only. Near as the chalk is, the thin soil has sometimes been washed free of carbonate of lime, and responds to chalking and the use of lime and manures like basic slag containing lime; in other places increasing the depth of cultivation has remedied this shortage of lime. Many of the agreements stipulate that the bake shall be farmed on a five-field shift, in which two corn crops—oats and barley or always oats—are taken in five years, with green crops between; but more often a simple alternation of cereal and green crop, eaten off by sheep, is followed, with an occasional rest for a few years in sainfoin. Naturally enough these uplands never see a manure cart; superphosphate is used for the roots, and the rest of the fertility is brought in the cake and corn fed to the folded sheep. Below the bake comes the "four-field" land, free-working loams still very flinty and inclined to be heavy and sticky when they are low enough to lie on the chalk marl. This is the typical corn land farmed on the Wiltshire rotation, in which two years of straw crops follow two years of root crops eaten off by sheep. Barley follows the wheat; then half the field goes into clover and rye grass, the other half into vetches, rye, or winter barley, to be followed by rape and turnips. The system is directed towards providing the sheep with some green crop during every month of the year, and before the turnips are over the rye or winter barley must be ready to take the ewes and lambs. Generally the fold passes over the land three times during the rotation, and little farmyard manure finds its way even to the four-field land. Of late years dairying has extended into this district wherever the farmer

possesses a little better pasture, and it is often the custom to retain all the manure made by the cows for the grass land and farm the arable with artificial manures and the cake and corn fed to the sheep.

The lowest arable land is distinctly heavy and is farmed on the old English "three-field" course of beans, wheat, and barley; it yields heavy crops in ordinarily favourable seasons. In 1910 the thin soils were carrying crops below average; the barley was only fair, the oats distinctly poor, and though good roots were to be seen, weeds were often more prominent. Chalk soils are always full of weeds, and in such a dripping year following on the previous year's inheritance they had almost beaten the farmer; in places the charlock had outgrown the corn and obliterated the lines of the late-sown turnips. By general confession the land is not nowadays so cleanly farmed as of old. On some of the weak spots among the corn yellow-rattle covered the ground, one of the most puzzling of weeds as regards either its distribution or eradication.

Apart from the dairying, Wiltshire farming has in the main depended upon the sheep; for the bullock fattening, which is also practised, is only a means of trampling down the straw into manure. The sheep are the big and rapidly maturing Hampshire Downs, though the Wiltshire man is inclined to maintain that the Hampshires both originated and may be seen at their best in his own county. Other breeds are rarely seen, though we did hear of one north-country immigrant who has introduced and still swears by the Cheviots. The sheep are mostly sold as stores, though some men fatten out their wether lambs; as with all the Down breeds, they live upon the arable land, travelling daily from the down to the fold and back again.

At the time of our visit the sheep farmer was not in a very happy position, for the extraordinary drop in prices that had taken place within the previous two years still persisted; wool, however, remained profitable, and the corn crops had latterly more than paid their way. Throughout the district there was evidence of a general quiet prosperity among the farmers; every one still remembered the bad times and the ruin which followed, but those who had managed to live through the early 'nineties, or who had taken their farms about that time on the reduced rents, were doing well enough. Of course rents had fallen to something like one-half of the old figures, and averaged about 10s. per acre for the kind of farm we have been describing, with its considerable proportion of bake and down, which, however, valuable as part of the system, are in themselves capable of earning very little. Buildings were poor, fences and gates were not numerous; so the landlord was relieved of a good deal of expenditure, which in other parts of the country makes heavy inroads upon his rent. Wiltshire holdings run large, 800–1400 acres; but, despite the large capital they thus involve, farms were in demand, and a stranger had then little chance of getting in. On the chalk small holdings may almost be said not to exist; for many years the drift had been the other way, towards putting little farms together into something which could be worked broadly and cheaply. As a consequence the population purely dependent on the land was sparse enough, but the Wiltshire labourer, often quoted as one of the worse paid in the country, could make up to 20s. a week, with his cottage if he were a shepherd or a horseman. Day labourers got 14s. to 16s. a week, with certain extras and customary payments, and the supply was generally

regarded as adequate, though casual labour had become comparatively scarce.

The Wiltshire farmer seemed to have adapted his system very closely to the range of prices that had been ruling for produce; the land is much of it poor, and, though higher farming was very possible, the bigger crops might be dearly bought; however, if the ratio then current between the price of mutton and that of cake had persisted, he would have been forced to change his methods somewhat and maintain fewer sheep upon entirely home-grown produce.

II

PEDIGREE CORN AND STOCK

ORIGINALITY has been claimed for the man who plants his cabbages; but originality of another order cannot be denied to the man who devises a new kind of cabbage to plant. If agriculture is to be progressive, behind the farmer must always be the man of ideas, very often, as history tells us, not a farmer himself; and we spent a morning in Warminster, visiting one such contributor of ideas to the farming community.

Mr. E. S. Beaven's work upon barley is widely known. On a field of ideal uniformity of soil and exposure for experimental work he has erected a long wired-in cage, within which his barleys are grown in careful rows, each seed being dibbled in separately at exact distances from its neighbours. We were first shown a collection of all the known barleys from every part of the world—two-rowed, four-rowed, six-rowed —many of them so unlike the type that a farmer would deny their right to be called barley at all. Very few of these specimens possess any agricultural value in England; even the raiser of new varieties generally finds it best to base his work on the sorts which the farmer's experience has shown to be suited to the country. The improver can then proceed upon two lines—by hybridization which will yield some-

thing entirely new, or by the selection of a pure strain from an old and valued stock. If an ordinary field of barley is examined, a good many differences between individual plants can be found; some will be taller, others longer in the ear, others blind of a few corns on one side of the ear; variations, sometimes of magnitude, exist in every part of the plant. Most of these variations are due to accidents of nutrition and disappear in the next generation. Thus a specially big grain generally yield but ordinary corn; and on the other hand small "tail" corn of a good stock, if it gets through the early stages of growth, gives rise to perfectly normal progeny. But some variations are heritable and appear again without change in the progeny when the grain from the special ears is sown separately. It follows that the ordinary crop of a given variety must be an aggregate of many different strains, like every aggregate made up of some above the average, and some below it. By breeding from single ears the different strains can be isolated, and those which yield best can be picked out and bred on to constitute a stock possessing all the general characters of the variety, but with a distinct superiority in productiveness.

Above all, the new strain—a pure line bred from a single ear—will be exceptionally uniform, and, with barley of all plants, uniformity is itself a quality of the highest value. Major Hallett's pedigree barleys were really "pure line" strains, but the rigour of the method was first applied to the production of improved cereals in Sweden and in Denmark. The Danish experimenters, for example, selected a valuable "pure line" of the English barley known as "Archer," and thereby raised the yield of barley in Denmark; this "Lyngby" or Danish Archer has proved itself, in the

extensive experiments carried out by the Irish Department of Agriculture, to be the most profitable barley to grow in Ireland, and has been extensively disseminated there to the already manifest improvement of the Irish barley crop. Mr. Beaven has picked out another pure line from "Archer" which he believes to possess certain points of superiority over the Danish selection, and his seed is now being distributed over the south and east of England, where Archer is the most profitable barley, except on a few soils specially suited to the true Chevallier varieties. Mr. Beaven has also selected a "pure line" wide-eared barley from a stock of Swedish origin, which is suitable for the northern growers who prefer that type of barley. The great difficulty about all such work is not to raise the "pure line" strains either by selection or cross-breeding, but to test their yield without the delay and expense of propagating each on the scale even of ordinary field plots; and one of the most interesting features of Mr. Beaven's experiments is the method he has devised of matching his new varieties against some standard sort when only a few hundred grains are available. The two sorts are sown in alternate rows of twelve carefully spaced individual plants to the extent of a hundred rows or more; the eight central plants in each row are harvested separately, the corn rubbed out and weighed; then by considering each pair of rows as a separate experiment, a conclusion can be reached not only as to the relative yield of the two varieties, but also as to the degree of confidence to be attached to the result. In addition to his "pure line" strains we saw some of Mr. Beaven's cross-bred barleys, none of which were then in commerce, though several had been tested in the cage, and had been promoted to trials on the field scale.

Cross-bred cereals have a bad name among some farmers, because they are supposed to split and vary, but every distinct variety was a cross-bred once, and Mendelian principles have taught us how fixity can be secured.

From Warminster we ran along the rich shelf of arable land under the edge of the down through Heytesbury, and then turned up the hill along the old Exeter road until we paused by the ancient earthwork of Yarnborough Castle to gaze over the great expanse of Salisbury Plain. This is the chalk country *in excelsis*, wave after wave of smooth rolling down and soft curving hollows divided into great fields, one hundred acres or more in places, that are only marked off from one another by the changing colours of the crops. The yellow-hammers that sprang up all along the wayside were common to all open country, like the flock of plovers that dipped and wheeled close at hand, but the wheatears that flitted from mound to mound of the earthwork really belonged to the great plain, as, too, the sudden swift flight of a pair of stone-curlews, birds we were not likely to see again until the heaths of Norfolk were reached. We had barely made out the shining lines of tents over at Bulford Camp before a black squall could be seen, travelling across the wide landscape until we also were involved and made the rest of our journey amid rain.

Our host was one of the best-known ram breeders in the country, and his 4000-acre farm, which instead of a long strip formed a rectangle with the down in the middle, was in the main run to keep the great pedigree flock always moving on to fresh feeding ground. But, despite the precedence of the flock, in any year there would be over a thousand acres of corn on the farm, and both barley and wheat were expected to yield at somewhere near the five-

quarter level. The soil was rather different from that seen earlier on the chalk; even at its thinnest it was red in colour, and the flints were neither so small nor so sharp as on the bake; in the hollows it became a deep loam of some consistency, though always easy to work. An outbreak of springs towards the lower end of the farm, which united into a "winter bourne," not only provided a source of water which was forced to various parts of the farm, but gave rise to some rich pasture and meadow supporting a comparatively new venture in the shape of a dairy herd of fifty cows. The arable land was farmed on the typical Wiltshire four-field plan—wheat, barley, followed by two years of green crops. As on most of the chalk land, rape was preferred to swedes, winter barley was highly esteemed and considered to yield better fodder than rye; mangolds, of which a fine field was seen, were only grown for the ewes at lambing-time and for the dairy cattle. On this thin land it was instructive to see such excellent barley crops following wheat, a custom usually regarded as only appropriate to comparatively strong and retentive soils, but the Wiltshire farmer has always been able to grow a fair crop of barley of malting quality after the wheat without requiring any manure. Our host, with his large farm and the varying exigencies of his flock, naturally enough did not always adhere to his usual rotation; from time to time he would find himself taking barley after roots; but though the quality of the grain was good enough he was still minded to follow the local custom, because the two years of successive green crops give a better opportunity of introducing the third catch crop than is provided by the interval between the wheat and the turnips in the Norfolk four-course system.

Of our host's flock this is hardly the place to write; its fame has gone forth into all lands, but its excellences require an expert's appreciation. Folded on the vetches were the ewes, which bear three crops, and are then sold to yield yet one more lamb before they are fattened off. There also were the ram lambs which had been sold at as high an average price as £25, when the ordinary sheep raiser was obtaining little more than the same number of shillings, and a few of the stud rams, including one old warrior then long past his prime, but with the pedigree of a crowned head, ennobled also in Chinese fashion by the deeds of his descendants. With these rams of all ages as text our host could expound to us the slight changes, one can only call them of fashion, which are set up from time to time in the breeder's ideal, in this particular case in response to the Argentine demand. The closing of the Argentine ports to English live stock, due to the Yorkshire outbreak of foot-and-mouth disease in 1910, had hit our host and similar breeders hard; prize-winners at the summer shows which had been sold for export were thrown back on their raisers' hands, and as the local demand could not expand they were not likely to realize more than a fifth of their former price. Facts like these are the arguments for the continuation of our policy of a closed door against foreign live stock; everything must be done to minimize the risks of disease in our flocks and herds, for Great Britain is still the fountain of pure blood for all the stock-raising countries of the world. We were to hear one or other side of the case not infrequently in our travels, but without doubt the breeder's views are those which commend themselves to the vast majority of British farmers, even against their own personal interests. To be a successful raiser of pedigree stock demands

not only a special sense—a kind of artistic perception and intuition—but also those qualities of persistence, judgment, and determination which make a leader among men, and as long as the British races of live stock maintain their pre-eminence their breeders will be accepted as representative of agricultural opinion.

III

THE BLACKMOOR VALE

SALISBURY PLAIN is no place for the small holder; with the extension of the military camps a few will find footing in the adjacent valleys, but in the main the chalk country is the home of the capitalist farmer. When the depth of the soil can be measured in inches the farming must be based upon sheep, and no small farm can pay its way with sheep; holdings of 50 or even 100 acres on the Downs must mean a very low standard of living for the occupiers and poor yields from the land. At present the land is not perhaps producing its maximum, and without doubt in places game is too abundant and is taking too great a toll of the crops; but the better prices that are prevailing will allow of increased expenditure at a profit, and we may expect to see all the land more intensively farmed. But if the country population is to be raised it must be by the return of the rural industries, for the progress both of farming and of the agricultural labourer is bound up with a reduction in the number accompanied by an increase in the efficiency and pay of the staff required for a given acreage, unless the circumstances permit of an entire revolution in the style of farming, as when milk production can be exchanged for fruit-growing.

But from Warminster westwards we ran into a small-holder's country; as far as Wincanton our road

lay over the Upper Greensand, which there formed a comparatively elevated country of stiffish soil, nearly all laid down in grass and divided into small fields by tall, rough hedges. Though it was the end of July, haymaking was still in full swing; farms ran small, and labour-saving machinery was rare. It was essentially a dairying country, and the occasional fields of roots and corn we saw were not of much account. From Wincanton we struck into the Blackmoor Vale, and an improvement in the agriculture was quickly manifest. The country was always undulating, through the alternations of clays and limestones which characterize the Jurassic formations; on the tops and down the eastern dip slopes of the low scarps would lie workable arable land, with retentive clays at the bottoms and for some distance up the western face of the ridges. In the hamlets brick and timber had given way to stone cottages, and though fine thorn hedges were still to be seen, the fields, still of no great size after the large areas prevailing on the chalk, began to be divided by stone walls. Mixed farming prevailed, and the general impression one received was of a fairly fertile country that was farmed in rather an easy-going way and might be made to yield more. We visited one farm lying on the Oolite, where the soil was of a red brashy nature, full of fragments of rock, and varying in consistency from a light, free-working loam to a sticky clay, often difficult to manage with the comparatively high rainfall prevailing. The lighter members of the Oolitic series give rise to typical corn-growing land all over England—witness the name of "Cornbrash" which old William Smith gave to one of the most representative of the formations. On this farm, and indeed generally in the district, the Wiltshire rather than the Norfolk

four-course rotation was followed, though the regular cropping was interrupted at intervals in order to take sainfoin, which was left down for a few years. The soil was distinctly calcareous, and sainfoin was highly valued both for the hay and the grazing; lucerne also grew well, though only small patches were usually sown near the homestead. It is rather remarkable that, despite the prevailing chalk soil, Wilts only grows from 700 to 800 acres of lucerne, and Dorset less than 300; in these warm climates one would have expected a greater breadth of so cheaply grown and productive a crop for thin soils. But sheep-farmers always prefer sainfoin to lucerne for grazing, and the high rainfall puts difficulties in the way of making it into hay; Essex and Kent, two of the driest counties of England, form the chief home of lucerne growing. The wheat looked well, and throughout this district was the best crop of the year; barley was also promising both for yield and evenness, though recent thunder-rains had laid it rather badly in places. Both crops were in want of sunny, drying weather: one of those easterly spells which had been so remarkably absent from England during 1909 and 1910 would have saved many doubtful crops. In contrast to the other cereals oats were weak and patchy, in many places scant of plant and short of straw, and generally of a poor, unkindly colour. Attacks both of stem eel-worm and frit-fly had been in evidence previously, and the early-sown crops had suffered as much or more than the later ones, though in 1909, when a very severe attack of frit-fly prevailed over the Midlands, it was the late-sown crops alone which were affected. But here, as in several other places along our route, we began to be told that oats had been grown rather too frequently of late; barley had been

giving place to oats, and the land was tending to become "oat-sick." Though this was the impression conveyed to us, it was difficult to justify it from the agricultural statistics; the acreage under barley had certainly been slowly declining, but with no corresponding increase in that of oats. The incidence of parasitic diseases is often determined by climatic conditions which escape our observation, possibly in this case unfavourable seed-times had been the determining factor. Moreover, there is little evidence of land becoming "oat-sick" in the north, where the crop is more frequently grown, often only after one or two years' interval.

On the heavy land on the lower part of the farm we made the acquaintance of a weed known only to us from a casual paragraph in the text-books; a field of beans, themselves tall and strong in the straw, was overtopped by the waving panicles of some big grass in flower, almost as conspicuous as reeds, and in patches completely hiding the beans. This was "onion-couch," a form of the tall oat-grass, *Avena elatior*, one of the commonest constituents of Hertfordshire meadows, but here a weed of the arable land, developing just along the surface of the ground a string of small bulbs, varying in size from that of a hazel-nut to that of a pea, and resembling nothing so much as the Chinese artichoke, *Stachys tuberifera*, which a few people grow in their gardens. A terrible weed to deal with, because cultivator or harrow only breaks up the rows of tubers, and each will give rise to a new plant; they cannot be dragged out of the ground and collected like the strings of true couch, and their tuberous form makes them resistant of drought, so that they take a good deal of killing when the land is being fallowed. In this case an infested field—and the weed is only really troublesome on the

heavy land—had been but recently taken in hand, and during the previous two dripping seasons had defied all attempts to bring the pest under.

This was a country of good pastures; the firm calcareous soil and the sufficient rainfall result, where the management is sound, in a close sward carrying naturally an abundance of both white and red clover. The sheep of the district—and the lighter brashy soils must be folded over to maintain their texture and fertility—are the Dorset Downs, a variant of the Hampshires that is little known outside its own special district. The origin of these sheep appears to be identical with that of the Hampshires—a cross of the old big, white-faced local sheep with the Southdowns—but they diverged at an early period and are nowadays distinct enough. They are somewhat finer and lighter in type than the Hampshires, browner in the face, and slower in coming to maturity. Their breeders claim that they yield a better quality of mutton than the Hampshires, and that they will always command higher prices when sold at equal weights in the west-country markets, where the two breeds come into competition. Of course their slower growth has to be set off against this; the Hampshires are above all things rapid mutton-making machines, and which system is the more profitable, the forcing policy adopted with the Hampshires or the longer and cheaper feeding of the Dorset Downs, is just one of those questions which a local experimental farm might take up. The economics of our various methods of farming is the side of British agriculture about which we are most ignorant, and though it is easy to object that any experiment on the subject is at the mercy of the season or the turn of the market, that only means the experiment must be carried out more

thoroughly and spread over a longer interval of time. Experiments of such a nature also would drive home to farmers at large the possibilities and value of proper farm book-keeping, not the book-keeping of a merchant or a banker who only wants to know his financial position with regard to A, B, or C, but the book-keeping of a manufacturer who must ascertain the cost of every article he produces and the results obtained by each department of his business.

It is very questionable whether we need the present multiplicity of sheep breeds in Great Britain, and yet the tendency is to increase their number, for almost every year some district decides to fix and intensify the local variation by constituting a flock book and defining a new breed. Nothing is done to demonstrate that the local race is better than its competitors and therefore deserves perpetuation; it is an article of local patriotism that the sheep of the district must be the best, and though the fact of its survival is an argument in its favour, the odds are that one of the dominant races would answer better when once the acclimatization period was over. How otherwise can we account for the success of the Oxford Downs in the Border country, *a priori* one of the least likely homes for them? There can hardly be such wide differences in the climate and soil of England as necessitate the score or more of sheep breeds there to be found. The formation of a local breed society does encourage men to pay more attention to the class of animal they rear, and so tunes up the management in the district, but it also means the acceptance of a more parochial and therefore lower standard; it cuts men off from the international market, and it encourages that somewhat retail view of farming as a fine art which is still too prevalent in British farming.

IV

SOMERSET BARLEY GROWING

OUR road still lay westward through Sherborne and Ilminster across the scarps of the Oolites and Lias formations until, as we approached Taunton, we reached the New Red Sandstone, with the deep lanes and warm-coloured fields we associate with the typical Somerset. All the way it was a rich corn-growing country, and the crops, if not heavy, were evidently over average and standing well on the light kindly soils; the wheat in particular looked very good and was more of a feature in the agriculture than we had expected. East of Taunton it seemed the leading crop; to the west barley predominated. From Ilminster westwards small orchards begin to form a feature in the landscape, but they are poor and ill-cultivated, in unpleasing contrast with the good soil and the fine arable farming by which they are surrounded. In this rich Taunton Vale we visited one of the most representative farmers, not only of the district, but of southern England generally, known for himself as for his famous Devons and Dorset Horn sheep. The farm is situated on the gently undulating edge of the vale just before it rises into the Brendon Hills and Exmoor; southward the view is bounded by the long ridge of Blackdown, while across the valley to the north-east stretch the Quantocks, within

whose recesses lie Nether Stowey and Kilve, holy ground indeed for pilgrims, but for another occasion than ours. We were still on the New Red Sandstone, a light, free-working loam, containing no stone—indeed, the sort of land that was poorly enough esteemed in the old days when a man grew his crops out of the capital in the ground, but nowadays the most valuable of land to the intensive farmer who treats it liberally, because it is both grateful for manure and cheap to work. Like many of the sands of the New Red formation it is a little deficient in lime and potash; finger-and-toe is not unknown among the turnips; red clover is not as successful as some of the other crops and is benefited by applications of potash manures. One is accustomed to speak of such land as "sheep and barley soil," but in few other places does barley form such a feature in the rotation, being grown no fewer than three times in a five-year rotation of roots, barley, barley, seeds, followed by barley again. Of course, the soil and climate are particularly suited to growing the finest Chevallier barley; early sowing is nearly always possible in that open genial district—in fact, we were shown several fields which had been sown in January even in such a difficult season as that of 1910. The barley was a heavy crop, at least six quarters to the acre, with specially reedy straw almost free from flag, these features being characteristic of the soil and the early sowing; it was ripening rapidly and promised to be ready for cutting in the first week of August, and though somewhat laid would be easily manageable with the binder. More beautiful examples of finely-finished barley would be hard to find—indeed, soil and climate there are very much the same as those which prevail on those special few hundred acres of land

near Porlock which have so often produced the champion barley at the Brewers' Exhibition.

Like most modern farmers, our host by no means tied himself down to follow the rotation above set out; just as the root-breadth included mangolds and some very excellent potatoes as well as the swedes, so a certain amount of wheat was grown when the land could be conveniently cleared in time. It was also usual to sow a few acres of trifolium as a catch-crop after barley and before the roots; this clover grows well on the sandy soil and greatly enriches the land when folded off by sheep. Another crop to which most of us were unaccustomed was "dredge" corn, a mixture of barley and oats in roughly equal proportions, which was formerly a regular feature in English agriculture, but nowadays is only seen in the south-western counties. Of course the product is only used for home consumption, but the mixture of the two grains roughly ground or crushed constitutes admirable dry food for either fattening cattle, horses, or pigs. The real gain in growing dredge comes in the enormous yields that seem to be possible; not only here, but in other places we convinced ourselves that a much greater gross weight of the mixture could be grown than of either separately, so that any farmer in the habit of growing oats and barley for home consumption would probably do better to sow the two together. There are, of course, reasons why the mixed corn should succeed better; the two cereals permeate slightly different layers of the soil with their roots, and by their different habit of growth they seem to assist one another to stand up. At any rate, we saw heavy crops, estimated at ten quarters per acre, still standing stiff and erect, when most of the other cereals in the country were more or less lodged. On this sandy land wild oats

constitute the most troublesome weed among the corn, true couch is rarely seen, though a specimen here and there was picked out of the hedgerows. What is known locally as couch is the stoloniferous form of the Bent Grass, which often grows tall and strong when it invades the arable land; an odd example or two of the "onion-couch" referred to earlier were found, but it is never aggressive.

In this rich vale of Somerset we were out of the region of extensive farms which prevail on the chalk; the ordinary holdings are from 250 to 400 acres, and mingled with them are a fair number of comparatively small farms ranging down to 25 and 30 acres. It is not always easy to draw conclusions from the agricultural statistics, because a country is an arbitrary area, rarely coinciding with natural districts; but it is significant that in Wiltshire the farms of over 300 acres constitute 9 per cent. of the total number of holdings, whereas in Somerset, with only a slightly greater area under cultivation, there are more than twice as many holdings, and the farms of over 300 acres constitute only 2·9 per cent. of the total.

Without doubt all forms of farming had been profitable in Somerset for some years prior to our visit; dairying was in a flourishing condition, and Somerset possessed more cows in milk than any other county except Lancashire and Cheshire, while the corn-growers had enjoyed better harvest weather than had prevailed in other parts of the country. Rents ruled high in the Taunton Vale, from 30s. to £2 an acre, and there were no farms to be had, which is the most convincing test of the agricultural prosperity of a district. Of course, some holdings were still coming into the market to be let, but they were of a kind to be shunned, either bad land or in a run-out and foul

condition; farms of any quality were bespoken before the impending change of tenancy became public. With this general prosperity of agriculture in the district, a district, too, where small farms have always been common, there had naturally been a considerable demand for small holdings under the Act. In this connection we were struck, as we have also been in other parts of the country, by the loyal way in which the Small Holdings Act had been carried out by County Councils, composed to a large extent of men who disagree with its principles. Our host, for example, disbelieved in small holdings and regarded their artificial creation as an economic blunder on a par with an attempt, say, to resuscitate hand-loom weaving in Lancashire, but as a member of the Small Holdings Committee he had personally seen to the division of a farm taken for the purpose, and schemed out such a cheap rearrangement and addition to the buildings already on the place as would save the tenants a good many shillings per acre of rent. When farms have to be surveyed, plans drawn, and buildings erected by officials, the cost of the holding is very rapidly augmented, and some of the rents which we heard of in various parts of the country, though the necessary rent on the outlay incurred by the County Council, give even an old hand at the game of working a small holding very little chance of paying his way. In some districts also small holders have been set too thickly in one place, so that they must swamp the strictly local demand for vegetables, eggs, and similar produce, out of which the little farmer can generally make a good retail trade. Of course the supporters of the movement look to see each small-holding community become co-operative, pooling the produce of its members, and selling it in bulk; but

such a system has not yet been seen at work in England, and seems to require a stronger bond of union than self-interest alone can provide. However, in the main the Small Holdings Act has been fairly launched, though against the judgment of the majority of those most deeply engaged in country pursuits; the movement has one great thing in its favour—the rising tide of prices for all kinds of agricultural produce; it has now passed out of the region of discussion, and must be left to show its real character by results.

V

THE DORSET DOWNS

As Devon and Cornwall are mainly given up to stock-raising and dairying, we turned at Taunton and partly retraced our steps in order to reach South Dorset. Nor did the dairy country detain us—the manufacture of "blue vinny" must be left for another journey—but approaching Dorchester we reached again the chalk and the region of extensive arable farms. In this district the elevations are not so great nor the gradients so severe as in Wiltshire; the valleys, too, are well watered, not only by the Frome and the Piddle, but by tributary streams rising wherever the surface level has been cut down to the water table in the chalk rock. We turned our back on Maiden Bower and the other tempting camps which crown the heights above Dorchester, put aside the glamour of Wessex and Thomas Hardy's country, and drove eastward to one of the largest sheep farmers thereabouts. We were nearing the boundary of the chalk, for we began to find the ridge by the roadside crowned by little caps of Tertiary formations—Woolwich Beds or Bagshot Sand—and the change in the flora was sudden and complete. The chalk hedgerows, with their characteristic shrubs—the dogwood, the beam tree, the wayfaring tree, and, above all, the wreaths of clematis or traveller's joy—were suddenly exchanged for planta-

tions of Scots fir with bracken and foxgloves below, sure signs of the absence of lime from the soil. The farm we were in search of lay in one of the shallow valleys where the chalk begins to rise above the alluvial flats and the heaths bordering the coast; at its lower end a brave spring of clear chalk water came to the surface and was bordered by water meadows and wet pastures. Near the spring was placed the homestead, as on most chalk farms at the lowest point of the valley, because of the shelter and the nearness of water even when no stream breaks out. From this point the farm extended upwards in the usual long strip, terminating in big upland grass fields rather than in open down. The soil was the usual yellowish flinty chalk loam, sometimes of considerably stiffer texture on the higher ground, where no doubt Tertiary formations, now denuded away, had still left behind an admixture of clay, just as on a more wholesale scale they have left the deposit of Clay-with-Flints above the chalk of the North Downs and Hertfordshire. The thinnest soils lay on the side of the hill, where the chalk turned up so loose and friable that it falls to a powder on drying and will blow in the wind like the lightest sand. Most chalk soils require a good deal of consolidation in cultivation—one old Kent custom is to load a cart with bricks or stone and lead it up and down between the rows of turnips—but we never saw a field on which the constant use of a heavy roller was more necessary.

Our host, however, was somewhat of an expert in husbandry, one who belonged to the old school in the thought and care he gave to the working of the land, though he had broken away from the local custom of comparatively fleet ploughing in favour of extra deep cultivation. The scale of his holding, 1400 acres, of

which about 800 were under the plough, the easy slopes, and the magnitude of most of the fields rendered it very suitable to steam cultivation, and it was our host's custom to get most of his first ploughings done by steam, following this up by a very thorough preparation for his roots. There are few subjects on which the opinion and practice of the best farmers, even in the same district and on the same soil, differ more than on this question of the amount of working the land requires before sowing turnips. Of course, on a heavy soil a fine but firm seed-bed must be obtained, and cannot as a rule be attained in a single set of operations; but even on the lighter lands men will be found who plough twice with an interval between, cultivate, harrow, and roll repeatedly, then leave the land to rest for a time before gathering it up into the ridges upon which the seed will be sown; while others will prepare their land and get it sown in a single round of operations. Even the question of whether it is best to sow swedes on a stale or freshly-moved tilth is still a matter of dispute. We are greatly in need of more experimental work on the operations of cultivation, this being one of the subjects with which local experimental farms well might occupy themselves, instead of with the permutations and combinations of nitrogen, phosphoric acid, and potash which seem to bound the imagination of too many of our agricultural teachers. Our host was a strong advocate of the policy of "thorough" in his treatment of the soil, and his methods—the deep cultivation, the working down of a considerable layer to a fine crumb, which is then packed tightly on to the subsoil and kept loose for the top two or three inches only, were just those which have recently been renamed dry-farming in America and boomed as the discovery that is to make the desert

blossom like the rose. The rotation followed on this farm was novel to us; it had for its object less the growing of corn than the provision of as much sheep keep as possible. As in the Wiltshire system it began with two years of roots or rather of green crops, for kale, vetches, rye, or winter barley predominated over swedes and turnips, while mangolds occupied a still smaller proportion of the area. These green crops were, of course, folded off by sheep, cake and corn being often fed out at the same time. After the forage crops barley was taken and in it the seeds were sown, red clover every other course only, for it does not stand very well on the land and is best alternated with mixtures of alsike, white and hop clovers. The seeds were sometimes left down for two years and were followed by wheat. Thus two corn crops only were grown in five or six years, and though this system paid while more profit attached to sheep than to wheat or barley, it is questionable if it will continue to be remunerative with the present trend of prices.

With our host's resolute style of cultivation the land was clean, despite the season and the large acreage of the farm; charlock, which is always supposed to follow deeper cultivation on these soils and is therefore made the excuse for shallow-ploughing, was less in evidence than on any chalk land we had seen. The wheat was a heavy crop, especially on some of the stronger land on the hill; there were some of the blighted heads which were so characteristic of the season, but on the whole the wheat was cleaner and brighter than usual. The barley was Chevallier and a distinctly good crop also, not so much laid as might have been expected from the fact that it followed two years of green crops folded off. Dredge corn was also showing its usual heavy growth.

The roots, both early and late sown, were excellent

and very clean; in the seeds the rye grass was most prominent, the clover being but patchy. The soil seemed to lack potash and was said to respond to manures containing that fertilizer. Sainfoin we were told was rarely successful, in spite of the warm chalky nature of the land, but trifolium was grown very successfully as a catch-crop after the wheat, and this again showed that the soil is hardly of the normal chalk type. The main part of the farm derived its fertility chiefly from the artificial food given to the sheep when folding, bone manures were used for the roots, but only the fields near the homestead got any farmyard manure.

At the lower end of the farm where there were good meadows and water, a herd of dairy cattle was kept, but the mainstay of the business was the fine flock of pedigree Dorset Downs. Looking at the ewes we were again impressed by the handsomeness and general look of quality about the sheep of this comparatively recently recognized breed; the only question is whether their quality had not been purchased too dearly by their comparatively slow growth. Lambing takes place early in the year in a fold-yard built up on the arable land, and the ewe lambs do not come into the flock until their second season; the wether lambs are sold in the September of their second season as forward stores, coming off the fold where they have also been receiving a little cake and dry food. They fetch good prices, but the annual output of the flock must be lower than that of other Down breeds, a good deal lower than that of a Dorset Horn flock, and as the sheep are throughout their life consuming crops on the arable land and receiving some dried food in addition, they are not running so cheaply as other slowly maturing sheep that live largely on the

grass. Like all the Down sheep they travel to and from the fold every day; we saw them on a great stretch of upland, not true down because it had been sown to grass by the present occupier, but typical enough of the chalk country in its gentle curves and in the huge tumulus that crowned it. In the heart of this were exposed a number of large blocks of Sarsen stone, many marked with fire; unfortunately the mound was built up of nicely friable chalk which formed a convenient medium for mixing with the artificial manures before sowing, and so was steadily being dug away.

All the farms thereabouts ran large; our host's was as much as 1400 acres, but three to eight hundred acres were usual. Rents averaged about 15s. per acre for the good arable land down to half that price for the down land, and despite the capital required to take up such farms none were to be obtained. Small holdings were little known, some of old standing in the district had been put together again in the not very distant past. A little farther on our way we saw a farm which had been recently acquired and divided by the County Council, but the experiment was too new to judge of its promise. In this district labour was reported as cheap and plentiful, the only difficulty was to get the young man to take up the skilled occupations, notwithstanding the higher wages available. The sheep-shearers work in bands by contract, going from farm to farm, but the local company was reduced to five men, and shearing by machine with the ordinary labourers would have to come. On the whole, the impression we formed both here and elsewhere in South Dorset was that its farming was of a very sound and conservative type, quietly prosperous, and preserving a good deal of the pride of the old school in the thoroughness of the work done on the land.

VI

THE SUSSEX CORN BELT

OUR road continued eastward over the lower slopes of the chalk across the fine cornland near Blandford, which is reputed to be about the earliest district to harvest in the south of England, until near Wimborne we exchanged the chalk for the Bagshot Sands and left the good farming behind.

The old story that the Conqueror made a waste of the New Forest has long been discredited; the Lower Tertiaries on which the Forest and its environs are situated give rise to the poorest of soils, the cultivation of which was even less possible in the old days, before extraneous sources of manure were available. But from Ringwood to Stony Cross is one of the most glorious of rides when the bell-heather lights up the black heath and the packs of forest ponies come trotting across the road; all the more beautiful on that occasion when the afternoon sunlight struck in shafts through the dark clouds which the west wind was massing up from the Channel, with little promise of the settled fine weather that every one was wanting to ripen off the corn and bring in the harvest. Poor as the soil is, the outskirts of the Forest show the innate land hunger of our people; just because the land has been obtainable in small pieces all kinds of little holdings, with weird bungalows and suburban

cottages of the dreariest red brick, have been springing up of late years, each with a strip of land on which the occupier hopes to make a living out of fruit or poultry or even bees. Most of these rapidly shabbying villas could tell a series of short stories of failure, as much from the inexperience and ineffectiveness of the occupiers as from the innate hopelessness of the venture upon which they had embarked; but here and there a business faculty develops and another family gets rooted on the land. The forbears of a good many of the older farmers about the Forest were nothing but squatters, authorized or overlooked; probably they knew little enough of agriculture at first, but they have made both land and men out of waste.

From Redbrook we had miles of suburb to traverse, but once across the Itchen ferry the highly cultivated land begins and extends into the zone of the electric tramcars and the street lamps. The light sands on this side are less barren than the Forest heaths, and have proved of great value for strawberry-growing, with which, indeed, the countryside as far as Portsmouth is chiefly occupied. Poor enough some of the land is, and after it has grown strawberries for a few years it is often allowed to run back to villainous waste; but its warmth and dryness combine with the southerly exposure to produce the earliest outdoor strawberries in the country. The strip of country from Southampton to Chichester comprises, indeed, some of the warmest and earliest land in the country, and a little farther east by Portsdown Hill, where corn-growing rather than fruit becomes the staple industry, the earliest wheat harvest may be expected, as Cobbett used to tell his readers nearly a century ago. Here were some excellent crops, and the first corn we had

seen cut already stood in sheaves. Attractive as this country was, we did not stay, but pushed on into Chichester, as our object was to see the farming in the maritime district of Sussex, a country little known but containing some of the richest arable land in England.

South of a line from Chichester to Lancing the land is but a few feet above sea-level, and is covered with a deep deposit of brick earth forming a uniform, stoneless even-tempered soil, easy to work yet sufficiently strong and retentive of moisture to keep crops growing throughout the driest of summers. Just along the line itself, and inland a little until the slopes of the South Downs begin, the soil is lighter and full of stones—valley gravel, or "shrave," as it is locally called; both it and the brick earth are alluvial deposits belonging to the geological or climatic epoch immediately preceding our own. Fertile as is the country, it is flat and unattractive, thinly peopled, though the small parishes and the numerous churches one meets when driving along its winding deep-cut lanes bear evidence that it has always been a rich and productive country; but the greater economy of labour with which the land is nowadays worked and the decay of the village crafts have led to the reduced population. Unlike many of these areas of old or recent alluvial origin, maritime Sussex is mostly under the plough. Along the watercourses there are a certain number of old pastures, but only a few of them possess any reputation for fattening stock; here and there also men have laid down land to grass in order to have some firm land on which to put their sheep during the winter, when the arable often gets too wet for folding.

Our host had long farmed in the district, and had

evolved a scheme of cropping which exceeded anything we had yet seen in the amount of saleable produce obtained from the land. Of course, it was essentially a corn-growing soil; no other area in the south of England produces so large a proportion of wheat, and on this farm four corn crops were grown in a six years' rotation as follows: wheat, oats, roots, oats, wheat, seeds. Catch-crops were taken whenever possible; as a rule the oat stubble was quickly broken up and sown with trifolium, vetches, rye, and winter barley, to be eaten off with sheep, and followed by rape or late-sown turnips. Our host was, indeed, one of those farmers who believe in keeping the land occupied, and in one of his big fields where the sheep were just finishing off a crop of vetches we saw a round dozen of horses at work breaking up the land and getting in turnips in a single day's work. A double-furrow plough was working close up to the fold; this was followed by a heavy harrow, a man sowing superphosphate, a roller, and a light harrow. Behind came a man sowing turnip-seed broadcast from a seed barrow, whereupon another light harrow and a second roller completed the day's work. It was a good example of the driving cultivation possible on this soil, in extraordinary contrast to the long and arduous preparation which other farmers find to be necessary for their turnip crop. For the season the land was very clean; weeds, indeed, were smothered out of existence by the succession of heavy crops.

The rotation, as we have seen, gives four corn crops to sell in six years, and as a good deal of straw is sold also, and even hay when the price is tempting, the fertility of the land has to be maintained by artificial manures in addition to the manure contributed by the feeding-stuffs given to the sheep when folding. The

big crops, however, made it evident that manure was not spared; some winter oats and wheat were seen which promised exceptional yields for the season, but the spring oats were scarcely up to the standard expected in this district, where wheat is counted on to yield year after year more than five quarters to the acre and oats much about the same. One distinguishing feature of the crops grown on this land is their stiffness of straw; when the land has been brought into high condition the crops stand better here than on the chalk or greensand. Barley is but little grown, but is better suited by the lighter shravey soil nearer the hills. Moreover, there is an exceptionally good local sale of oats to the poultry crammers who have established themselves so largely in East Sussex. For "Sussex ground oats," nowadays the standard food for fattening poultry, heavy white oats are in demand, and they are ground, husk and all, to a fine powder by specially dressed millstones, having previously been mixed with barley to facilitate the grinding, in roughly the proportion of five of oats to one of barley. The red clover was, perhaps, the least satisfactory of the crops, though our host had for a generation saved seed of a variety of his own which he regarded as best adapted to the land. As is generally the case where red clover is rather a doubtful crop, the soil was somewhat deficient in lime; dressings of lime, or, best of all, of fine chalk, had always proved beneficial.

We had now finally left behind the Hampshire sheep and reached the Southdowns, the original parent of all the Down breeds, a race evolved rather more than a century ago by selection alone from the short-woolled hill sheep which were native to the south of England. This was not so much their proper country as were the downs we could see rising to the northward; the land

was indeed somewhat too heavy for sheep, and often suffered badly from their treading in the winter, traces of which could be seen here and there in some of the oat crops. The sheep, too, are not exactly at home on the lowlands, and are subject to foot-rot, especially after a winter as wet as the previous one had been. The lambs had just been weaned, and the air was full of bleatings as we went to look at the folds, where the neat, active brown-faced little sheep were clearing off the last of the vetches. No sheep count more devoted adherents than the Southdowns, and though men accustomed to the larger breeds always wonder how a farmer can be found to waste time raising anything so small, both Southdown mutton and wool command special prices of their own, and the turn of the market has for many years been in the direction of small mutton. On this farm it was the custom to sell off the wether lambs and the draft ewes in September, when they go inland, as for example to the greensand country beyond the Downs and into Surrey, to be fattened on the turnips. A few dairy cows are kept, especially near Chichester, but the chief cattle business is the fattening of bullocks, mostly Devons raised in the West Country, so much so that Chichester has become a well-recognized market for young Devon stock. Generally they are wanted to trample down the straw and are yard-fed, but some men possess grassland good enough to bring them up to sale point during the summer with the aid of a certain amount of cake.

The farms ran fairly large, 400 acres or so; despite also the richness of the land and the proximity of the string fertile suburbs from Chichester to Southampton, the small manure was hardly known, and of late years several feeding farms had fallen in and been amalgamated into

larger holdings. Rents were high, 30s. to £2 an acre, and rising above that figure in some recent agreements; some of the land, too, was subject to a drainage rate. Buildings were in general pretty poor; labour plentiful but well paid, even the day labourers should make a pound a week on the average of the year. It was by no means every one's style of farming, but most of the land had been in the same hands for a long time, farms were hard to get, and were likely to become even more so if corn prices maintained their upward tendency. The great characteristic of this Sussex maritime country is, however, neither its sheep nor its cattle, but its power of producing continuous heavy corn crops; no land and no farming we had seen so far had given us the same impression of a busy manufactory of produce.

VII

THE SOUTH DOWNS

FROM the maritime plain we set our faces towards the South Downs, most beautiful of all the chalk country. West of the Arun they are mostly covered with wood, for both elevation and rainfall are considerable; and on much of the land the beech forest, if only it is managed for timber rather than neglected for game, is likely to prove more profitable than agriculture. But eastward the country becomes more bare; in the great waterless hollows lie the homesteads with wide, hedgeless arable fields round them, sloping upwards in gentle, undulating folds to the open grassland, which, though never wholly unenclosed and broken in places by cultivation even to the tops of the ridges, stretches on and on until it finally rolls over in a great wave to the Gault valley and the Wealden plain beyond. Beautiful as are the folds of the hills in the heart of the chalk country, as, for example, behind Brighton, the South Downs are most impressive when viewed from the low country northward; there the sudden sweep of the escarpment truly merits old Gilbert White's description of "this majestic chain of mountains," nowhere more so than towards Lewes, where Ditchling and Firle Beacons are crowned with smooth and spotless turf.

The true South Down farmer lives by his sheep,

which on these extensive farms travel daily for long distances from the down to the fold. They lamb in March in fold-yards that are built up of wattles in the corner of some turnip field with a straw stack adjacent, and the losses both of ewes and lambs are apt to be rather heavy, as they had been, for example, in the preceding wet winter. This may be attributed to the ewes losing condition through the wet, until the daily journey from down to fold and back brings them into too low condition for lambing. After lambing, the flock feeds steadily across the arable land, beginning on the rye, then on the winter barley which grows a little more slowly, then on the rape and the aftermath of the seeds, followed by summer turnips and rape again. Swedes are little seen in this district, rape being universally preferred for the sheep. One reason is that the root land is generally cropped first with rye or some other catch-crop, and by the time it is cleared the season is often too far advanced to sow swedes with success. Only on a few farms are the wethers fattened; as a rule the wether lambs and the draft ewes are cleared out in September, the South Downs being thus a sheep-raising rather than a mutton-producing country.

The land, though so similar to the Wiltshire chalk, is generally farmed on the Norfolk four-course shift, with oats in place of barley. Only in the north-western counties of England—Cheshire, Lancashire, and Cumberland—does the acreage under oats overtop that given to barley in anything like the proportion prevailing in Sussex, where there are seven acres of oats for one of barley. We have already mentioned the good local market for oats; oat straw is also considered the more valuable and is wanted for the bullocks that are wintered. With the comparatively

high rainfall that occurs on the higher chalk country the land is probably left too rich for barley after roots folded off, yet it is not considered good enough to carry two straw crops in succession. The tops of the downs are covered with the same thin black soil that we had before noticed near the edge of the Wiltshire Downs; so regular is the layer of flints resting on the chalk rock immediately below the grass that the surface of many of the downs is being systematically dug for flints for road metal, to the destruction for many years to come of the exquisite turf which is the delight of every traveller on these heights. Alternate rape and oats are usually grown on such of these uplands as remain under the plough, and the area of cultivated land has again shown some tendency to expand with the rising corn prices of the last few years. The upland is from time to time sown down for a few years, though curiously enough neither sainfoin nor lucerne is much used for this purpose. The black soil is usually completely decalcified so that basic slag has proved a valuable fertilizer, contrary to the usual forecast. The enormous improvement, amounting almost to a revolution, that basic slag will effect in the high down pastures has been one of the most astonishing results of recent experiments.

The Down farms run large, and general report says that the land is in fewer hands nowadays than it was twenty years ago; indeed, we heard of one man who farms a strip of land extending from Rottingdean to Lewes, five miles across country. Such increases in the area farmed by one man are not to be detected in the statistics issued by the Board of Agriculture, which almost uniformly show a decrease in the number of holdings over 300 acres, both since 1885 and since 1905. The reason for this discrepancy between

general opinion and the official returns is the fact that each farm is still returned under a separate heading, so that though one man may be working four contiguous farms they do not appear in the statistics as a single larger holding. When rents had reached their lowest level and times still looked black for farming in the 'nineties, the men who had learned to make money under the new dispensation added farm to farm; but of this process no record appears in the agricultural statistics, where almost the only change to be recorded is the division into separate tenancies of some area which had hitherto been regarded as a single farm in the estate books. The accretion, however, had been arrested at the time of our visit, for farms were no longer to be had easily, little land was coming into the open market, and that was in steady demand at the current rents of about 15s. an acre for the better land, and 7s. 6d. for that on the hill. Even 20s. an acre all round had been lately paid for a good Down farm. Labour was obtainable in satisfactory quantity; and though "silly Sussex" is rather a byword, the men of the hill are very sound hands among sheep, and if stubborn and wedded to the old ways, yet very dependable and possessed of a measure of originality and native character rare in southern England. But the stockmen are always the pick of the agricultural labourers; they have to be continually using their judgment, and the Southdown shepherd lives out among his sheep to an unusual extent.

Though sheep-breeding is the mainstay of the South Down farmer, it has always been the custom to buy in young bullocks in the autumn and winter them in lodges high on the hillsides, feeding them on the oat straw and on the seeds, hay, and roots, an

selling them as forward stores in the spring. Only those men whose farms run down to include a "brook," which is the Sussex name for the flat, alluvial pastures bordering the rivers, fatten bullocks at all; and even this practice has of late years been largely exchanged for dairying, which indeed is extending on to most farms in possession of grassland of more than down quality.

To one of these dairy farmers we paid a visit; he held about 300 acres of comparatively heavy land under the hill near Lewes, including some brooks that belonged to the Lewes Level. As this farm had been shorn of the down which once formed part of the holding, our host kept no sheep, but instead milked a herd of some sixty cows and also fattened out bullocks on the brooks. He farmed in the main on a three-field system of roots, wheat, oats, the root shift including mangolds, cabbages, and maize, exchanged for clover seeds at fairly long intervals, for clover was not a success when grown more often than once in every six or eight years. Even then he would hardly grow red clover twice in succession, preferring to alternate with a mixture containing alsike, white, and hop clovers. Sainfoin also did not answer on this stiff land, but we saw a useful patch of lucerne near the homestead. On this farm the land was clean and the crops heavy, much superior to most of those we had seen on the chalk or on the chalk-marl terrace under the hill; our host was a strong believer in the value of artificial manures, and could show us a good many experiments he was making with a view to ascertaining the most profitable fertilizers for each crop. His fields were all marked out into "cants" of known area for the purpose of assessing piece-work; for he let out as much as possible of the field work to his men, and

the same boundaries were convenient for the experimental areas. This farm was a very good example of the way a man may sometimes depart with success from the general farming customs of his district; without its down it had become less suitable for sheep, and the occupier had boldly thrown them overboard and evolved a plan more suited to the soil and situation. Two of the three crops on the arable land were sold, including a good deal of the straw, for which Brighton and Lewes provided excellent markets. The other third of the arable helped to feed the dairy cows, which were producing an average of 150 gallons of milk a day. During the summer also the surplus grass was being consumed in fattening bullocks, so that plenty of saleable material was always being raised on the farm. The dairy cows were heavy Shorthorns and a Sussex bull was used; the resulting crossbreds are among the kindliest of animals to grow quickly and fatten on grass. Of course, such a farm was expensive in labour; it is much more costly to carry green crops to cows than to run the fold over them, and in that district men earned good wages, milkers in particular being difficult to get at any price. For such strong land, well situated as regards access to the town and rail, higher rents had to be paid than for the hill farms proper, but the farm showed every sign of earning a good profit on the pound or so per acre which was about the rent prevailing.

Before leaving this country we paused at the little village of Glynde, a few miles outside Lewes, because it was the home of John Ellman, the founder of the Southdown sheep. Of course, the Southdowns were not made in the sense the Hampshires or the Suffolks have been made; Ellman took the sheep of the country and selected them to a type he had in his

mind, fixed the type by in-breeding, and then impressed his flock and his standard upon the whole countryside. He may have taken his ideas from Bakewell, but he did for the Southdowns what Bakewell did for the Leicesters; and which race has done most for the improvement of British sheep may well be a matter for argument, seeing that the Southdowns have contributed the essential element of quality to all the Down breeds—Hampshires, Oxfords, Dorsets, Suffolks, and Shropshires. Of John Ellman himself the only biography is a verbose and colourless performance; but we get some glimpses of the man from Arthur Young's accounts of visits to Glynde in the *Annals of Agriculture*, enough to show that he was one of those leaders of a countryside whose work stands for many generations. Amongst other things, after several men had failed, he undertook the reclamation of the estuary of the Ouse, then a wash of marsh and tidal mud-flat between Lewes and Newhaven; he straightened and embanked the river, making navigation both safe and speedy, and at the same time won for agriculture more than a thousand acres of good pasture. *Si monumentum requiris circumspice* might indeed be said of Ellman by any one standing as we did on Mount Caburn, above his old home, with the Southdown flocks dotting the hills round about and the broad green expanse of the Lewes Level at our feet.

VIII

SPECIALIST FARMING: HOPS AND FRUIT

ONCE away from the "hill," as the South Downs are called, Sussex is but a poor country agriculturally. There is a strip of greensand immediately to the north, which grows very good crops and has for some time past been increasingly devoted to dairying; but the greater part of the Weald contains only poor land indifferently farmed. The neighbourhood of Heathfield, however, possesses one flourishing agricultural industry, that of poultry fattening or cramming, as many as 1200 tons of fat chickens ready for the table being sent away from Heathfield Station alone during the year. The crammers feed the birds in the ordinary way for a time, then for the last fortnight or so they cram them twice a day with a porridge composed in the main of Sussex ground oats, forcing the food in by means of a machine until the crop is just distended. The birds are not raised by the crammers, but are purchased in the country round by "higglers." Poultry keeping and fattening have long been favourite pursuits in the district, but it has only been within the last score of years that the industry has become systematized and has grown to such proportions. It is a small man's business; indeed, speaking generally, the Weald, both on the low clay plain and on the Forest Ridge, is divided

into little farms, among which numbers of really small holders have more recently found a footing. To an increasing extent it is a residential district; and many of the bungalows and raw red-brick cottages and villas, which look as if they might have been transported bodily from a London suburb, have been erected and are more or less maintained out of savings earned somewhere else. But some of the holdings have become self-supporting, though they have grown up there, as on the outskirts of the New Forest, on wretched land from an agricultural point of view.

A good deal of the country is still covered by woodland, though the small size of the fields and the abundant hedgerow timber — often, indeed, narrow shaws that show the enclosure was originally cut out of the forest—make the country look more heavily wooded than it is. Otherwise grassland predominates, often of the poorest quality, because it is mown for hay every year and then let to carry sheep from the marshes through the winter, thus being both hayed and grazed with little or no return of fertility. The arable fields show a whitish, hungry-looking soil, varying in consistency from a clay to something near a sand, but never kindly to work and always deficient in that essential to fertility—lime.

The good pastures are the brooks bordering the streams in the steep-sided valleys, especially where these brooks widen out into the marshes near the sea. We crossed Pevensey Level, a broad expanse of grass land which forms the seaward prolongation of the southern arm of the Weald clay plain, just as Romney Marsh extends from the corresponding northern arm. It is covered with roughish, coarse-looking herbage, which however possesses great feeding value. It is

grazed chiefly by fattening bullocks, some of them belonging to the native Sussex breed and coming in small bunches from the hill country roundabout; but as this local supply is insufficient, Irish-bred Shorthorns and Devons from the west are even more common. The very similar Romney Marsh is stocked almost entirely with sheep, which are bred there and then travel to the uplands for the winter, when the ewes alone remain in the marsh. As soon as the grass begins to grow, the lambs return and either join the flock or are fattened out on the abundant pastures of early summer. In winter the losses are heavy among the lambs, because they are stocked thickly on the poor hill pastures and rarely given hay even during the severest weather. But, wasteful as the system seems, the graziers justify it on the ground that the weakly ones, who would have proved bad doers, are weeded out and those which return thrive all the better for not having been coddled. In the main the practice survives because it is cheap: like much other bad farming, it pays by cutting down the expenditure to a minimum and making profit of all that can be skimmed off the land. Incidentally, the system, acting for many generations, has raised up one of the hardiest of sheep breeds—the Kent or Romney Marsh—a big, white-faced, Roman-nosed sheep, with a heavy fleece and a faculty of standing all kinds of weather and foraging for itself, which has made it of late years a favourite for crossing purposes both in Argentina and in New Zealand.

Beyond the Marsh the land rises into the High Weald where, as we approached the Kentish border, a new feature appeared in the landscape—the round, conical-topped oast houses or kilns for drying hops. The earlier ones we saw were only evidences of a

now vanished industry; for until we had crossed the South-Eastern line to Hastings we met with no hop plantations, and then with many fewer than the kilns. The acreage under hops has been shrinking considerably for the last generation, and has, moreover, been concentrating itself into certain favoured districts, like the valley of the Medway and its tributaries or the belt of rich loams in East Kent, in which places the production of hops has been pursued intensively until a much greater yield per acre has been forced. In many of the little Sussex gardens that survive the hops are grown with very slight departures from the method prevailing in Tudor times, as described by Reynolde Scot in that rarest of all agricultural books, *The Perfite Platforme of a Hoppe Garden.*

Very different was the management on one of the modern farms we visited, where we saw probably the most intensive cultivation that is practised in any part of the world. Rather more than a hundred acres were under hops, lying partly on flat alluvial fields along the sides of a small stream and partly on the deep loams on the lower slopes of the valley, and the annual expenditure averaged not less than £50 per acre before the hops were sent to market. The hops are trained up lengths of coir yarn, which are attached every year to a network of strong wire stretched over the whole plantation at a height of thirteen or fourteen feet. The permanent superstructure of poles and wire represents a capital outlay of about £30 an acre, and the annual renewal of the string costs about £3 an acre for labour and material; but this system has almost entirely replaced the old poles, as it is found to grow both more and healthier hops. The routine of cultivation is heavy and continuous; the hop plants have to be pruned in the early spring, shoots of the

right quality have to be selected and led to the string while small, then constantly trained in order to keep them climbing upward until they reach the top wire; the extra shoots have also to be pulled out, and later the lower leaves and shoots are stripped off because they harbour vermin. Meanwhile the ground is heavily manured and maintained in a fine tilth by repeated workings with a cultivator that will just travel between the rows, the slips between the plants being hoed by hand. In good gardens the land is kept beautifully clean; we saw acre after acre without a weed, every hop trained like its neighbour in exact rows, and a mellow, crumbling tilth everywhere.

The severest work—and this, like the training on string, is a comparatively modern practice—is the spraying or washing, as it is called. The hop plant, particularly when pushed along for a big crop, is subject to attacks of green fly, which may multiply with excessive rapidity and so cripple the growth that the leaves turn black with honeydew and no hops at all are produced. These "black blights" are, however, things of the past except in the out-of-the-way, neglected gardens; the modern grower never lets the aphis get hold, but as soon as it appears deluges the plant with a spray consisting generally of a weak solution of soft soap and quassia. This washing is done by machines dragged through the hop garden by three or four horses, and throwing a great cloud of spray 20 ft. high, some three or four hundred gallons of wash per acre being distributed by the machines. Some growers have even laid on a system of underground pipes all over their holding, and force the wash from a common centre to a series of standpipes to which lengths of hose can be attached when it is desired to wash, the jets being directed by hand on to

the plants within the radius of the hose. Nor does one spraying suffice. Prior to our visit there had been a slight but persistent attack of aphis, and our host had kept his machines at work almost continuously from the middle of June, some pieces having been washed over half a dozen times. A fungoid disease is also much dreaded, and was being combated by dusting the whole plant over with flowers of sulphur distributed by a machine which blew the sulphur out in a great cloud as it was drawn along the alleys. The hops are picked early in September, when nearly three hundred families, say, a thousand people including the children, would be housed on the farm, in the rows of wooden huts we saw here and there in the grass fields. These pickers are not always an easy team to drive; but in the main they are composed of respectable families who are engaged year after year on the same farm, and there obtain good wages and a health-giving month in the open air. Fine weather is the desideratum; in heavy rain the pickers cannot be expected to continue at work, the huts are only designed for sleeping in, the men get off to the public-houses, and strikes, riots, and trouble of all kinds follow. The hop-grower's anxieties at that time are not confined to his pickers; his hops have to be dried in the oast houses, of which we have spoken, where they are laid out for ten hours or so on a horsehair cloth some 12 ft. to 16 ft. above a fire of charcoal or anthracite, so that a continuous current of hot air passes through them. In this drying process they can easily have their market value reduced by one-half, and even a slight error in the management of the fires will knock several shillings a hundredweight off the price. Our host possessed various patent kilns, very unpicturesque beside the old roundels of brick and red

tile, but in them engine-driven fans were employed to force the hot air through the hops. In this way he hoped to reduce the drying process to a system and turn off a uniform product; but the added expense was considerable, and he doubted if he ever got the finished appearance which was obtained by the old-fashioned method at its best.

It will thus be seen that hop-growing is a very specialized business, more like manufacturing than farming, though the agricultural aspect is perhaps represented in an intensified form in the extraordinary fluctuations in yield and in price. A big crop not only reduces the price far below paying-point, but depresses the market for years; because, despite the foreign importations, it is the fluctuation in the home production which mainly determines the price here. At that time the industry had been passing through a particularly bad phase, due to a year of exceptional production coinciding with a time of great depression in the brewing trade. For three years in succession the price fell away below the cost of production, crippling every one and bringing many old hop-growing families to the ground. In 1909 the crop was short, not only in England but all the world over, and the prices recovered, though nothing like to the degree which might have followed ten years earlier when the brewing trade was in a better way. As a consequence the acreage under hops had been reduced to its lowest point, and even the prospect of improved prices was not tempting men to replant. When an old grower is ruined and a farmer from another district takes his place, the newcomer grubs up the hops, which he neither understands nor trusts.

When the yields fluctuate by cent. per cent. and prices may be forty shillings a hundredweight one

year and seven pounds the next, hop-growing becomes a speculative industry, and is discouraged by many landlords on the plea that the tenant starves the rest of his farm for the sake of his hops. But forms of agriculture that demand capital and skill of a high order, that draw a great cash return off a small acreage, should above all others be preserved in England; moreover, from the landlord's point of view no other crop can afford to pay such a high rental. Good hop land in Kent is still worth three pounds an acre when it would otherwise stand at twenty shillings or thereabouts. As a business, hop-growing is safe enough over a term of years for the man who recognizes its fluctuations and maintains a reserve. The disasters happen when the man who has been successful with twenty acres during a good year extends to forty acres and is left with no surplus to meet such a succession of losses as happened in 1906–8. But most of the wealth of Kent and East Sussex has been made over hop-growing; and it maintains the most numerous and best-paid body of labourers in the countryside, for most of the operations are let out by the piece and the women have their share in the work. We were told of families taking home three pounds a week during the summer; and, as a hundred acres of hops will easily carry twenty men all the year round, there is no form of agriculture more effective in maintaining the rural population. At that time we were led to think that the industry was short of that measure of scientific assistance it might expect, and that it was lacking both in leaders and in courage.

From time immemorial the Kentish hop-grower has also been busy with fruit; both crops were probably "fetched out of Flanders" in early Tudor times along

with the original of the Kent sheep and many of the improved farming practices which at an early date made Kent the Garden of England. The fruit is, however, on the whole grown on lighter land than that given up to hops. As we dropped off the Wealden heights we saw plenty of hops in the valleys and little fruit, but as we approached the long escarpment of the Lower Greensand to the south of Maidstone fruit was more abundant than hops. In that highly farmed "ragstone" country the hops have generally been replaced by fruit on the heights; but along the Medway valley and in the hollows, where the soil is a little deeper and heavier, the hops predominate, because they do not suffer like fruit from the spring frosts which always affect the lower land most severely. Fruit again is thickly planted in North Kent upon the thin Tertiary sands and light loams which extend along the Chatham line almost up to the outskirts of London, but very few hops now remain in that country. In the Maidstone district almost all the fruit is grown on tilled land, apples and plums are planted alternately, with gooseberries underneath. Strawberries, raspberries, and currants are generally grown separately; the black-currant plantations have almost wholly been destroyed of late years through the attacks of the tiny mite which causes "big bud." No certain cure is yet known, though some growers profess to have methods of their own whereby it can be kept in check; others have preferred to grub the infected area, and after an interval have replanted with clean stock carefully imported from France. Within the last few years gooseberry mildew has obtained a footing in this country, despite the warnings of scientific men, and now the Board of Agriculture and the County Councils have to employ inspectors, plantations have

to be grubbed and burnt, and a valuable industry is rendered precarious because of the initial lack of foresight and energy based upon knowledge.

On the "ragstone" the underfruit consists not unfrequently of filberts and cob-nuts, always a speciality of Kent; and they are grown on bushes trained into the shape of a great basin six feet or more in diameter, the young shoots, which are to fruit in the following year, being pruned a joint or two above their starting-point by breaking them across in the summer and completely removing them in the winter. As much as two tons of nuts to the acre are grown with proper management in favourable seasons, and far greater crops are sometimes obtained; naturally the market is a restricted one and prices very variable. Apples are chiefly grown on the free stock all over Kent, only in East Kent a few orchards of dwarf apples on the Paradise stock are to be found growing without any admixture on tillage land. But the great characteristic of the Kentish soil and climate from the fruit-growers' point of view is the comparatively restricted growth it promotes; trees at an early age naturally form fruit-bearing spurs instead of the gross growth of wood which prevails in the West.

In the Maidstone district no large proportion of the land is occupied by general mixed farming; besides the fruit and hops the most characteristic features in the rich and varied landscape are the plantations of sweet chestnut which used to be cut over at twelve to fifteen year intervals to yield hop poles. Nowadays, however, hop poles are in little demand; a smaller number of large poles are required to support the wire superstructure of the hop plantations, and the chestnut underwoods have lost the greater part of their value. In East Kent, where the fruit and hops are grown on

the deep loams and brick earths overlying the lower slopes of the chalk, more open country with ordinary mixed farming is seen; indeed, a little to the south of Canterbury the hops cease and a typical chalk sheep and corn country sets in as far as Dover.

After we left the rich "ragstone" soils we crossed once again the narrow Gault clay valley we had seen both in Wiltshire and in Sussex, rose a little on to the chalk-marl terrace—here, as there, forming strong corn land—and then climbed the steep escarpment of the chalk. But when the top of the North Downs is reached there is little or no open sheep walk; instead, we came to a country of dense woods and small grass enclosures underlain by a stiff clay soil ten feet thick or more. This superficial Clay-with-Flints is too heavy for profitable cultivation on the top of the ridge, but lower down the slope towards Faversham and Sittingbourne it gives rise to good strong corn land, and even carries fruit and hops. The best farming in East Kent is concentrated on a strip of land bordering the old Dover road and the railway between Rochester and Canterbury; but, superb as are the crops, the district has a dusty, harsh, businesslike look which renders it very unattractive. It may be the chimneys of the cement works along the Medway, which are generally visible smoking on the horizon, or the deplorable yellow brick villas, or only the prevailing dry east-windy atmosphere, but this East Kent country rarely suggests agricultural richness. Even its famous cherry orchards only look neat and trim, with neither the lush grass below nor the exquisite patina of moss and lichen which characterize a Devonshire orchard. The cherries are, as a rule, grown in grass, as are a good many of the apple orchards in this district. The young standards are planted in the arable or with

strawberries or other small fruit below; after ten or twelve years' growth the land is sown down to grass and kept heavily stocked with sheep receiving cake and corn. The land must always be closely grazed; indeed, the best cherry orchards possess a sward like a lawn; it has been found that the grass covering checks rank growth and keeps the trees in bearing; it also helps to absorb any rain that falls when the fruit is ripening, rain which otherwise would cause the fruit to crack. The returns from a good cherry orchard are sometimes remarkable, up to the freehold value of the land; but, as with all fruit crops, they are variable in the extreme—indeed, fruit would be as speculative as hops had not the grower usually a range of crops. Gooseberries, cherries, plums, apples—it is rare that all fail or glut in the same year. Moreover, up to the time of picking, the expenses incurred in the cultivation of fruit are not so great as with hops; but the length of time that elapses before the plantations come into crop involves a considerable outlay and an element of risk.

By local custom in Kent the tenant plants, as indeed he ought to do, because fruit-growing is his business and he should know better than any landlord the best varieties to plant; but the landlord pays for the trees, in which case the tenant gets no compensation on leaving. If the tenant pays for the trees and for any reason leaves the farm within seven years of his planting, he is repaid the bare cost of the trees; after that time he is considered to have recouped himself, and the landlord reaps the benefit of the matured orchard. Of course in practice the majority of tenants take the risk and plant securely enough on a yearly agreement. Compensation is sometimes given when death or accident has voided a tenancy before the occupier

has obtained a return for the work he has done; but cases are not unknown when the rigour of the law has been enforced and the outgoing tenant has got nothing from the improvements he has made. It has always been a grievance in Kent that the Agricultural Holdings Act gives the tenant no compensation for fruit planted and brought to bearing, the landlord's argument being that he ought not to be saddled with the necessity of finding what would often be a considerable sum per acre, when he has no security that a new tenant will pay him an adequate rent on the improvement. By the Evesham custom, which is incorporated in the Market Garden Holdings Act, the tenant owns the standing fruit trees and may sell his interest in them to a new tenant, whom he can propose to his landlord at the old rent. If the landlord declines the new tenant, he must himself buy up his tenant's trees at a valuation. To such an agreement most landlords object because it creates a dual form of ownership, and leaves them no longer "masters of their own land." In practice, as we have seen, the tenant takes the risk of planting, and often adds £30 or £40 an acre to the capital value of parts of his holding without any security; but none the less the existence of the risk does operate, and that the landlord has to be content with a lower rent than would prevail if compensation for improvements was obtainable.

Owing to the custom of land tenure, the distance of the northern markets, and the South-Eastern Railway, which by its inefficiency discounts all the advantages that should come from a geographical proximity to Covent Garden—still the best all-round market in the country—the Kentish fruit-grower is handicapped in comparison with men in the Evesham or Wisbech districts; and it is noticeable that the

younger men who are setting up fruit-growing are rather shy of Kent and seek other counties. As a cultivator, the Kentish fruit-grower need fear no rivals; as a packer he is behind the times, for, speaking generally, he does not grade his fruit but sends it off to market in unattractive baskets—sieves and half-sieves—which have to be returned. Of the adventures of returned empties on the South-Eastern Railway many lurid tales are told, of search parties taking the line section by section, of submerged trucks full of baskets that wash up in distant stations and there lie stranded in the sidings; but such is the force of long custom that the Kentish grower has not yet been converted to the value of non-returnable packages, which neither bring back disease nor mean idle capital.

Hops and fruit have always absorbed the best energies of Kentish agriculture, and the ordinary stock and corn men in the other parts of the county fall rather below the general average in their management. Some very good wheat and barley are grown in East Kent; in particular the Isle of Thanet, where the chalk is near the surface and the country takes an open, rolling down-like aspect once more, possesses considerable local reputation for its barley, which is not uncommonly grown for several years in succession on an old lucerne or sainfoin ley. In 1910 East Kent crops, even in the favoured districts, were only indifferent, for the distribution of pressure had been such as to give this usually very dry strip of country more rainfall than the Midlands and the inland districts farther west. An exceptionally wet winter had been followed by a summer of continual thunderstorms; the wheat was blighted and seemed likely to thresh out badly, and though oats and barley

looked very bulky they were not healthy crops. Only grass and turnips were really good, and they to little purpose, for the prices of Kent sheep, either as stores or as mutton, had never before been at such a low level. Indeed, Kentish farming generally was a little below the weather at that time; the bad hop years had left the whole countryside poor, tradesmen as well as farmers, and for several seasons fruit-growing had not been a very paying business. What with late spring frosts and rain when the cherries were swelling, the weather had taken charge at the most awkward moments, with the result that crops had been poor and irregular and prices low. At the time of our visit very few of the growers hoped to do more than pay their way; only in a few cases were cherries good, plums were scarce, and most varieties of apples only bore the sparsest of crops. With hops and fruit and sheep doing badly together, nearly all classes of farmers were hard hit: and Kent more than any other county was in need of a turn of the wheel and an improved regulation of the weather.

IX

ESSEX SEED CORN

As we approached Gravesend along the Watling Street, we left behind the fruit and hop country, and ran once more into the cornland, large open fields lying on the lower slopes of the chalk and the Tertiary formations which cover it in North Kent. To our right lay the Hundred of Hoo, with some light land at its extremity which is intensively cultivated for early potatoes and vegetables; but the greater part of the peninsula is farmed in a more ordinary fashion and derives its chief agricultural value from the rich pastures which border the Thames estuary. These "marshes" form a continuous belt of low-lying alluvium, protected from the inroads of the sea by high banks, which stretches from Deal and Sandwich along the Stour and the old line of the Wantsum to the Roman fortress at Reculvers, and then, after a little interruption east of Whitstable, borders the Swale Channel between Sheppey and the mainland and extends along the Thames as far as Plumstead. The great liners overlook the sea wall as they drop down the river at half speed, otherwise these marshes are among the most remote and solitary of pastures, where rare duck breed in the ditches and the Kent sheep lie in summer almost as thickly as on Romney Marsh. The soil is of the heaviest, built up, no doubt, from

London Clay which is always wasting into the river, and on the best fields the herbage is almost wholly composed of rye-grass and white clover, with the particular silky sheen in the early summer which only rye-grass shows when growing vigorously after close cropping on the richest of land.

Having crossed the river at Tilbury, we quickly ran into a country of lighter soil which is nearly all under the plough and in a high state of cultivation. Here the corn crops were both heavy and early, the wheat looking brighter and healthier than any we had seen; it was all near to harvest, indeed this country was almost as early as the land near Portsdown and Chichester. But corn-growing was being alternated with potatoes, of which great crops are produced by the aid of London stable manure brought down the river by barge, and green vegetables of all kinds. One large field we saw entirely occupied with vegetable marrows—the bush variety—and very handsome they looked in the afternoon sunlight with their broad strong leaves, among which the lighter green of the gourds showed up conspicuously.

All this side of Essex is famous for seed-growing; the soils are on the strong side, which results in grain of a good weight per bushel and in firm biennial roots (turnips, cabbage, mangold, etc.), which stand well through the winter, but the most favourable factor of all is the light rainfall and dry atmosphere which generally prevails at the close of the summer. Not only are seed crops difficult to harvest except in continuous fine weather, but the colour, and with it the saleability, of the seed is very readily deteriorated by rain, even though the crop is eventually got up in sound condition. We called at one farm on which nearly all the crops were grown for seed, some of

them, like turnips and mangolds, under contract for one of the great seed firms, but the cereals for local sale by the farmer himself. He had one or two stocks of wheat of his own selecting, really pure line strains grown on from a single plant which had caught his attention by its extra vigour among an ordinary crop; and he was also growing some of the pure line barleys to which we have alluded earlier. Here, too, we saw a field or two of the French wheats which at that time were being so much talked about and extensively grown in the eastern counties. The difficulties experienced in the previous winter in getting the land ready for wheat had led to the sowing in February of a considerable breadth of "Red Marvel" (which is probably identical with Vilmorin's hybrid Japeth), because it makes a much better spring wheat than any of the older sorts once used for this purpose. We saw a good many crops of this variety here and farther up the country; the spring-sown fields promised very fair yields, if not up to the average of ordinary autumn sowings; but the specially big berry possessed by this sort may easily lead to a wrong estimate of the crop in the field. Rivet or Cone wheat is also extensively grown in this district, being, indeed, specially suited to the warm climate and stiff soils prevailing. With its bearded ears, its stiff reed-like straw, and dark colour, Rivet wheat is one of the most distinctive of varieties, indeed it might almost be differentiated as a separate species; it has long been grown in this country (it is often known on the Continent as "English" wheat), but it yields flour of poor quality, and some years ago had almost dropped out of cultivation. But when the importations of foreign "strong" wheats from the North-West and Russia began, the millers ceased to discrim-

inate much between English wheats, all of which are comparatively weak, until they would pay almost as high a price for Rivet as for wheats like Rough Chaff, which had hitherto been the strongest available. In consequence the cultivation of Rivet, with its heavy yields and powerful straw, began to revive; the stocks are, however, very impure, and on this farm we were shown the early stage of a pure line strain originally selected for its specially vigorous growth. Professor Percival, of Reading, has also raised a pure line strain of Rivet up to the marketable stage; so Rivet wheat, despite its antiquity, despite the awns which make the chaff unusable and even the straw disliked by stockmen, and despite its coarseness, seems in for a new lease of life. After all, yield is the big factor in the value of a crop, whatever its nature; the purchaser is always harping upon the virtues of quality, and quality also appeals greatly to the pride of the farmer, but fine quality should earn a much larger difference in price than usually prevails in order to make up for the larger yield of many of the so-called coarse varieties. Thus the universally-grown wheats—Square Head's Master, Stand Up, Standard Red, Browick — are big yielders and stiff-strawed; Archer barley is displacing the Chevallier varieties because it will generally yield more; and the apple growers are regrafting their Cox's orange pippins with common kitchen sorts, even though the market will pay 3d. apiece for well-grown apples of the choicer variety. On this same farm several acres were given up to growing sweet peas for seed under contract—the field, with its brilliant bands of variegated colour, afforded a pleasant contrast to the somewhat monotonous Essex landscape. In our climate the sweet pea harvest is not too trustworthy—in the crop we saw, for example, most of the early flowers and some even of

the first pods had dropped off, so that a good many of the commercial stocks are now raised in California. But so important is it to rogue out all plants departing from the type, and also to catch up the occasional "mutations" of distinct merit, that the best seedsmen prefer to raise their stocks in England where they can keep them under observation.

Our road then lay through the Roothings, that string of villages called Roding which lie round about the little river of the same name, a country of heavy clay land of the kind that is usually associated with "derelict" Essex. But this country never fell out of cultivation, nor had it been let down to grass and given up to milk production, by which means so much of the once derelict land has since been brought back into profitable use. It is still very largely plough land, farmed in a conservative fashion in medium-sized holdings. The rotation is one of the most primitive — beans, wheat, barley — with a bare fallow not infrequently; very few roots are grown, and those always mangolds; fields of red clover or other seeds are also rarely seen. Such a course of cropping does not permit of keeping much stock, but it gives a crop to sell off the land every year, except when the need of cleaning and re-establishing a tilth calls for a bare summer's fallow, a practice which can only be justified on a strong soil in a dry climate. Wild oats seemed the most characteristic weed, and, with the superabundant thistles, bulked all too largely in some of the corn crops. Two wet growing seasons had left the East of England desperately full of thistles, to the extent sometimes of interfering with the harvesting of the barley crop, so slowly do they dry when they form any considerable proportion of the sheaves.

A little farther north we visited another farm, rather

typical of modern management, in which no fixed rotation is followed but the land is cropped to a large extent according to the expectations of business. Again the bulk of the crops were sold for seed, but as the land was lighter and more calcareous (a chalky boulder clay) greater variety was possible. Many of the fields indeed were light enough to grow peas successfully, some for picking green, while others were threshed out; a breeding flock also was kept and folded on the green crops, though not always to the benefit of the sheep or of the land. The sheep were the Suffolks, handsomest of all the Down breeds, with their black faces, close fleeces, and clean symmetrical build; to a particular degree they seem to combine size with refinement, they also move better than some of their rival breeds. The sheep were being folded on a mixture of kale and vetches sown together, a mixture new to us but one that was providing a large amount of sheep-keep and a good combination of foods. Nor was the mixed crop the only novelty, for in one field it was being eaten off by young pigs folded on the land like sheep; unusual as it is to see pigs thus grazing, they might very well be treated to more of an outdoor life than they generally obtain. Pigs are in good demand in this district because of a successful bacon factory, and it is noteworthy that, though the local farmers largely found the capital for the undertaking, it is being worked on a joint-stock and not on a co-operative basis. On this farm also bullocks were fattened during the winter, but the occupier confessed that he had never been able to make his winter feeding pay except by attaching an excessive value to the dung produced. But seed-growing and not stock was the characteristic feature of the farm; we saw, for example, the last of a crop of crimson clover

that had been allowed to ripen off for seed. In the district between Dunmow and Bury most of the English trifolium seed is produced, and the cultivation has been stimulated by a large American demand, for crimson clover is now being extensively grown in the United States as a cover crop in orchards and the like. Red clover was also extensively grown for seed, it being the custom to graze off the first growth, thus obtaining an earlier and heavier yield of seed than if it had first been cut for hay. The Browick wheat and the selected stocks of barley were mostly sold as seed corn; turnips were not grown on the farm, the root break being mangold and cabbages, together with the vetches and kale already described. Another crop which was rather a novelty on a large scale were two fields of sugar-beet, which a Dutch company were prepared to buy for export to Holland, until they could get the factory running which they were about to establish at Maldon. But on these comparatively stiff soils the sugar-beet grower might expect no light task before him when the time came for lifting the crop. If the manufacture succeeds, sugar-beet will form one more crop that can be sold off the farm; and our host's farming, as that of so many other successful practitioners, was to sell away everything he could—even the trees round some of his lower fields were cricket-bat willows, the true sort, than which nothing grows into money more rapidly. It is, indeed, through their high proportion of saleable crops that the Essex farmers are in a thriving condition again; their farming has lost some of its old-time polish, the land is cheaply worked and is not so clean as formerly, but the rents in the district have not dropped much below the 20s. an acre level and are tending to rise with the competition that now exists for vacant farms.

The small farmer is not uncommon in the district, but is neither farming the land so well nor making as much profit out of it as his larger neighbours, while the strong heavy working soils are by no means suited to the typical small holder of five to ten acres.

Essex has many varied forms of agriculture to show, as for example the intensive dairying that prevails in the south-east; but wherever we went we saw no longer the derelict Essex which was once the type example of ruined English agriculture; instead, the countryside seemed to smile with a quiet unexcited prosperity—it was providing bread and butter, at all events, for its occupiers.

X

THE FENLAND

FROM Essex we turned a little eastward towards Cambridge and soon ran off the very heavy land on to the lighter drift formations on the east of Essex and the borders of Herts. At one time these gravelly soils were held in poor esteem; Arthur Young, who had a farm at North Mimms, declared that he found he had "been living in the jaws of a wolf," but in modern times drainage has disembarrassed them of the land springs to which they are liable, while the enormous amounts of London manure available have built up both fertility and the power of resisting droughts.

Potato farming is now intensively pursued on these gravels, largely by Scotch farmers who moved down into this district after the rents had fallen during the great depression. Farther north the chalk land sets in again, and more purely corn farming is followed, but the country is so low and flat that almost the only signs of the chalk below are the size of the fields and the clematis in the hedgerows. Towards Cambridge the barley was looking well; the crops, if not of more than average size, were uniform, and at that period were standing up well. Most of the barley is grown after wheat, for in East Anglia, its original home, the Norfolk four-course rotation has been almost every-

where modified by taking two corn crops in succession, barley after the wheat and oats in place of barley after the roots. It is an early country, and the corn appeared to be much nearer to harvest than that we had left it in Essex; indeed, as far or even further forward than it had been in Kent. Sheep form an integral part of the farming on these light and easy working soils; and in several places we found the Suffolks had given place to Southdowns. Cambridge has, indeed, become the second great home of the Southdowns, which were first brought into the district by Jonas Webb, of Babraham, sometime about 1820, and from his sheep several great flocks have sprung, not the least successful being the one established by the late King at Sandringham. We did not, however, delay in this district, where the farming is very much of the same type as that which prevails throughout Norfolk, but pushed on into the Fens, that stretch of low-lying alluvial soil, about 1500 square miles in area, which has been formed round the Wash by the estuaries of the Ouse, the Nene, the Welland, and the Witham.

Into the formation and reclamation of the Fens, interesting and even romantic as is the history of the latter process, this is not the place to enter; it is sufficient to say that the whole country is nearly at sea-level, the land on either side the Bedford Levels, for example, being but one or two feet above ordnance datum. The fen is generally underlaid by clay, the Oxford and Kimeridge clays, which here and there form small island patches rising 20 ft. or 30 ft. above the general surface, such as the islands upon which Ely and Chatteris stand. Naturally the district requires to be artificially drained and protected from the sea, which has made occasional incursions even within

recent times, and the drainage tax which the Commissioners levy for this purpose amounts to about 10s. per acre, varying with the situation and level of each area. The work of reclamation probably began with the construction of sea walls in Roman or pre-Roman times, but, as we know, it was carried out piecemeal by different bodies of adventurers from the time of Charles I. onwards, and even before that under some of the great monasteries. In consequence the system is somewhat haphazard and confused; could it be redesigned with the whole end in sight it might be made far more effective and economical. From the agricultural point of view there are two distinct types of land in the Fens—the black soil, or fen proper, and the silt, or marsh as it is locally called. The black soil is developed on the inland side where the rivers enter the Fen, by Cambridge and Ely, along the course of the Bedford Levels, and round Ramsay, Peterborough, and March. Doubtless in this area the country used to be always awash with land water from the rivers, and out of the marsh vegetation growing in the comparatively clear water the black deposit of peat, nearly 4 ft. thick, was formed, with a comparatively small admixture of earth. Nearer the Wash, from King's Lynn to Wisbech and on to Boston, the country was doubtless regularly flooded by the muddy estuarine waters, and thick deposits of silt have been built up by a process of natural warping; this soil is not black, but has the character of ordinary alluvial marsh land. Monotonous as the fenland may seem, with its endless succession of cornfields and long reed-bordered dykes, it cannot be denied a certain grandeur, if only for its vast canopy of sky and unbroken horizon. Looking over it as we did from its edge on the Ely road on that bright morning in late July, when a stately pro-

cession of huge thunderclouds and their attendant shadows marched across sky and plain, when the glittering levels stretched at our feet into blue and yet bluer distances, we could feel how the *heimweh* must grow in the Fenman, for few countries possess such a measure of character as his own.

We ran through Wilburton and mentally took off our hats to the memory of Albert Pell, perhaps the finest type of country gentleman the Victorian age produced; educated, refined, and broad-minded to a degree, he served the State and his countryside throughout the whole of a long life. His mark endures in the schools and church of Wilburton, just as his biography will stand for long years, both as the story of a man and a record of the immense process of mental and spiritual growth which the English countryside achieved in the latter half of the nineteenth century. Thence we crossed the Bedford Rivers, the two cuts which take the waters of the Ouse, and along Ireton's Way into Chatteris, where we exchanged for a time the black land for the poor grass pastures of one of the clay islands. Throughout all this district almost the only stock to be seen were the little groups of mares with foals at foot occupying the grass land, for Chatteris lies in the midst of the chief district in England for breeding heavy horses. The Fens have been the natural home of the Shire horse ever since the introduction of the great Flemish war-horse, out of which our present breed has arisen by crossing on the native stocks. Nearly every farmer breeds a few foals, and as he can work his brood mares with safety and even advantage for the greater part of the year and there is a good and steady market for the produce at the great horse fairs at Peterborough and Chatteris, the breeding forms a remunerative branch of his business. So far

the introduction of mechanical haulage does not seem to have affected the market for draught horses of high class, from which we can only conclude that the expansion of industry has been sufficient to absorb the motor-wagon as a mere addition to the older means of traction.

Beyond Chatteris we called at a Fen farm, about 400 acres in extent, all on black soil, though some of it was modified by a considerable admixture of silt. The black soil proper is highly carbonaceous, so much so that it will burn, and has on occasion been set on fire and smouldered for weeks. The clay is, however, not far below, and the black soil has been getting notably thinner within the memory of the present occupier; on some of his "grounds," as the fields are here called, he ploughs deeply and brings up a little clay, trusting in this way to establish a deep, mellow soil before the initial stock of organic matter is wholly exhausted. It should be noted that the black peat of the Fens is never acid like that of a moor or peat bog; it is neutral humate of lime and may even contain carbonate of lime—indeed, throughout this country the staple manure is the acid superphosphate. Nitrogenous manures are not needed, even dung is of little value, and though potash seems to be desirable, no evidence could be found of benefits following its application. The cropping on the black soil was a simple rotation of wheat, oats, potatoes; on the more silty soil barley followed the wheat, and mangolds were often substituted for the potatoes. Nearly everything was sold away, even the straw and the mangolds, there being a railway station convenient; but the greater part of the oats were consumed by the horses. Some sheep were kept to run over the stubbles and to eat off occasional catch-crops of

mustard, etc., and a few bullocks were winter fed, but the only breeding stock were the horses. Throughout the district mustard is a good deal grown for seed, and not infrequently we saw another crop which hardly occurs elsewhere in England—*i.e.* buckwheat—though it is generally considered to be a sign of poor farming, and is only taken by the small men. Other unusual crops of which we saw numerous small areas were celery, carrots, and asparagus, but the only cruciferous root growing was kohl-rabi, which is used to fill up gaps in the mangold grounds.

Throughout the Fens the corn crops betray the excess of nitrogen in the soil, and are such as would cause dismay to the ordinary farmer: they are rank and full of growth, with an enormous yield of straw, and in that year, as in most seasons, were laid and twisted in every direction. Moreover, all the corn, and especially the wheat, had a grey, dirty look which would make the upland farmer think it was blighted; never did we see the clear yellow or golden colour we are accustomed to associate with land ripe unto harvest. The heavy twisted crops call for a great expenditure of hand labour in harvest, and this is one of the districts to which the Irish labourer, who used to be such a feature of hay time and harvest over most of England, still finds it worth while to come; indeed, the crops could hardly be got in without some such extraneous assistance, for the modern reaper and binder often fails to deal with them. The barley is mostly of the wide-eared type; even the old "sprat" barley is grown and answers well. Naturally the quality of the grain is poor and below what is usually desired for malting. In fact in all the produce of the Fens quantity has to make up for lack of quality. The potatoes from the black soils command the

lowest prices in the market, the wheat is not attractive, though the miller does not find that it yields flour noticeably below the English average; while the mangolds prove on analysis to be exceptionally watery and deficient in sugar.

Fen farming is a case of exploiting the natural resources of the soil without any return being made; crop after crop is taken and sold away; even the superphosphate which has so long been used and in such great quantities, only quickens the conversion of the initial stock of soil nitrogen into saleable produce which leaves the land for ever. Slow as the process may be, one cannot live on capital indefinitely; and this land will run out, just as the black soils of the middle west of America have begun to show a noticeable decline in fertility. However, long before any complete exhaustion sets in the farmers will find it necessary to resort to recuperating crops like red clover, which fortunately grows well enough: even lucerne will flourish, as we saw on the farm we visited. The level of the land falls with the exhaustion of the black layer, and it may eventually be possible to lead on the turbid waters from the estuary and so build up a new soil by the warping process that we were to see later near the mouth of the Trent.

But while it lasts the Fen soil is valuable; nothing else in this country will yield so much for so little expenditure, either in manure or labour. Land is in demand and has a freehold value of £40 to £50 an acre, the average rental being 30s. to 40s. an acre, though the buildings other than the barns are of little account. The size of the farms varies very much; we heard of none of the vast holdings which prevail on the chalk, and a large number of quite

small farmers earn a satisfactory living. There was, indeed, a considerable and growing demand for small holdings, for the land is easy to work and will yield returns very cheaply; moreover, carrots, celery, and asparagus are crops producing a considerable sum per acre. Hemp used to be grown and yielded excellent results to the small men. Unfortunately the methods of dealing with the fibre were imperfect, the mills have failed, and this industry has died out, though it might be revived by some better means of management which would handle the raw hemp in the straw at a common centre. More crops suited to small holders are wanted, for the danger attaching to their present increase is that they will overcrowd the local markets with the limited range of products upon which the present men pay their way. However, the noticeable fact about the rich land, both on this and on the silty side of the fen, is its power to carry a comparatively dense population which lives by agriculture alone—sturdy, independent folk of prime value to the State even if they sometimes do vex the souls of clergy and gentry; whereas in many other districts the richer the land is the larger the holdings become, and the fewer are the families maintained thereon.

XI

NORFOLK BULLOCK FATTENING

FROM the black Fen we made our way across to the silt and the fruit-growing which has so recently grown up round Wisbech, then rose off the rich flat fen lands on to the sandy heaths which stretch along the western border of Norfolk. Norfolk is very far from being an agricultural unit, and, despite the reputation which its farming deservedly enjoys, due partly to the leaders it has always given to the industry, from the time of Townshend to Coke and Clare Sewell Read, the county contains some of the poorest land in England. Along the western side from Newmarket Heath by Brandon and Thetford up to Sandringham on the north coast stretches a line of barren heaths, where light blowing sands and sharp gravels break through the scanty herbage and only bracken and pine woods seem at home. The chalk is beneath, as indeed it underlies the greater part of the county, but as a rule it is too far below the surface to play any part in forming the soil, which shows every sign of deficiency of lime. Foxgloves and bracken in the copses, corn mangold and spurrey on the arable land, are rarely far away, and always indicate lack of lime. In this area the farming is of no great account and is confined to the valleys and occasional patches where a deeper soil has accumulated.

West of this line the soils, though still very diversified, are stronger and the good farming sets in; the underlying rock, chalk in the centre and crag in the east, is almost everywhere obscured by a complicated series of drifts, generally of glacial origin, which range from strong clays along the Suffolk border to patches of pure gravel and sand near the North Sea. Speaking roughly and generally, the finest land, famous for the all-round excellence of its root crops, occurs in the east of the county in the district within reach of the Broads, while in north Norfolk the soils are lighter and run off in places into very poor thin stuff indeed. Just in the same way Norfolk farming may be divided into "wheat and bullocks" or "sheep and barley," though no sharp line can be drawn between the two; what is common to all divisions of the county is the great predominance of arable land over permanent grass and the dependence of the agriculture upon fattening rather than on breeding stock. The agricultural statistics show that in Norfolk 73 per cent. of the total acreage under crops is arable land, a proportion exceeded only, and that but to a slight degree, in the neighbouring counties of Cambridge and Suffolk, and the typical Norfolk farm will possess only one or two grass fields next the homestead, the remaining four-fifths or more of the land being under the plough.

We spent some time in north Norfolk, a gently undulating country diversified by numerous shallow valleys, where little streams have cut away the surface gravels down to the comparatively impervious chalky boulder clay. On the upper levels the soil varies from a moderate loam, rarely more than two-horse land, to a thin black gravel of little value; on the sides of the valleys the best land occurs, while the

bottom is usually occupied by a strip of wet, rushy pasture, often mere bog and showing a thin layer of peat. The land water soaks readily through the gravels and is held up by the impervious clay, so that the floor of the valley becomes waterlogged and develops peat. The chalky clay below is supposed to have been ground up by the action of glacial ice: it is yellowish in colour and by no means pure chalk; in the district it is known as "clunch," and is dug out and moulded into blocks, out of which a good many of the farm buildings are constructed. It hardens considerably on exposure, and when protected from drip and covered with a layer of whitewash the "clunch" forms a serviceable and lasting building material. Of course building stone is entirely lacking, if we except the flints which can be so freely gathered from the gravels, and as clay for brickmaking is also not very common, the majority of the houses and homesteads are built of rough flints set in mortar, with brick or, more rarely, stone quoinings. Perhaps it is in consequence of this lack of good materials that the Norfolk farm buildings, in spite of the size of the farms and the great importance attached to bullock feeding, are comparatively poor; both small and in bad repair and generally designed in a very haphazard and inconvenient fashion. On all the farms we visited very much the same system of cropping was followed, the differences depending mainly on the quality of the land. As soon after harvest as possible the leys are broken up for wheat, an early seeding for every crop except roots being essential in this country of light soils and minimal rainfall. One feature that immediately strikes a stranger to Norfolk is the custom of ploughing round and round a field. The ploughman either starts in the centre and strikes out a rectangle

of similar shape to the field, which furrow by furrow he enlarges until he has only got the corners and odd bits to fill in; or begins at the outside and works in gradually smaller and smaller rounds to a standstill. On these light lands the saving of turnings is an economy and it is desirable to leave the field flat and not in ridge and furrow. On the stronger lands barley is taken after wheat, and so general is it throughout the county to get thus two barley crops in the rotation, that Norfolk is one of the few counties growing a greater acreage of barley than of wheat. In Norfolk in 1909 23 per cent. of the arable land was under barley, the only other counties approaching this proportion being Suffolk, with 21, and Lincoln, with 19 per cent. With the dry harvest weather that usually prevails (though of late years there have been some signal disappointments), Norfolk expects to obtain fine malting quality, and on some of the land near the sea, where the soil is a little warmer in the early spring, the really fancy barleys which command a special price among the pale-ale brewers are regularly grown. Opinions differ as to how the stubbles should be treated in preparation for roots; some men like to plough as soon as convenient before the winter, their argument being that thus they collect the winter's rainfall, but one notable farmer with whom we discussed the point only forks out the patches of twitch and ploughs round the headlands where the land may be foul from the hedges, arguing that the most successful take of swedes is obtained by sowing on the fresh-turned plough slice that has not been dried out by successive cultivations. The swedes must not be sown too early, as they are then liable to mildew, and of course a certain proportion of the root-land is also given up to mangolds. The headlands are sown with

white turnips, which are pulled directly after harvest for the sheep and the bullocks that are yet on the grass or are being run over the stubbles and the new leys. As a rule half the swedes are pulled for the cattle, the rest being fed off by sheep. Barley generally follows the roots, though to a certain extent it may, like the wheat, be replaced by oats, and in the barley the seeds are sown, generally a very diversified mixture, though rarely containing Italian rye-grass. On the thin black soils the seeds are often left down for a second year, naturally enough on such land the expenses of cultivation have to be reduced as much as possible. Other crops are rare; thousand head and cabbages take the place of some of the swedes on the lighter lands where sheep predominate, and a break may be made in the rotation to take a crop of vetches, followed by mustard, but in the main the farming sticks closely to the variations on the four-course system that we have indicated. A certain number of ewe flocks are kept, but the typical Norfolk farmer buys his sheep in the summer to fatten out on the turnips; a good many pure Suffolks are seen, but crossbreds are perhaps more common, Cotswold-Oxford Down being a favourite cross. Cattle-breeding is even less common, though this and the neighbouring county of Suffolk do possess a distinctive breed in the Red Polls—deep-coloured, shapely animals, which are regarded by their admirers as second to none for combined meat and milk production, but which have never become a numerous or a widely-diffused race. Even in their native county they are by no means common, for the special feature of Norfolk farming is the fattening of stores which gather in the autumn to Norwich market from Ireland, Wales, and the Border country. As soon as the Norfolk farmer

has got his harvest over and set about his wheat seeding, he moves his sheep on to the turnips and begins to fill his yards with cattle. Sometimes these may have been grazing on the east coast marshes during the summer, but in the main they are brought straight out of the market, often at big prices, for the Norfolk grazier aims at a very finished product, and wants a good foundation. The feeding is liberal, unlimited turnips—a hundredweight or so per head, cake and corn even up to ten pounds a day, and this for a long period, because the best men look to make £30 a head for their fat cattle.

How such feeding pays or has paid for the last half-dozen years is a flat mystery; except when lucky buying or selling has secured the turn of the market in its favour. No strict accounts accessible to us have shown a steady and consistent profit for this fattening of bought stores. The ordinary answer is that the profit lies in the dung; but if the men who evade the issue in this fashion would only keep books to show how much dung they make and at what cost, provided that the hay and the straw and the turnips consumed are given any value at all, the results would uncommonly surprise them. Probably the best arguments for the Norfolk system were those advanced by a farmer we visited, himself one of the most determined fatteners of bullocks in the county, who is daunted by no expense to attain the best stores or to bring them up to the highest condition for sale. You always find, he said, the most successful farmers are the heaviest feeders; the starving niggling man with but little stock may always be known by the state of his land. His next argument was that it is impossible to show that any single operation on a farm pays by itself, it is the whole system taken together which succeeds or fails.

Now this is less of a paradox than it seems; an element of speculation or of estimate does enter into any system of farm book-keeping which aims at really disentangling the various interests involved in growing a crop or feeding out a bunch of beasts, and the truth that lies behind his remark is the dependence of Norfolk farming on good dung and plenty of it. The soils are all light and sharp, the climate warm and dryer than in any other part of the country; in no other land does the humus vanish so quickly, nor is its abundance so important in order to ensure an early start and a continuous growth for the crop. The Norfolk farmer must fatten cattle in order to trample his straw down into the indispensable dung. What has still to be learnt is whether it is better to do this expensively with the aid of unlimited cake, or whether the cheaper method which feeds little besides the home-grown roots and hay will not produce a more profitable return. The humus the land needs will be supplied by the straw and the roots; the extra richness in nitrogen of the dung produced by heavy cake feeding could be purchased more cheaply in the shape of fertilizers.

We could not help suspecting that the Norfolk farmer had been losing money over his bullocks, though the losses had been disguised by the handsome returns he had been making on his corn. For by common report Norfolk farming had been prosperous; farms ran large (these sands seem to offer few temptations to the small-holder); yet rents were not low, 15s. an acre for farms with a large proportion of thin gravelly land that seems ruinous stuff to a stranger, 20s. for the better qualities of land; moreover, land was scarce and almost impossible to get. The farmers struck one as full of confidence and yet eager

to make use of all the knowledge they can obtain; Norfolk is the only county in England where they have established and continue to run an experimental farm of their own, independent of county council or any educational institution. After all, the spirit of experiment ought to be strong in this district; it is no great distance to Holkham, where stands the monument erected by the yeomanry of England to Coke of Norfolk, with its bas-reliefs representing the famous sheep shearings which did so much to disseminate a knowledge of the improved practices of farming. You have only to cross the high road below the park to see Coke's even more enduring monument, the area of salt marsh he reclaimed with the sea wall and the pine wood beyond. There was a man who both knew and worked; where and when are we going to find such a leader among the landlords of to-day?

XII

SPECIALIST FARMING—POTATOES

FROM Norfolk we again struck across the Fens, crossing them on this occasion on their seaward side, where the soil is silt or marsh, without any of the black peat we had seen earlier. Towards Wisbech there has been of recent years a great development of fruit-growing; and we passed through a district of almost continuous plantations, sometimes of small fruit only, but more often of small fruit overplanted with apples and plums. The industry is so new in this district that there are no large trees nor old orchards laid down to grass. Cambridgeshire has for a long time grown fruit on the "shelf land," the strip of fine greensand soil which borders the fen, but only within the last fifteen years or so has the capacity of the Wisbech land to grow fruit was discovered. The soil is a deep, stoneless, even-tempered loam, very similar in character and composition to the brick earths of East Kent; indeed, the good fruit soils all over the kingdom possess much the same structure, whatever their origin. The land is a little higher than the black fen farther west, but is still only ten to twelve feet above sea-level, and standing water is found but a few feet below the surface. So marked has been the extension of the industry that Cambridgeshire is now one of the leading fruit-growing

counties, only Kent exceeding it in the acreage under small fruit, though of orchards the five western fruit counties as well as Kent possess a greater acreage. The plantations showed that the industry is young and active, the land was clean and admirably worked, and on the young trees there was a somewhat better show of apples than we had seen elsewhere; if anything there was rather a superabundance of growth, and the grounds were a little overplanted and in need of thinning. The business is mostly in the hands of small men, though there are a few extensive holdings.

Nor is fruit-growing the only new and flourishing industry in this district; wherever the silt is somewhat coarser so as to become definitely sandy, particularly in the neighbourhood of Spalding, bulb-growing for the wholesale market is carried on, and great breadths of daffodils, tulips, crocuses, snowdrops, etc., are raised for their bulbs and not for their bloom. Hyacinths are still rather a Dutch speciality; in the other cases the fen growers claim to turn out firmer and heavier bulbs than those which come from Holland. Seed growing is also extensively pursued, and fields of mustard for seed were very commonly seen among the wheat and potatoes which form the backbone of the ordinary farming.

After crossing the Nene and the Witham we stopped to visit a great acreage of land under one management, a series of farms which make up one of the largest agricultural businesses in the country, perhaps the largest, if the intensive character of the farming is taken into account. This business has been built up on potatoes, which are grown every year on about one-third of the whole 3000 acres, and even year after year on a few convenient pieces of land,

though in these cases earlies are generally planted and dug soon enough to enable a crop of rape to follow for sheep-keep. The rotation is as a rule potatoes, oats, wheat, but one of the wheat crops is partially replaced by beans, and after two of these three-year courses, a crop of red clover is generally grown. Sheep-keep is sown after either potatoes or wheat whenever the season allows; sometimes a crop of seed-mustard breaks the rotation. The potatoes received any farmyard manure that might be available, but as this only provided for a small fraction of the great area given up to the crop, the main part of the manuring was done with artificial fertilizers. Often the red clover was allowed to grow after the first cut, and the second growth was ploughed under, thus enriching the land as much as a coating of dung would have done. Naturally the oats and wheat which followed the potatoes required no manure. Many of the fields showed a broad band of a different crop from that occupying the middle of the field; this represented the sites of the potato "pits" or clamps which had not been cleared in time to treat all the field alike. Evidently the land was being very highly farmed, as may be judged from the fact that even the early potatoes were expected to yield from five to eleven tons per acre, according to the date at which they were lifted. Of course, really early potatoes, in the sense that the crops from Jersey, St Malo, and even Ayrshire are early, cannot be grown in Lincoln; their earlies are heavy cropping varieties which come on the market when the south and west can no longer supply it. One of these crops was then being lifted. A plough was drawn along the rows and threw the potatoes out, whereupon they were picked up by a gang of women and children and brought to a foreman,

who then and there weighed them into bags for market. A harrow followed the pickers and gathered up all that had been overlooked or buried, and rape or mustard was sown at once to keep the land occupied and produce some sheep-keep before winter. All the tubers, even of the main crop varieties, were sprouted in boxes before they were planted, and as sprouting in the dark gives rise to long, weakly shoots that are very readily broken off in planting, great glasshouses have been erected at various places on the farm in which to store and sprout the potatoes. About one-half of the seed potatoes required was obtained from Scotland, their produce being grown for only one more year on the farm, except in the case of some new or rare variety of which an increased stock is wanted. Most farmers ascribe great virtues to a change of seed, whether of real seed like wheat and barley, or of perennial tubers like potatoes; yet other practical men hold the quite contradictory opinion that the best results are only obtained from seed that has been acclimatized by growing for a year or two on the farm. As regards seed corn there are probably several factors concerned, so that it is impossible to make general statements until more experimental work has been done; but it has been put beyond a shadow of doubt that seed potatoes from Scotland (and Irish seed seems equally effective) give a considerably larger yield in the south and east of England than seed of the same variety which has been growing for a year or two in the district. This difference between Scotch and home-grown seed is most manifest on light, dry soils; it has been ascribed to the comparative immaturity of the northern stock, but this is little more than a surmise.

Our host carried on a considerable trade in seed

potatoes, both dormant as usual and others sprouted in boxes, to which end we saw the boxes being filled with tubers of the right size as they were gathered in the field. This intensive potato-growing employs a great amount of labour; for, in addition to the ordinary operations of cultivation and the planting and picking, the plants are sprayed in some cases three or four times during the season with Bordeaux mixture and other copper preparations in order to ward off disease. Women and children are largely employed in the planting and gathering, and in this district the labour was chiefly obtained locally, thus avoiding the great influx of casuals which marks the harvest in other potato-growing districts. In other respects our host's farming followed a more normal course, though on all sides one saw signs of the great pitch of fertility to which the land had been raised. The oats which followed the potatoes were exceptionally heavy crops so as to be laid in nearly every case, while the wheat following the oats, though standing up better, had much of the rough and dingy appearance that we had associated with an excess of nitrogen in the soil on the black land. Barley was little grown, but the beans, which alternate with wheat once in every six years or so, were again producing very heavy crops. Indeed, on this land any crop can be grown pretty well up to its *maximum* yield in Great Britain. The free working soil was of the same character as that near Wisbech, and similar in almost every essential respect to the deep brick earths we had seen below Chichester and the other band of brick earth on which the best of the Kentish fruit is grown. Its distinguishing feature is not any chemical richness nor the presence of any particular substance that is lacking in ordinary soils; it is its smooth, even

texture, light enough to work with a pair of horses, yet sufficiently retentive of water and capable of bringing it up from the subsoil to keep a crop growing during a drought. The value of a soil is more determined by the way it deals with the water it receives and by the kind of tilth it will take under cultivation, than by its stock of plant food.

On such valuable land little permanent pasture was to be seen, but in addition to the Lincoln sheep which we have already mentioned, our host bred a considerable number of Lincoln Red Shorthorns, selling the steers for fattening and the heifers in milk after their first calf. The Lincoln Red is a race that has only of recent years been heard of outside its own district: like the Sussex, the Devon, and the Hereford, it may be descended from the all-red cows which are supposed to have been the Saxon contribution to our island stock, but it differs from these other races in that milk as well as meat has been considered in its selection. Whatever their origin the Lincoln Reds are handsome, kindly cattle, and their characteristics—meat and milk together, if the combination is possible—are what the breeder has to set before him in the cattle of the future.

The history of the great estate which our host was exploiting with so much energy is not without interest. Thirty years ago the district was mostly in the hands of small men, and was even then famous for its potato-growing, though the industry had not been specialized up to its present proportions. Indeed, it was somewhat of a speculative business; the returns were so large in favourable seasons that men starved and neglected the rest of their farming in order to push for a big potato crop. Artificial manures were far more expensive, and little knowledge of their proper use was

available, so that the grower chiefly relied on making farmyard manure in sufficient quantities for all his potatoes. When the great drop in prices came at the close of the 'seventies, and with it a succession of bad seasons when the potatoes blighted and could not be harvested, the small men were affected more than the large farmers, because they rarely possessed any reserve of capital. The Assistant-Commissioner who wrote the report on this district for the Royal Commission on Agricultural Depression which was presided over by Lord Cathcart, draws a very black picture of the state of affairs in 1882. The men then occupying the land were largely ruined, much of the land was sold, and from that time onwards our host, who in one way or another had managed to adapt himself to the changed conditions, began to take up land and had ever since been adding farm to farm. He had thrown the little fields together, redrained the land, brought in fertility liberally and wisely, and above all organized the selling of his potatoes on a wholesale basis, with the remarkable results we were then seeing. Of course, not he alone had partaken in the general prosperity that has come to the whole potato-growing area; rents were high, about 50s. an acre in general, up to as much as £3 for specially good pieces of land. Even at that price farms were in demand, so that a stranger had but little chance of getting in. But favourable as potato-growing may seem to the small holder, and though wages are good enough to give a labourer a chance of saving enough money to start on his own account, there were but few little farmers left in the district, and our host was very strong in his opinion that whatever might be done to re-establish a system of small holders, they would again be crushed out when the next wave of falling

prices threw men back on their reserves and called for skill and adaptability in place of traditional methods. It may be that the rewards are unevenly distributed, but it was evident that potato-growing as organized in South Lincolnshire is a very efficient method of getting the *maximum* out of the soil and finding employment for a large population.

XIII

LINCOLN HEATH AND WOLD

WE finally left the Fens at Sleaford, and, after crossing some undulating country formed by the alternations of oolitic limestones and clays, climbed up on to the long ridge which traverses Lincoln from north to south—Lincoln Heath, the outcrop of the sandy formations there constituting the middle and lower oolites. A century ago this was open rabbit warren, but it has been enclosed and is now worth £25 to £40 an acre. The soil is thin and light, red-brown in colour and gritty in texture, full of fragments of oolite rock, and demanding a good deal of rolling and consolidation in working. The fields run large, and stone walls take the place of hedges, so that the country has something of the wide and spacious look of the chalk. Arable farming prevails almost exclusively, the only permanent grass being a small paddock or two near the homesteads. We called at a large farm about half-way between Sleaford and Lincoln, and there saw some of the very special farming that earns a profit out of this scanty soil. Peas formed the basis of the rotation. Our host was growing a few garden varieties for seed, but his standard article was the blue wrinkled marrowfat that is sold to the northern towns for boiling. The peas were grown with a little artificial manure only, but they formed the best

preparation for wheat, and their introduction had improved the cropping powers of the land all round. If the peas were got off early, summer turnips could be sown and followed by oats, but as a rule wheat succeeded to the peas. After wheat came the roots—swedes or kale, eaten off by sheep, and then barley was sown, the Heath being one of the largest districts for fine barley in the country. After the rough dark grain crops of the Fens we were all the more readily impressed by the uniformity of these large stretches of barley, and by the clean bright straw, which in very few places had been laid. As we walked among the crops the shortness of the straw and the comparative absence of flag were noticeable, both features which help towards a fine malting quality in the sample by the aid they give to uniform ripening and rapid harvesting. In the barley the small seeds are sown, and the land is usually left down to temporary grass for two or three years. Red clover answers very indifferently and is rarely cultivated; instead it is a general custom to sow a mixture of alsike and white clover, of which we saw several very pleasing pastures all along the Heath. Sainfoin is also sown, either alone or mixed with the clovers, good grazing for the sheep being the desideratum. Very few other crops were seen; a little of the root area was given up to mangolds, but potatoes are not grown until some of the rather stronger land is reached, sufficiently near to Lincoln to permit of the potatoes being carted into the town for local sale. We saw a few crops of mustard ripening for seed, and in one or two cases the leys were being allowed to bloom with the idea of threshing out afterwards white clover seed from the hay.

The rotation just described would provide saleable

crops from practically half of the area under cultivation, and, as our host was prepared to sell straw and even his sainfoin hay when the price was good, the output was considerable from such poor, thin-looking land. Moreover, it received very little dung, the necessary fertility being brought in by the artificial manure for the peas and the roots, and the cake which is fed to the sheep on the temporary pastures. The land looked no better than, hardly perhaps as good as, the Norfolk land for which farmyard manure in quantity is regarded as the only possible means of securing proper yields throughout the rotation. In this case the pea crop appeared to be a factor in improving the soil, and, coupled with the two years' ley, also consisting largely of clovers, was enough to maintain the land at a very fair pitch of production. This rotation, with its utilization of the natural recuperative powers of leguminous plants gathering nitrogen from the air, costs very little, and is in instructive contrast with the Norfolk system, which buys in its nitrogen through the expensive medium of cake. The land was easy to work, but, like all such light soils, much given to weeds, especially as so many peas were grown, for probably no other crop leaves the ground so foul. The creeping-rooted bent grass is the local form of couch, but it was not specially troublesome, wire grass, and, above all others, poppies, being the chief weeds in evidence.

As already indicated, sheep form an essential feature in the farming on Lincoln Heath, but the sheep we saw were hardly what one would expect on the light uplands, being the well-known heavy-fleeced and large framed Lincoln long-wools, which are more at home on the marshes and fat grass lands in the vales. The Lincolns, which are generally accorded pride of place

among the British long-woolled breeds, are in many respects not unlike the Kent sheep, and may have a common origin in the white-faced Flanders sheep, but they are distinctly larger, and their wool is longer and more lustrous. Whether this lustre is an advantage or not depends upon the fashions in ladies' garments. At that time the turn of the wheel was against the Lincolns, but only a few years ago the Bradford manufacturers required to have a shining fibre and the Lincoln wool was at the top of the market. But what has made the fame of the Lincolns has been their value for crossing with the Merinos in Australia, New Zealand, and the Argentine, where the demand for a sheep that would yield a better carcase than the Merino—something that could be exported as mutton, and would yet retain part of the immense wool-producing capacity of the latter breed, has been chiefly met by the introduction of Lincoln-Merino cross-breds. Hence has come a great foreign trade in the best Lincoln rams, and prices on occasion have soared up to fabulous heights, more than a thousand guineas having been paid for a single ram. Our host possessed a noted flock, and we saw several of his rams which had just returned from the summer shows—rams in some cases that would have left the country but for the embargo caused by the Yorkshire outbreak of foot-and-mouth disease. Some of these had been left unshorn from birth just to show what they could do in the way of producing wool, and then resembled nothing so much as an occasional table with too big a cloth upon it, so squarely had their backs been trimmed and so level were the locks that swept the ground on either side. Of course these were fancy articles, but they carried nearly 30 lb. of wool apiece, and we

were told that thus they would travel through the tropics in better condition than similar sheep which had been shorn.

On Lincoln Heath, as it was light land comparatively recently enclosed, we were back in the region of large farms, and, with the plentiful building stone, it was noteworthy how the farm buildings at once became large and well built, the first good ones, indeed, that we had seen. The cottages by the roadside were also roomy and well built. Labour, we were told, was good and plentiful. Rents varied with the quality of the land. The very light soils near Sleaford did not command more than 10s. an acre; farther north the average land was worth about a pound an acre; and towards Lincoln, where the soil becomes deeper and more loamy, from 25s. to 30s. was paid. At these prices the farms are all let, and there was considerable demand for any that might come into the market.

Remarkable as is the contrast between the Fenland and the Heath, these are by no means the only forms of farming that the great agricultural county of Lincoln has to show. The long ridge of the Heath runs the whole length of the county, with the Ermine Street upon it striking an almost exact north and south line, but it is breached at one point where the Witham makes its way through to the sea, forming a gap on the edge of which is set the city of Lincoln.

From Lincoln we struck eastward into a comparatively low-lying and poorly-farmed country, with gravel on the heights and a good deal of clay exposed in the hollows, where the glacial drifts have been cut down to the underlying oolitic clays, and then we began to rise a little until we were once more confronted by the escarpment of the chalk.

In Lincoln the chalk is never very high, rising above 500 ft. in only a few places, and there the scarp is somewhat pronounced, though it has the Greensand at the foot and not the Gault clay, which here has thinned out.

With the lower elevation the characteristic features of the chalk country are also less in evidence, the great folds and valleys are flatter, and, though the fields are big and the country has the same bright open look, the land is more completely farmed, and there are none of the wide downs which we always associate with the chalk in the South of England. We called upon one large farmer in the heart of the Wolds, and saw the typical farming of the district about as well carried out as it could be. The system was the pure four-course shift without any variation beyond the frequent substitution of oats for wheat; the turnips were folded off by sheep: then barley was taken, and in it the seeds were sown; lastly, wheat or oats completed the rotation. The seeds were generally alsike and white clover, and, as on the Heath, we saw some excellent temporary pastures which had thus been formed. Red clover can only be grown with any success about once in sixteen years. Sainfoin was not infrequently grown in some odd field where it can be left for several years, and occasionally small patches of lucerne were sown near the homestead. The elevation and the exposure to the North Sea make it a late district, so catch crops were not taken. The roots were swedes, with a few early turnips and thousandhead for the lambs; mangolds are very rarely seen. Our host, for example, had only a little bottom field of two acres on which he grew mangolds every year. Usually the soil is very thin, the pure chalk setting in at from 6 in. to 12 in. below the surface, and the soil itself is all full of small fragments of chalk.

The whole farm afforded a very good example of the old strict style of farming. Only corn and meat were sold off the holding; everything else was consumed and came back to the soil, and the land was kept wonderfully clean, being probably the cleanest large area we had seen during that very weedy year. Even more than on Lincoln Heath we were struck by the brightness and gloss on the corn crops—wheat and barley especially. The oats were not so good, and our host also had the idea that oats had been grown too frequently on the land during recent years. His sheep were the typical Lincolns, at that time on the clover leys, and he also bred the other live stock of the county—Lincoln Red Shorthorns—for which he had some grass fields in the deep little valley that had there been cut into the Wold. He also bred a few horses, keeping for that purpose some exceptionally fine teams of working mares. From what we heard and saw our host's style of farming was very typical of the whole of the high Wolds; it is the strict four course pursued with rigour and thoroughness, very conservative in its methods, and neither spending much upon nor taking very much out of the land. Of course the farms must run large in order to yield a living on such a plan, for the rents are high for the class of land—20s. to 30s. an acre—but the farming is good, and is adapted to the comparative distance from all large centres of population. For on these Lincoln Wolds you feel that you are really remote from the towns; the land is neither wild nor picturesque; it is in fact highly cultivated everywhere; but for that very reason there is the less suggestion of the residential and holiday-making element that colours the countryside in so many parts of England. It represents agriculture, and nothing but agriculture.

XIV

THE ISLE OF AXHOLME

FROM the Lincoln Wolds we set our faces westwards and crossed in rapid succession the whole series of the secondary rocks from the Chalk downwards, until at Gainsborough we reached the New Red Sandstone, and with it the valley of the Trent. Here the tidal river has formed a wide alluvial flat, out of which rises a ridge of low sandstone hills, constituting the Isle of Axholme, now an island no longer in the geographical sense, though the reclamation of the "moors" by which it is surrounded is a matter of comparatively recent history.

The Isle of Axholme has its niche in history, for its most considerable village is Epworth, where John Wesley's father held the rectory, and where his gifted family received their strange upbringing. But vivid as are these associations, it was another reason which drew us to the Isle of Axholme. From a distance we could see that the hillside, crowned with the church and windmill of Haxey, had the look of a patchwork quilt, so covered was it with a strange reticulation of crops in narrow strips, as though laid out in experimental plots. The road led into this much-divided land, and then we found we had struck upon a little bit of country that has been left as a kind of outlier in time, to report to the twentieth century on the

manner of land-holding of our remotest forefathers. In these parishes there are no hedges, the land lies in one open field, and is divided into series after series of parallel strips, each a rod wide and half an acre in area, though here and there two may have been put together, and gores and odd-sized pieces exist of much smaller dimensions. Nearly all the strips are curved, sometimes with a single sweep, sometimes with a double bend like an elongated S; at one end they are bounded by the hard road, at the other they butt generally at right angles on to another group of strips. There are no boundaries except the last plough furrow; each strip is called a selion, a word which is connected with the French *sillon*, a ridge, both being derived from an old Scandinavian word *sela* = to divide (land). Each group of selions is called a furlong, and the furlongs are named, so that we saw advertisements of the sale of two selions of land in the furlong of ——. The headlands on which the ploughs have to turn are now the high roads; probably all the English roads with their apparently purposeless wanderings as they near a village, were once nothing more than the linked headlands in the common field. The strips were carrying various crops without any attempt at order; turnips might be next to oats, or wheat, or barley; mangolds would alternate with clover or potatoes; hence the extraordinarily diversified aspect of the countryside—corduroy farming, as it is locally called. The diversity is caused by the fact that adjacent strips belong to separate owners; each of the inhabitants, indeed, possesses a number of selions, but scattered about the different furlongs, so that one comparatively large holder we met told us he owned about 40 acres in something like 100 plots in various parts of the parish. This system is, indeed, a survival, the only

one on a large scale with which we are acquainted, of the earliest system of land-holding prevailing in this, as in most Teutonic countries. To go back no further than medieval times, the manor lands were divided into three great fields, one for wheat, one for spring corn, one fallow, and each field was then subdivided into ploughlands—the selions—some of which were held by the tenants and others made up the lord's demesne. In these days the farming was in common and remained so after much more complicated rotations than the three-field course had been introduced; the selions may once have been yearly redistributed by lot, so that all men should have an equal chance of the good land, but each man retained the same extent of holding, however much scattered about among the furlongs. We did not learn, if indeed it is now possible to recover the knowledge, when the tenants acquired a title to their particular strips or when the common farming gave place to separate cultivation, but the land is now held individually by comparatively small holders either as freeholds, which were parts of the lord's demesne or lands afterwards enfranchised, or as copyholds, which represent portions of the original servile tenures.

Of other manorial customs we found trace in the low-lying country of turbaries, which have been more or less taken up by squatters in small holdings, not, however, divided into strips, and there are also certain commons enclosed under an Act and similarly divided up within living memory. The strip farming, however, prevails over all the land which we may suppose to have been dry in medieval times, in the southern part of the Island at any rate, for in the parish of North Belton we again saw the land enclosed. The soil is a deep, black, sandy loam, easy to work and grateful for

manure, but by no means naturally rich. It was everywhere carrying on the strips very fair crops, though there was nothing exceptionally heavy, and the potatoes and corn would yield less per acre than the same crops on the great fields on the warpland only a few miles away. Still the land looked clean and soundly cultivated; the greater number of the strips carried the usual crops of the farm, a few bore carrots and celery, but the only other exceptional crop we saw was the opium poppy. This was a surprising and a beautiful sight, for the glaucous grey plants stood up four feet or more, and at that time were lit with a profusion of broad white flowers. The poppy was formerly pretty generally grown throughout the Fen country, having probably been introduced by the Dutch drainage adventurers, while its cultivation was maintained by the habit of taking opium and laudanum which existed as long as the agues hung about the marshes. Nowadays the demand is small for the dried poppy heads, which are still to be seen in the old-fashioned country shops. The harvest takes place towards the end of August, at the same time, in fact, as the corn harvest, when the seed heads are turning white but have not yet opened to liberate the torrent of seeds that pour out when ripe. The heads are broken off with a trifle of stalk and laid on a floor to the depth of six inches or so; then they are turned repeatedly until they are dry, in which state, if of good quality, they are marketable at about 10s. per thousand.

The size and shape of the strips prevents any stock being kept on them, but each of the little farmers has a small homestead in the village to which he carries his corn, the clover hay he makes, and such roots as he grows in order to fatten a few beasts in the "crew-

yard" in winter. Sheep, of course, cannot be kept, and the only dairying is for the purely local supply of milk. It is difficult to understand how a system of farming so wasteful of labour can possibly survive; after ploughing one of his selions the holder must take his plough and team by road perhaps a quarter of a mile to begin upon another; even in the strip itself there is waste, because the dividing furrow forms no inconsiderable fraction of a land only one rod wide. But though the holders are very sensible of the advantage of adding one selion to the next, and will always bid heavily for such plots adjacent to their own as may come into the market, we were generally assured that there was little or no prospect of persuading men to a general survey and redivision of the land which would give every man his full acreage in a single plot. Each man fears that he might get placed on a piece of the poorer land, and the present system has endured so long that the holders regard the inconveniences as normal.

There are no longer any remains of the co-operative working which made the medieval open field something of an economic unit; each man owns his own implements and works entirely for his own hand. There are a certain number of "higglers" who will plough and cultivate at customary prices per acre; these men are chiefly employed by the village tradesmen who own a few selions but do not maintain a crew-yard. For all its disadvantages the land is in good demand; £60 to £80 an acre has been paid recently for selions that have come on the market. This is for freehold land; copyhold land, which is subject to a small fine, fetches about £5 an acre less. The long custom has evolved a cheap system of conveyancing, in which there is no attempt to set out a

long title, so well is the history of each bit of land known in the parish. Disputes about boundaries are rare, though there is no survey and no marks beyond the furrow which the last man to plough strikes up. Some of the land is rented, 30s. to 40s. an acre being paid, and the holding of many of the farmers is made up of strips that he owns, some in freehold, some in copyhold, together with others which he rents from tradespeople who have invested their savings in land, though the total area in one man's hands rarely exceeds 40 or 50 acres. But despite the smallness of the holdings and the drawbacks due to the divisions and the scattering, we were informed that the farmers were all reasonably prosperous, and the look of the little homesteads and houses and of the men with whom we conversed all conveyed the same impression. It was not always so. If we turn to Mr. Druce's report as Sub-Commissioner to the Royal Commission on Agricultural Depression, we find that about 1882 the farmers in the Isle of Axholme were practically bankrupt. The land was nearly all mortgaged, the farmers were at the end of their resources and could not pay the interest due, the farming only went on because the mortgagees were advised they could not sell the land if they foreclosed. The mortgagees were wisely advised; they acted the part of landlords and forbore to press for their interest until better times came round, so that the small holders of the Isle of Axholme were able to live on through the depression when their fellows in South Lincoln went under almost completely. Much of this result must have been due to the solidarity of local interests, for the mortgages appear to have been held locally by neighbours who knew the farmers intimately and could give them credit on account of their character. The interest of the Isle

of Axholme to the student of farming is extraordinary, for here you find in full and living operation a system which speaks visibly of many of the customs of the prehistoric Aryan communities—a system too which it was the object of every agricultural reformer, from Tusser to Arthur Young, to break down. The farmers form a compact and somewhat isolated community; they own (subject always to the mortgagees) their own land, they know one another and their neighbour's land intimately, and yet, in spite of all the obvious gain to be derived from a redistribution and gathering together of the scattered holdings, they have never attempted to do so either in bad times or good, nor have they evolved any system of partnership in work or sale. We are told that the economic success of small holdings depends on welding them together into co-operative communities, but if the Isle of Axholme furnishes any indication of the future the men who are going to teach the English farmers to co-operate have got an up-hill task before them.

XV

THE MAKING OF NEW LAND

THE corduroy farming did not exhaust all that the Isle of Axholme had to show of interest, for in the low country by which it is surrounded there is some extremely fine capitalist farming on what is called the warp land.

After leaving the common fields on the sandstone ridge, we found ourselves in a region of straightened river courses and drainage channels like the Fens, mostly below high-water mark and covered with a deep silty soil similar to that occurring between Wisbech and Boston. This is classic ground in the history of embankments and drainage, for here Cornelius Vermuyden was at work in the time of Charles I., and here, when authority was relaxed during and after the Civil War, the angry marshmen rose and destroyed pumps and sluices, letting in the tidal waters until the haunts of the wild-fowl were re-established. It required repeated efforts and the ruin of many adventurers before the land was finally won from the sea; only within the last half-century by the aid of steam and of the centrifugal pump has it been possible to unwater the land regularly and with certainty. The memory of Vermuyden is preserved in the name of the Dutchman's Drain carried by a large channel to the north of Epworth, but drainage

is not the whole of the work here necessary in order to make the new land. The further process is called warping, and consists in building up a deposit of tidal silt several feet thick on the wet and valueless marsh. A little farther north, in the parish of Crowle, we saw the process at work on an area of very low land about six miles back from the estuary of the Ouse, which in this neighbourhood joins the Trent and forms the Humber. The unimproved land forms a wide area of "moor," wet peaty bog covered with a vegetation of tufted grass, bracken, heather, and stunted birches and pines, practically without value for agriculture. A company is engaged in digging the peat for conversion into moss litter; only the top three or four feet which is still fibrous can be so used, but that surface layer is cut out, stacked and dried, and then conveyed to the factory. There it passes through a disintegrator and the coarser part of the result is pressed up into the well-known bales of peat moss litter for transit. The dust and smaller fragments are reduced to a still finer powder and used as an absorbent for molasses in order to make a cattle food; the peat moss made in this district is exported as far as Natal, where the sugar works can find no nearer nor better vehicle for the molasses they produce.

These Yorkshire litter works had been founded on Dutch models, and were for a time largely worked by Dutch labour, but the labourers first brought over, like the drainage adventurers two centuries ago, have been merged in the country population and the workers are now English enough. After the peat has been cut out a bank is built round the area to enclose about two hundred acres, and a connection is made with the warping drain, a straight channel which leads to the estuary, with powerful sluice gates at the entrance.

At high tide the sluices are opened, and the thick muddy estuarine water pours up the channel and floods over the embanked area, where it is left to stand for three or four hours until the tide has fallen, when the sluices can be opened once more to allow the water to run back into the open river. Meantime while at rest the water has deposited a portion at least of its burden of silt, and there is left upon the excavated peat a paper-thin layer of fine sand and mud. Tide after tide this process is repeated, the strong springs carry more silt than the slower moving neaps; but, as a rule, in three years about four feet of soil can thus be built up. Formerly only the summer tides were used, but warping is now carried on all the year round. The surface must be actually dried between tides, and to form a good deposit the water has to be admitted in such a fashion as to cover the whole area as rapidly as possible, to which end the inlets are moved from time to time, because near them the coarser sand alone is deposited, the finer particles being carried farther into the quieter bays of the artificial lagoon. During the process of warping, the sloppy surface which is drowned twice a day becomes a favourite haunt of wild-fowl, and carries a strange vegetation, in which plants of the slob land, like the sea aster and the sapphire, grow luxuriantly side by side with heather and fern still flourishing on little floating islands of peat that have broken away from their foundations and keep rising and falling with the waters. Finally, when sufficient deposit has accumulated, it is given a little time to dry and a shower of rain to wash out the salt, whereupon it is sown with clover and rye grass, which are left down for two years while the ground consolidates. It is then firm enough to be drained and receive a little levelling in places where deposition has

been irregular, after which it passes into general cultivation and can be let at £2 an acre or thereabouts. Sometimes the land settles so much after it has been in cultivation, through the decay or consolidation of the underlying peat, that the warping is repeated and another foot or two of soil is added. The chief item in the expenditure is the construction of the warping canal, hence the cost of warping depends on the extent of land that can be dealt with by one canal; roughly the capital outlay is considered to be about £20 an acre, at which cost the waste moors possessing only a nominal value become worth £40 to £50 per acre.

Warping does nothing more than systematize and bring under control the natural process of building up alluvial flats which is going on in every estuary; it appears to have been introduced into this part of the country about a hundred years ago, and not to be practised in any other part of England; but, under the name of *colmatage*, it is well known in the valley of the Po and near the mouth of the Rhone. Doubtless there are many other tidal flats in Great Britain where it might be advantageously pursued, because the resulting land is both rich to start with and admirably suited for cultivation.

While considerable areas of these Thorne Moors and of Hatfield Chase, which lie in the great flat expanse between the Isle of Axholme proper, Goole to the westward, and the hills beyond the Trent on the other side, have thus been artificially warped, the best land of all is the naturally warped land which lies highest close to the river bank. This lets for as much as £3 an acre, and it owes its value to the fact that it is always the driest part of the country. At a lower level than the natural warp, and a little farther back

from the river, comes some poor "carr" land, distinguished by a soil which is not peat proper nor quite like the black Fen soil, though it does contain an enormous proportion of decayed vegetable matter, among which the remains of comparatively recent forest are very conspicuous. It forms, however, but a poor soil, and requires to be warped; at a still lower level it passes insensibly into the moors, which have more or less been reclaimed by the warping. All the land must be artificially drained, and as the river bank is approached a very complicated system of drainage canals is seen at various levels and of all sizes. Some of them, which only deal with small and comparatively high areas, drain by gravitation, the sluices opening automatically to let off the water at low tide; in other cases huge scoop wheels driven by steam are employed, and are very cheap and efficient when the water has only to be lifted a few feet; for a higher lift centrifugal pumps must be employed. The maintenance of these canals and the pumping stations is met by a rate which varies between half-a-crown and ten shillings an acre, according to the position of the area dealt with. Fresh drainage areas are always being made or the old ones are put under a more efficient system, but the consent of four-fifths of the proprietors of the land must be obtained before a new rate can be levied. The result is a stretch of land of great fertility, a curious country with the smoke of the Goole chimneys on one horizon and that of the Frodingham ironworks over against them on the other, a country traversed by great waterways on which barges, almost worthy to be called ships, sail high above the land, traversed too by many railways bringing Yorkshire traffic to and from the port of Grimsby. But in itself the country is purely agricultural—not perhaps for many years

longer, for the Doncaster coalfield is creeping eastward and shafts are already threatened in the midst of the Thorne Moors. Rents are high, from £2 to £3 an acre, and the farms run comparatively large, from 200 to 400 acres, and are almost entirely under the plough. Potatoes and wheat are the standard crops, the usual rotation being potatoes, wheat, then half the land in roots and half in clover and rye-grass. To a certain extent mangolds replace potatoes or turnips, and oats are taken instead of wheat. The potatoes are heavily manured with whatever dung may be available, or, better still, by ploughing in the second growth of the preceding clover crop; they also receive an artificial mixture, generally of superphosphate and nitrate of soda, in very large quantities. As a rule main crop varieties are grown, they are rarely sprouted before planting; spraying against blight is general, but is not perhaps made so much of as in the Boston district.

The warpland is also famous for its wheat; a yield of six or seven quarters is general, though few fields were expected to reach that high figure during the year of our visit. Some of the wheat gets sold for seed; at one time seed wheat off the warpland was regarded as a good change for almost every other description of soil. No stock were to be seen on the land; permanent pastures are rare, except a field or two near the homestead, there were no sheep and very few dairy cows, the custom being to fatten bought stores through the winter.

Very little was to be seen of special crops; here and there a few acres of celery were growing, generally the property of one of the few small holders who have somehow got a footing in this region of comparatively large occupiers. Flax, we heard, used to be grown in the district in quantity; the last mill, itself a

revival, had been shut down only a few years ago, but we were given to understand that the farmers understood the cultivation of flax and would willingly grow it again if they could find a market for the fibre. Some attempt ought to be made to see if the industry cannot be revived in England; probably it died away because the all-important retting process, by which the fibre is set free in the straw, was left in the hands of the individual farmers, with the inevitable result of a variable and parti-coloured product for which the best price could not be obtained. The farmers' work ought to be confined to growing the flax, leaving the retting and all the processes of manufacture to a central factory; on these lines it is possible that the growth of this valuable crop might be revived, especially as linseed oil, which is crushed out of the flax seeds, has doubled in price during the last few years. Crops yielding a large monetary return are needed in that district, for rents are high and labour well paid. Day labourers received 2s. 9d. a day, with double in harvest time; we again saw women at work in the fields, but the potato lifting is largely done by immigrant Irish labourers, who are so thoroughly a part of the system that on all the farms there is a large barn known as the "Paddy House," in which they live. We do not hear of any great desire on the part of the young men to move to the ironworks or the shipping; some had tried it and had come back to the easier work on the land. For the men, as for the masters, farming in these West Riding and Lincoln flats seems fairly prosperous; it is not perhaps the most attractive sort of agriculture, but it is a good driving business which is getting out of the land something approaching the highest yield that is profitable.

XVI

YORKSHIRE ARABLE FARMING

THE warp land of the Isle of Axholme lies partly in Lincoln and partly in Yorkshire, and in the latter county, across the Ouse, there is a considerable area—Howdenshire, over which the agriculture is of the same type, arable farming, with potatoes and wheat as the principal crops. William Cobbett, no mean judge, after riding into Hull in 1830, enumerates all the fertile land he knows in the south, and writes: "Having seen and having ability to judge of the goodness of the land in all these places, I declare that I have never seen any to be compared with the land on the banks of the Humber." In this opinion Cobbett is mainly thinking of the warp, though he does specifically include Holderness, the country east and north of Hull, which is quite distinct, for though it is still low-lying the surface is covered with gently undulating glacial drifts, and true alluvial soils only occur along the river side. Close to Hull the flat country is mostly under grass, and in the alluvial area near the mouth of the river and Spurn Point, round about the district known as Sunk Island, mustard and other seed crops are extensively grown; but Holderness proper is occupied with mixed farming.

The soils are strong enough to be the better for an occasional bare fallow, and they are mostly in

need of liming, though the chalk rock underlies all the country, but at too great a depth to be exposed. The farms all run comparatively large, from 300 acres to 800 acres; the buildings are extensive, but not in particularly good order; being brick, they have perhaps a meaner appearance than they deserve. Wheat is the crop of the country, and everywhere promised some of the heaviest yields we had seen during our tour; it had, moreover, entirely lost the dirty aspect which characterized all the corn on the rich lands farther south, and was generally standing erect with bright clean straw and ears just touched with the first gold of harvest. The farmers follow no very strict rotation; but, roughly speaking, two corn crops are grown and then one year of fallow succeeds. This is really the old English three-field system, the earliest of all rotations, adapted to modern practice. The wheat is followed by barley, and on crossing the Humber one leaves behind the narrow-eared barleys, like Chevallier and Archer, their place being taken by wide-eared varieties of the Goldthorpe type. It is true that a good deal of Chevallier barley is still grown in Scotland, there being a demand in the south for seed barley of Scotch origin, but speaking very generally the wide-eared sorts are better adapted to strong or elevated soils and cool climates. After the barley, peas or beans are very commonly taken, or a portion of the area may be given a summer's bare fallow; wheat and barley then come round again, after which the land is divided between turnips and seeds. Red clover can only be successfully grown about once in twelve years; usually a mixture of alsike and white clover is sown, and as in Lincoln gives rise to excellent temporary pastures. Mangolds are but little grown, and among the corn crops a

surprisingly small proportion of oats is seen. Sheep are not very numerous, as the land is rather too heavy and wet for folding; what we saw were mostly the heavy Lincolns which come from just over the water. Each of the farms, however, holds a fair proportion of grass land, and this with the temporary pastures was well stocked with cattle, Holderness being very largely a stock-raising country. The cattle are mostly sold as stores, there being little winter fattening, as indeed the rotation indicates, with its scanty allowance of roots.

It will thus be seen that the style of farming adopted is calculated to earn a good deal from the land: two crops out of the three are corn and are sold straightaway, while the breeding cattle do not require very high or expensive feeding, and are to a large extent clear produce of the soil. The cake bills are considerable, but are not on the same plane as those incurred by the man who fattens bullocks; and though a certain amount of artificial manures are bought, they are not very costly. Superphosphate is the staple manure, though, as might be expected on such strong soils comparatively destitute of lime, basic slag answers very well and its use is extending. Rents were not high, though perhaps above what would be demanded for a similar class of land farther south; they averaged about 30s. per acre, and at this rate we were informed that farms were in great demand. Only a few small holders were to be found; here and there we saw a few acres which had comparatively recently been planted with fruit, and within reach of Hull a few men have begun to grow produce under glass, for it is a fairly sunny district and coal is cheap. Holderness generally struck us as in the hands of a very capable body of farmers, who, if not

very modern in their methods or their outlook, yet lived pretty well out of the soil by energy and hard work applied along traditional lines; above all things, they were farmers who made no attempt at being fine gentlemen.

Inland of Holderness proper runs a low-lying alluvial valley from Hull northward known as the Carrs, mostly wide grass meadows divided by open ditches and requiring in great measure to be artificially drained. At the head of this lower valley of the Hull stands Driffield, the centre of a fine farming district chiefly famous for its stock-raising and light horse breeding. Our object, however, on that occasion being crops rather than stock, we did not delay but made at once for the Wolds, which from Driffield begin to ascend gradually out of the green river plain. Rapidly we found ourselves once again, but for the last time, in the chalk country, more elevated and boldly sculptured than the Lincoln Wolds, though like them showing less open sheep-walk and more cultivated land right up to the tops of the hills than does the chalk in the south of England. The general elevation of the Yorkshire Wolds is considerable, touching in one place 800 feet, and as they are somewhat deeply cut, even on the eastern dip slope, by one or two small river systems, the hills are steep and sudden, though the most formidable gradient is that presented by the westward facing scarp, where it overlooks the Vale of York. The great fields, a hundred acres in a single block, the sparse hedges, and the smooth-flowing curves of the waterless hillsides, all spoke of the chalk again; the land was once more full of sheep, while here and there a late sown field of turnips showed how thin was the soil and how near the white rock. Because of the steep slopes and

the enormous fields, the soils in this country are much subject to washing down the hillsides in heavy rains; on occasion a thunderstorm accompanied by intense rain will strip off the soil down to the bare chalk over whole fields near the head of these upland valleys. It was indeed in this very district that so much damage was done by a cloudburst in the spring of 1910, when over a considerable district north of Driffield men lost crops and soil together, and damage was done to the land which centuries alone can repair. It would certainly seem desirable in some of these combes and valleys making smooth gulleys to divide the land up by hedges so as to break the flow of the storm water and prevent it getting up that velocity which gives it so potent an excavating power. We visited one farmer who occupies an extensive farm in the very heart of the Wolds, much of it at a very considerable elevation, and were, to begin with, impressed by the amplitude, solidity, and fine state of repair of his house and buildings, largely constructed of stone which must have been brought from some considerable distance. But, speaking generally, north of the Trent neither labour nor expense has been spared in providing substantial farm buildings. Almost as striking was the architecture of the ricks, some of which were still standing unthreshed in the yard; built on a circular base, about 20 feet in diameter, they grew wider as they ascended, and then at about 16 feet were capped with a neat cupola of straw running up to a central point—a masterpiece of the thatcher's art.

The land was mostly under arable cultivation; there was very little true down to be found, though on most farms are some fields which had been laid down to grass for a considerable time. The farming,

as on the Lincoln Wolds, followed the strict four-course rotation without any variations; the roots were rape and swedes to be eaten off by the sheep, rarely were mangolds attempted. Barley followed the roots, almost universally some wide-eared variety was taken, and afterwards came the seeds, red clover only at long intervals, but most generally the mixture of alsike and white clovers with trefoil, which we had been seeing everywhere on the uplands since we entered Lincoln. Wheat succeeded the seeds, and in this district even more than in Holderness possessed a gloss and brightness, without any trace of the rust that was then so common in the south country. The variety most commonly grown was Browick, and the oats which may take its place or that of the barley were generally Black Tartars. No catch cropping was practised, the seasons being comparatively cold and late.

The soils are naturally very shallow and are full of fragments of flint, but though the chalk rock is so near that it is brought up by a deep ploughing the land is said to be improved by liming. No great quantity of fertilizer is used, superphosphate for the root crops forms the only supplement to the dung made on the holding. Naturally in this style of farming sheep play an important part, and here for the first time we met with the Leicesters, the aristocrats among British sheep that still show a quality in their looks and action that has been rivalled by no other breed. It was by his work upon the Leicesters that Bakewell first taught his fellow-farmers the principles of stock breeding and selection, and there are few of our other recognized breeds that do not owe something of their excellence, not merely to the example, but to an actual blending with some of the fine Leicester blood. When in condition no other sheep quite so closely approxi-

mates to the Noah's Ark style of a square-sided box perched up on four legs, and the neat little ringlets or purls of closely curled wool which characterize the breed only add to their toy appearance. The main object of the sheep breeding on the Wolds is to sell lambs fat off the turnips at about a year old; our host, who had a flock of considerable repute, also sold a number of ram lambs for stud purposes. In addition to the sheep, bullocks were brought into this county to be fattened during the winter, half of the swedes being drawn off the land for this purpose.

The farming is thus somewhat restricted in type, following in the strictest and most conservative fashion the traditional practices, but it was being extraordinarily well done. The land was kept most scrupulously clean, like the land on the Lincoln Wolds, and the even, regular stand shown everywhere by the crops spoke of sound and careful management. Farms ran large, from eight to twelve hundred acres; there are practically no small holdings in the Wolds, and rents, we were told, varied from 15s. to 20s. an acre. At this price there was a good demand and no farms were then on the market. Labour was to be obtained in quite sufficient quantity; this is a district of yearly hirings, and the young, unmarried men all live with the bailiff or foreman, who receives an allowance on which to "meat" them.

The only labour difficulty appears to be the drinking bouts of these young men, who periodically go off for a few days and get rid of all their accumulated savings. It is a pity that a better outlet cannot be found for these sturdy Yorkshiremen of the effervescences; it is the monotony and want of relief in their occupation which cause the outbursts. Every farm labourer has to work long hours and content himself with a small

allowance of human intercourse, but this Yorkshire Wold country is to a special degree sparsely populated, very open and deserted to look at. As it is never likely to be otherwise, it is to education that we must look, education not only as regards knowledge, but education in outlook and aspiration, if we are to provide the labourer with interests that will keep him from drinking to excess.

XVII

HIGH FARMING IN NORTHUMBRIA

BEYOND the wolds Yorkshire has many other systems of farming to show, in Cleveland, in the Vale of York, and in the hills that run up into the Pennine Chain; but consideration of them had to be reserved for another occasion, because they are in the main dependent upon stock-raising and grass, while our attention was being chiefly directed to arable land farming. In North Yorkshire, though there is still plenty of land under the plough in the broad plain through which runs the Great North Road, it is grass land that fills the eye, grass in comparatively small fields surrounded by tall hedges. It is also a cattle country; and the most striking feature of the district is the high general level of excellence attained by the ordinary farmer's stock, as it is seen without selection in travelling or at any of the local fairs and markets. In the Midlands and in the south many farmers keep high-class stock, even if they do not breed pedigree animals; but a large proportion of their neighbours seem to possess nothing but misfits, and are content to try to fatten or to milk any kind of cross-bred. To look at the assemblage in the weekly market in one of the smaller towns, it is hard to believe that one is in the country which claims to be the great fountain-head of pure-bred stock, so mean and unimproved is the general average of the

cattle displayed. Much of this must be set down to the dairy farmers, especially the smaller men who are so numerous near the towns; they buy their milch cows where they can find them, irrespective of breed; and any kind of bull is used, so that a constant stream of calves bred anyhow are being put in circulation and, with the present dearth of store cattle, get reared to maturity. But in North Yorkshire the pure-bred Shorthorn reigns supreme, the old type, which is a good all-round farmer's beast and hard to beat either as a producer of milk or of beef. We were indeed nearing the ancestral home of the Shorthorns; for it was at Ketton and at Barmston, just across the river in Durham, that the brothers Colling, working along Bakewell's lines with the local cattle, evolved the modern Shorthorns, or Durhams, as they are still called over a great part of the world. After the Collings' time, Bates and Booth gave their names to the two leading strains of Shorthorns; and Bates belonged to Kirklevington in Cleveland, while the Booths lived near Northallerton. Over all this country, from Thirsk north to Darlington, and on to Durham and beyond, the descendants of these great stocks stood nearly knee-deep in the ample grass of the dripping summer of 1910, and we hardly saw a bad one among them.

Durham and the southern part of Northumberland are counties of violent contrasts, so rapidly does one exchange purely pastoral or agricultural country for densely populated colliery areas or that still more dreary land where the coal has been won and farming is being resumed in a half-hearted way. The surface of the country is covered pretty deeply by glacial drifts; but as they resemble in nature the underlying rocks of the coal measures, they give rise to comparatively poor

soils, which are mostly kept in grass. Round the edge of all the industrial districts of the north small dairy farming on grass land prevails; there is an immediate and steady market for milk, and the conditions produce just the kind of little farmer, doing most of his work with his own hands, who can make a living out of a few cows on comparatively poor land.

Farther back from the towns Northumbria possesses an energetic race of larger farmers; but there is no great area of arable land until the northern part of the county is reached beyond Alnwick. There a belt of land lies near the coast, a belt marked roughly by the North-Eastern Railway and the high-road, which is mostly under the plough, and shows some of the finest management in the country. The broad valley which extends from Alnwick to Wooler, and thence along the course of the Till to Tweedside, partakes of the same character. The best of the land is rather on the light side, distinctively sheep and barley land; but the soils are very variable, for the glacial drifts do not preserve any definite type for many miles, or even acres, together. The country slopes gently to the sea, but is diversified by the deeply cut stream courses on the one hand and by occasional ridges of old moraine matter, forming narrow and steep-sided uncultivated banks called "kames," out of which gravel and boulders can be dug. Other sudden banks run for miles across country roughly from west to east; these are the dikes of basalt which stretch like a spider's web from the old volcano in Mull across Scotland and the north of England, sometimes enlarging into masses of basalt rock like the great crags on which the castles of Bamburgh and Dunstanburgh are built. In this district the farms run large, from 400 to 800 acres; and the farming is in the hands of well-to-do men, some

of whom own the land they cultivate, but all have capital at command and farm high both for crops and stock.

As a rule, a strict four-course rotation is followed, especially upon the lighter classes of land; but oats often take the place of wheat, and in alternate shifts trefoil is grown instead of rye grass and red clover. The bulk of the root crop consists of swedes, but both mangolds and turnips are extensively grown; potatoes, however, do not become common until the Border has been crossed. The swedes as a rule are partly drawn off to feed the cattle in the yards and stalls, and partly left on the land to be eaten off by sheep for the benefit of the succeeding crop. With the large head of stock kept, both cattle and sheep, and the length of time during which the grass land can yield them no nutriment in the cold northern winters, the swede crop becomes of very special importance; and every effort is made to secure a large one. We were, in fact, getting far enough north for big crops of swedes and turnips; in the south and east of England the average yield of swedes and turnips is no more than 11 tons per acre, but it rises in Northumberland to over 15 tons, and higher still in some of the north-eastern counties of Scotland. The larger crop is chiefly due to the earlier sowing that is possible in northern latitudes and the more equable and continuous growth in the cooler summers. The roots are given all the farmyard manure, together with a considerable dressing of artificials, chiefly as a rule superphosphate, though the prevalence of "finger and toe" in the district has of late years led to a considerable replacement of the latter fertilizer by basic slag. Much of the land is in need of liming; but though the practice used to be universal, as may be seen from the numerous disused

limekilns along the outcrops of the bands of limestone which are common in the carboniferous rocks of Northumberland, it has been far too much neglected for the last half-century, to the detriment of the fertility and health of the land. The manures that are applied for the root crops do duty for the rest of the rotation; indeed, when any large proportion of the swedes is eaten off with cake and corn, the land becomes too rich for the succeeding barley; even the wheat and oats are often laid when the sheep have previously been grazing on the seeds for some time. The barleys grown are nearly all of the wide-eared type, though these sorts have the disadvantage in this exposed district of a long weak neck, which sometimes leads to a large proportion of the heads being broken off by a gale near harvest-time. With a fine September, however, bold barley of exceptional weight per bushel is produced along this coast; though the summers are never very warm, the proximity of the sea causes an equable growth, and the longer duration of the northern daylight in summer also makes for increased assimilation and plumper grain.

But though the land is mainly under the plough, and though the corn crops and especially the barley are considerable factors in the income of the farm, live stock form the mainstay of the agriculture of the district. Several kinds of sheep are to be seen: the Cheviots are the breed of the country, and though they are properly grass-land sheep, as their name indicates of mountain origin, they come down on to the turnips in winter to be fattened. Elegant little sheep, with white faces and characteristically cocked-up ears, they are active animals, moving with considerable grace; they may easily be familiar to Londoners, because in many seasons Cheviots are brought down

to eat off the grass in the parks, and in forty-eight hours may exchange the Fells for Kensington Gardens.

Soon after Bakewell's improved Leicesters had become famous, rams of that breed were brought up into the north of England; and by repeated crossing on the native sheep, probably unimproved Cheviots, a new race of Leicesters was evolved, differing only to a trivial extent from the parent breed in appearance if not in constitution, but nowadays distinguished as "Border Leicesters." These are very widely distributed over Northumberland and the south of Scotland, though they require the arable land and are not suited to the rough hill-sides on which the Cheviots flourish. A still more recent introduction are the Oxford Downs, of which during the last thirty years or so several flocks have been established in the district, so that the Oxford Down rams make a considerable figure at the great ram sale held at Kelso every September. The Oxfords are probably the largest of all the Down breeds, though they are bred in the Border country somewhat finer and smaller than in their native shires, the flocks having in many cases been built up on a foundation of Cheviot and Leicester blood; again, the Oxfords are essentially sheep of the arable land, and must be well fed and quickly grown to be profitable.

But perhaps the most numerous sheep in the district are cross-breds by Leicester rams on Cheviot ewes. These cross-breds are very uniform in type and might almost be regarded as a distinct breed, because they are very commonly bred together for another generation, or the ewes are again crossed with a Leicester ram. In a general way it is recognized that cross-breds possess a vigour that neither of the parents shows; but nothing further than a first cross is usually

bred, because in the second generation what we nowadays call Mendelian segregation begins to set in and the progeny become diversified, throwing back to all sorts of combinations of the characters of the parents. That these second crosses of the Cheviot Border Leicester breeds do not so segregate seems to show that there must be a very strong Cheviot foundation in the Border Leicester.

We were still in the country of Shorthorns, and went to see one of the famous herds; but it would require a specialist to make intelligible the excellences of the great bulls which were paraded one by one—magnificent beasts, docile with much showing, and amenable to the hints of the stockman, who knew well how to get them to stand to the best advantage. Our host had a famous run of white bulls—and white Shorthorn bulls have a special value, because when used on the black Galloway cattle they get the "blue greys," which are perhaps the most highly esteemed of all cross-breds for butchers' purposes. The cattle were all housed in a style that would seem luxurious to the south country or even the Norfolk farmer; for perhaps the most striking feature of Northumbrian farming to a stranger is the magnitude and excellence of the farm buildings—great blocks of well-built stone structures, dominated by a very factory-like chimney. Every northern farm has a small boiler, which supplies steam to the engine for chaffcutting, pulping, etc., and also for cooking or steaming foods; the boiler is fixed and possesses a substantial chimney, forming a distinct feature in the landscape, while a great dovecot almost equally tall is a not infrequent accompaniment. For all the substantial character of the buildings and the skill of the farming, rents did not run as high in this part of Northumberland as might have been expected, but

averaged from 18s. to 25s. an acre. But the land is not rich—some of it indeed is very poor—there are no large markets very close, and labour is highly paid, for the Northumbrian hind stands at the head of the agricultural wage-earners. The farms had mostly been in the same hands for many years, in some cases for generations, and none were to be let. Taking into consideration the rents paid for the class of land, the climate, and the high wages, only a determined and skilful race of farmers could attain the prosperity of which we saw so many signs.

XVIII

THE SUPREMACY OF THE LOTHIANS

EVEN the most agriculturally minded of travellers must find his soul touched to other issues as he nears the Border. As one travels by the North Road, away on the left the Cheviot lifts it shapely height; nearer still lies Flodden Field; on the right the foam-encircled Faroes, with their memories of Grace Darling, break the loneliness of the summer sea; and then the road dips down to run for several miles close to the expanse of sand or shallow bay, according to the tide, beyond which lies the Holy Isle. Soon afterwards one passes over the long bridge of Berwick, and still remains outside Scotland for a mile or two, although the Tweed has been crossed. But, once embarked in Berwickshire, some subtle change begins to creep over the look of the cottages, until by the time the Lothians are reached the Englishman can conclude from sight alone that he has left behind his own country.

The farming that we saw by the wayside was good, and it steadily improved with the character of the land as we got farther north, until a few miles short of Dunbar we reached what is without doubt the most highly-farmed district in Britain—indeed, in the whole world. This favoured district occupies a comparatively small area on either side of Dunbar; and the finest land of all is a thin strip to the east, not a mile wide,

between the coast and the railway. The soils are red and sandy, mixed with a good deal of stone; they are really drift soils, resting chiefly on an outcrop of the limestone near the shore; but they have been derived in the main from the Old Red Sandstone which forms the country rock a little farther inland. Chemically speaking, there is nothing special about the soils; physically they are light easily working loams, with a large proportion of sand particles but containing enough clay to give them substance and water-holding capacity. While they would be valuable soils anywhere, their special excellence is largely due to the way they are adapted to the climate prevailing in East Lothian, where the springs are late and it is important to have a soil warming up quickly; where also the summers are cool, so that little danger attaches to soils like these, which would suffer from drought under hotter conditions. A really dry summer is not desired on the best of these Dunbar soils, whereas many of the finest soils farther south never display their superiority to such a marked degree as in a parching season.

We paid a visit to the farm of Mr. James Hope, of East Barns, near Dunbar—a farm so well known to agriculturists, not only in Great Britain but from beyond the sea, that we may be pardoned for mentioning it by name. Before the wave of depression in the 'seventies and 'eighties of the last century, East Lothian farming was a model to the whole world, and the farmhouses were filled with gentlemen's sons who came to learn practical agriculture at its best. Few districts, however, were more heavily hit by the fall in prices; the production was planned on a scale too high to be profitable under the changed conditions; and of the men who then were the pride of Scotch farming very few are now left in the district. Mr. Hope, however,

remains, and shows how the old-time perfection in handling the soil and keeping the land clean, which has almost passed away, may be so combined with modern improvements as to make high farming still profitable. His extensive farm lies for some distance on either side of the high-road and runs down to the shore; throughout it carries the red sandy soil with stones and fragments of limestone which we have already described. The fields are large and divided by stone walls; hedges mean both waste of land and perpetual sources of weeds. In these fields we found the crop growing as well right up to the wall as in the middle of the field, and one had to look about in order to find a weed at all. The whole of the land was under the plough, being much too costly to be left in grass; and the leading crop was potatoes, which are taken every third year over the whole area. Of all main-crop potatoes, Dunbar "red soils" command the highest price in the market, often standing at 10s. per ton above the price of Lincoln and other warp-grown produce; and this reputation has prevailed for more than a generation, back to the days of the famous Dunbar "Regents." At the time of our visit no variety was special to the district; "Dates," "Factors," and "British Queens," then waning in popularity, "Langworthys," "Evergoods," and "King Edwards" were grown about Dunbar as elsewhere. But the Dunbar potato possesses a pink attractive skin, and has the special excellence of not turning black even when cooked up for a second time after it has once been allowed to go cold. This is a property greatly prized by hotel and restaurant keepers; in any wholesale potato market you will see on the top of each bag a few samples of boiled but cold potatoes, in order to show how well they maintain their whiteness, and also

the character of the flesh, whether floury or waxy. The superiority of the Dunbar potato seems to be due to the adjustment of soil to climate, which results in an equable growing period, free from pauses caused by heat or drought, and prolonged considerably into the autumn without excessive moisture or sudden cold, for the proximity of the sea maintains an even temperature.

The rotation that was being followed began with a crop of potatoes, then the land was divided between wheat and turnips; in the wheat clover and rye grass were sown, while the turnips were followed by barley —a wide-eared variety. In the following year the whole field went into potatoes, again to be divided between wheat and turnips in the following year, but on the alternate halves of the field, the wheat being again succeeded by seeds and the turnips by barley. Thus in six years were taken two crops of potatoes, one of wheat, and one of barley, all sold away; also one crop of seeds hay and one of turnips, part of which was also not infrequently sold. Oats were not grown to any large extent—just enough to feed the horses on the place. To the potatoes were given all the farmyard manure made on the farm; but this would not supply nearly enough, so very large quantities were bought from Edinburgh.

Other potato growers in the district are rather disinclined to use so much farmyard manure, fearing it deteriorates the quality of the produce; and they follow a different rotation, in which potatoes come only once in six years. Swedes are followed by barley, in which clover is sown to be cut for hay in the third year, but in the fourth to be grazed by sheep receiving cake and corn. Having thus considerably enriched the land by the growth of clover, and also by the food given to the sheep, a crop of potatoes is taken without any farm-

yard manure but with 7 cwt. or 8 cwt. per acre of artificial fertilizer; finally a crop of oats completes the six years' rotation. This course, as will be seen, produces much less saleable material than Mr. Hope's; it is suited to poorer and less expensive land. But on either system very heavy crops are grown; the initial cultivation is deep, and the later working of the soil, especially the earthing up, is very thorough; until by the beginning of August a man stands waist-deep in the vigorous potato haulm. It is no uncommon thing to hear of £30 an acre being given for the standing crop, the buyer taking all risks in addition to the cost of lifting the tubers. Of course, this is by no means clear profit, for, in addition to rent, cultivation, and manure, one or two sprayings have to be done, and a change of seed from some later district has to be brought in every other year or so. There is, however, a margin of profit. The potato is the mainstay of the farming, and without it the high rents could not be paid. Very little stock was kept on the farm, a flying flock was brought in to eat off the turnips, and bullocks were fattened throughout the winter in order to get the straw trampled down; but both processes were regarded by Mr. Hope as of doubtful profit, to be avoided if only the roots and straw could be otherwise disposed of.

The farm depended on its crops, and finer crops, not only of potatoes but of corn and turnips also, no man could hope to see; six quarters of wheat and eight quarters of barley to the acre were expected. It is difficult to set down the impression of uniform richness and absence of waste of all kinds, of perfect utilization of the land, which was conveyed by this farm. Indeed, it needs to be farmed to something near perfection in order to earn the rent with which it is

charged, up to 90s. per acre, the most highly rented arable land in the United Kingdom—probably in the world. Of course there are acres under market-gardening or fruit which command even a higher rental, but nowhere else could 800 acres be found in one block at such a price. The general average of the good land in the Dunbar country was let at about 70s. an acre; but the favoured land only forms a narrow strip, and immediately above it on the lower slopes of the hills the rents rapidly fall to 40s. or so. Even then the rents are high for the class of land; and the Lothian farmer has been heard to argue that the poor farming which is but too common in the south of England has been encouraged by the low scale of rents prevailing, and that higher rents are desirable in order to force men to make the land produce more. But this is not likely to be a popular doctrine—among farmers. Nor was labour cheap in the Lothians; the Scotchman who remains on the land demands to be well housed and paid on much the same scale as the man who goes into the towns: but then he will give you value for your money, which cheap labour often fails to do. Our host was a believer in married men who would desire to remain on the farm, but then he considered that profit always came from the good things; good farming, good seed, good manures had always paid him best. It is noteworthy that these large Lothian farms are all of them rented, though they have remained in the same family for generations. It needs a large capital to work them properly, and this can all be put into the business when the farmer is renting, provided he is reasonably secure of his tenure, as he always has been in the Lothians.

The good land was divided into large farms; small holdings did not exist upon it, nor in all probability

could they pay the rent that would be demanded, because no small holder could hope to rival the pitch of productiveness to which the land has been raised on the present system. Much as we had heard of the excellence of the Lothian farming, what we saw of it justified every encomium; we had not imagined that the management of arable land could reach such perfection, even with every advantage of soil and climate. Possibly it is not the most instructive lesson ground, for it is only in a few places that the most perfect can be also the most profitable method of agriculture.

XIX

NORTHERN FRUIT-GROWING

THE fine arable farming of the Lothians by no means ended at Dunbar; all the way into Edinburgh and along the shores of the Firth beyond much the same class of agriculture was to be seen, but the soils are more diversified and their cultivation never attained the pitch of excellence that characterizes the red lands of Dunbar. Across the Firth into Fife again some very well-managed land was to be seen, but the surface is somewhat rugged, the moorland is never far away, and cultivation cannot extend to any great height above sea level. With the poorer land grass began to be more prominent and stock contributed a larger share to the farmer's returns, even when they did not become the leading feature of the farm. The best of the arable farming is to be found in the alluvial valleys, particularly in the comparatively broad strath which extends from Cupar to the sea. In Perthshire the agriculture is also of a very advanced type; there are two well-defined areas of arable farming, the Carse of Gowrie—an alluvial flat of somewhat heavy soil along the head of the estuary of the Tay—and Strathmore —the wide valley that runs from Perth to Montrose with the Sidlaw Hills on one hand and the foothills of the Grampians on the other. We were taken to see one or two important farms, and, though each man

had naturally his own views and his own methods of turning the land to profit, certain features were common to the whole district. The standard rotation was a six course as follows:—potatoes, wheat, turnips, barley, seeds, oats, but on most of the farms the seeds are left down for two or three years, the land being kept in grass longer as it becomes heavier and more elevated. Wheat and barley not infrequently gave place to oats, so that the acreage under oats was three or four times that given up to wheat and barley together, while there was at least twice as much barley as wheat. Barley, especially towards the Forfarshire end of Strathmore, is of excellent quality, and though the comparatively late harvest rarely permits it to attain the brightness of the best malting samples, the distillers have provided a very good market for it until within the last year or two.

The chief money-making crop was, however, potatoes; they sell well locally, and possess also a special value for seed; most of the large English and Lothian potato growers obtain their seed from this district, where also are situated one or two well-known raisers of new varieties. All farm produce, however, commands very good prices in Scotland, and this advantage in the local markets is itself almost enough to account for the superiority of the rents to those prevailing for the same class of land in England. On the heaviest soil in the Carse of Stirling and Gowrie potatoes are not grown; some of the land has to be bare fallowed, but not to the extent that was usual a generation ago. All over the district, but particularly in the Carse, meadows of pure Timothy grass are laid down, a practice that one does not see farther south; the Timothy is allowed to stand for three or four years and has the great advantage of coming to cut a

little later than the ordinary growth of seeds or meadow hay. Although it was early August hay-making was going on, and everywhere we saw in the fields, as indeed we had seen from Durham northwards, the hay still outside but gathered into pikes, *i.e.* huge cocks holding about a ton of hay. In this northern climate hay-making is a much more difficult matter than it is farther south, and a farmer is generally content to get his grass into pike long before it would be fit to carry and build into rick. Once in pike the material heats a little and completes its curing and drying; it is also safe from the weather, and the farmer is able to leave it in the field and get on with his corn harvest, often only leading home his hay after the first snows have fallen harmlessly on the pikes. In some cases, especially where a field is much sheltered by a wood, it is the custom to use drying racks for the corn; a season like 1908 taught many farmers the value of this practice. Beans are not grown to any large extent, but a leguminous crop that we saw for the first time was "mashlum," a mixed crop of oats and beans, or, as we saw it on one farm, of any and every quick-growing leguminous plant—beans, peas, vetches, and clover. As with the dredge corn referred to earlier, the mixture certainly seemed to yield a much greater bulk of fodder than any of its constituents separately, and it is particularly prized by the dairymen in the towns, the provision of green fodder for whom is a leading feature on many of the farms of the Lothians, Fife, Perth, and Forfar. Farms were to be found which sold off everything they produced, turnips and straw as well as hay and green meat, but this is only possible in the immediate neighbourhood of a town. Some of the farmers kept dairy herds themselves, but in the east of Scotland the custom of town

dairies seemed to be more prevalent. The stock-keeping varied very much with individual tastes. We were approaching the region of the famous Scotch Shorthorn and Aberdeen-Angus breeders, but even when men were not raising the highest class of pedigree stock many had found that it was more profitable to breed for themselves, even if they did not sell as stores but finished off their beasts. "Let the other fools make dear beef," said one prominent farmer; "give me the first end of the business where the profit lies, and where I meet with no foreign competition." This, however, was by no means the general opinion; the majority of farmers fattened bought stores, either locally raised or Irish bred, and in Aberdeen, a little farther north, the production of the very finest beef is the cardinal feature of farming. But there the turnip crops are famous for their magnitude and feeding quality; there, too, as a natural consequence, the feeling against the interdiction of the import of store cattle from Canada is at its strongest. A good many sheep are kept, and of late years many farmers have made a special business of raising fat lambs as early as possible. Border Leicesters form the favourite breeding stock, and on one farm we saw some beautiful examples of these symmetrical sheep which had just returned with honour from one of the local shows, in company with some magnificent Aberdeen-Angus cattle. They, above all other breeds of cattle, seem to realise the breeder's ideal of concentrating the greatest amount of flesh on to the most valuable parts of the carcase.

One could not fail to be struck by the energy and intelligence displayed in the mixed farming of this district of Scotland. It does not show the rigorous system of the wold farming, nor the specialization which distinguishes some of the best agriculture

elsewhere; its features are rather an enlightened opportunism and adaptation to the distinctly difficult conditions of soil and climate that prevail.

Perthshire does, however, possess one very special agricultural industry, that is, the growth of small fruit —strawberries, to a certain extent, but more particularly raspberries—which is to be found in small patches all over Strathmore, but centres chiefly round Blairgowrie and Coupar Angus, in which district there are nearly 2000 acres under this form of cultivation. In Forfarshire, Kirriemuir, which is better known to the world as Thrums, is also becoming an important centre. Perthshire, indeed, grows four-fifths of all the raspberries in Scotland and about one-seventh of the strawberries, Lanark being the chief centre for the latter fruit. The industry is of very recent origin. Although strawberries have long been grown in Blairgowrie, the present wholesale production of raspberries has developed within the last twenty-five years or less, and has been largely due to the organizing abilities of Mr. J. M. Hodge, of Blairgowrie.

The most interesting feature of the raspberry growing is the co-operative form it is taking. A land company buys a large farm or estate on suitable land, and does all the preliminary work of clearing and planting, including the erection of the wire-work on to which the canes are trained, expending thus about £50 an acre before the fruit comes into bearing. The land is then let to the growers at rents of £4 or £5 an acre, the company contracting to supply labour for picking and to market the crop. In July and August a small army of pickers are needed, and they are housed in large ranges of dormitories, built at some convenient centre, with kitchens, mess, and meeting rooms attached. The pickers pay a shilling a week for their

accommodation, and they obtain their food from the central kitchens at extremely low prices, just calculated to cover the cost of production and attendance. In the main, the pickers are women and children drawn from the poorer classes of the large towns, but the arrangements for their housing and feeding are now so good that a much more respectable class is drawn upon, and many people who are in nowise dependent upon casual earnings take their summer holiday in the open air raspberry picking. The conditions are not unlike those of hop picking, but the business is far more highly organized by the establishment of the dormitory system and the provision of meals. Of course, hop picking is of very long standing, and has grown up slowly along traditional and somewhat haphazard lines. The novelty of the raspberry gathering, its longer duration, and the severer climate call for a more elaborate organization. The Blairgowrie raspberries go chiefly for preserving; a small proportion are sold for table fruit, but the bulk is packed straightaway into half-hundredweight barrels for the jam factories. At intervals along the side of the road platforms are erected with a weighing machine. A foreman weighs the pickers' buckets as they come in, and pays in cash at the rate of a halfpenny per pound; he empties the buckets into the barrels, which later in the day are collected by a service of motor lorries. Each grower is afterwards credited with his produce at the current rates.

For a time the raspberry has been extremely profitable; very large crops can be grown, four tons an acre were spoken of as common, and prices were up to £30 a ton, but in 1908 and 1909 they fell to something like £10 a ton, and though they, in 1910, recovered a good deal, it is questionable if the supply is not beginning to be in excess. Moreover, it is by no means

certain that the very heavy yields can be maintained. In Kent a ton per acre is a very fair crop; and though the raspberry is naturally a northern plant, some of its luxuriance may be due to the fact that it is being grown on new land for the first time. So far little or no manure has been needed, though the soil is a thin gritty red or black moorland, by no means rich nor highly esteemed for general farming. It seems almost inevitable that as time goes on the raspberry growers will begin to experience some of the troubles that fruit growers meet with elsewhere, diseases will set in, and the big crops will only be obtainable at a greater expenditure of labour and manure. To an outsider the dangerous feature about the industry is its dependence upon a single crop; in the meantime, however, the Perthshire raspberry growing is a remarkable example both of intensive cultivation and of the collective farming of a number of small men which many people desire to see widely spread throughout Great Britain.

XX

GENERAL IMPRESSIONS IN 1910

AT Perthshire our pilgrimage had perforce to be determined; we had set out to get a rapid survey of the arable farming of the country, but though many important districts yet remained unvisited, our own harvest now claimed attention. The early potato-growing in Ayrshire, the intensive cultivation of Lancashire and Cheshire, the mixed farming in Shropshire, the corn-growing of the Midlands, and the market-gardening of Bedfordshire should all have a place in a survey of even the arable farming of Great Britain, but could not be attempted on that occasion.

Ours had been a rapid survey, so rapid that any writing about it can only be justified by the fact that singly or collectively we possessed a considerable measure of previous acquaintance with most of the districts visited, which gave us some power of arriving at a general impression on seeing county after county in quick succession.

What, perhaps, we had hardly been prepared for was the great variety presented by British farming and the diversity of the methods that are practised. Great Britain is not a very large country, and the variations of climate and soil which occur within its limits might be considered trifling by men accustomed to continental

areas, yet every few miles of our journey we found ourselves in a totally different country from a farming point of view. This indicates that the British farmer has learnt, partly by old tradition, partly by his personal skill, to adapt his methods very nicely to his particular environment, whether of soil, or of markets, or of climate. One sometimes felt inclined to disagree with the local practices, which a wider experience of other districts might have taught the farmer to modify with advantage; but one cannot be too diffident in advancing such opinions, so great is the value of tradition and experience in the workaday matters of agriculture. This diversity of British farming has been very imperfectly reported; many of the systems in vogue have not yet reached the text-books, and are little known outside their own districts, though they deserve serious economic study, and will doubtless receive it as the agricultural colleges grow in strength and the members of their staff obtain more leisure for personal investigation. Indeed, such examination of local systems might easily lead to a most instructive method of teaching of what we might call "Comparative Agriculture."

But if the methods of British agriculture are very diverse, they seemed uniformly to be meeting with a very fair measure of success, for one could not but conclude that the industry as a whole was in a prosperous condition and had healthily and stably recovered from the great depression that lay upon it as recently as fifteen years earlier. Our views were doubtless coloured by the fact that we almost inevitably saw one of the leading farmers in each district we visited, and, again, did not meet with the number of other men who from lack of business aptitude or some initial handicap were still struggling desperately to make both ends meet. Still, we concluded that farming was in a good way and was

yielding a fair return upon the capital embarked in it, though it was never likely to lead to a fortune. Of this prosperity the best external evidence was that we could very rarely hear of any farms to be let, while in every part of the country the good farms were bespoken long before they came into the market. Rents, too, were rising; we heard over and over again of re-letting at an increased figure, especially where the farms had been put up for competition. We even heard of one or two cases of rent having been raised on a sitting tenant, and no landlord or agent would incur the unpopularity of such an action unless he had very solid grounds for supposing that it was justified. Next, it was noticeable that nearly all the advanced and skilfully adapted farming we saw was being done by tenants. Large tenant farming has for the last century or more been the special characteristic of British agriculture; under this method has been built up our supremacy in production per acre and in live stock, and to-day it still seems the most effective form of dealing with the land on a wholesale scale. As a system it offers many points for criticism; it is often illogical, but its prime justification is that it works well, when the landlords and tenants are such as we find them in this country. In the majority of cases the tenant stands entirely on the side of the landlord and backs him politically and privately, however contrary their interests may appear to be. We heard but rarely of cases of injustice or oppression, and when they did arise it was generally over game. For example, we heard of one landlord who had threatened to turn a tenant out if he did not take his fowls off the stubbles and thus leave the shed corn for the partridges. In the south and east of England the game sometimes are allowed to interfere seriously with the farming.

We found little desire on the part of the large farmer to become his own landlord; he wanted all his capital to put into his business. Occasionally we met with a farmer who had been driven to purchase his farm because the estate had been sold and his business would have suffered too seriously from a change, but in most cases he was paying as much or more than his previous rent as interest on the mortgage, besides having put down a portion of the price in hard cash. Even when land can be bought outright at 20 years' purchase it can rarely be mortgaged at less than 4½ per cent., which leaves only ½ per cent. for materials, for repairs, and any other allowances which dip deeply into the landlord's pocket. Above all, in bad times the mortgagee presses for payment, when the landlord will wait because he can trust the character of his tenant and measure the inevitable ups and downs in farming that are brought about by the seasons. Even for small farmers the same difficulties seem to be inherent in ownership: they are even increased by the fact that the small man will mortgage his land in order to acquire a little more—a proceeding which brings disaster as soon as times become bad. The economic value of the landlord can be more than justified in the history of English farming, and we believe that he might more than ever establish his position to-day if he would take the opportunities of leadership that lie before him. As a class farmers are probably more disposed to take advice than they have ever been, but in social and economic matters they are very little influenced by argument alone. Many questions of co-operative production and collective trading which are now hanging fire because they are all against the individualist habit of mind of the British farmer would

move rapidly if some of the great landlords, each in their own district, put themselves at the head of a workable scheme. Of course if the landlord is to become the *entrepreneur* and organizer of industry for his tenantry, he will have to work at his task very seriously; good intentions alone have always proved harmful.

Naturally at that juncture one heard much about small holdings and the prospects of the new tenants who have been set on the land by recent legislation. As might perhaps have been expected, the large farmers with whom we talked had very little belief in the future of the small holdings. Most of them held, and rightly enough so far as their own districts were concerned, that the large man with capital will get more out of the land than any small man possibly can. Even with fruit and vegetables the capitalist's power of organizing labour, and his command of manures, his power of doing certain operations like spraying, which are only cheap on a large scale, must mean a greater production per acre. But while the intensive large farmer can thus beat the intensive small holder, there are many large farmers who never attempt to get the *maximum* profitable yield out of their land, but trust to skimming a small return off a wide area, and these are the men that from a national point of view are not doing their duty by the land, but might profitably be replaced by small occupiers who will be driven to get more out of the soil in order to obtain a living at all. But though the large farmers did not agree with the small holding movement, they were not unsympathetic. Many of them admitted there was an opening for a few men to meet local demands in their own districts, while of course in certain places, like the Isle of Axholme, the

small holder had been thoroughly tested, and was holding his own even under disadvantageous conditions. Putting aside the inevitable proportion of failures due to deficiencies of character and business capacity, all small holders are likely to suffer again when the next turn of bad times comes round, unless by that time some method of giving them co-operative credit has become firmly established.

As a feature in the prosperity of the modern farmer we have put his adaptability to his conditions. In the main, the men who could not alter their system to meet the low prices prevailing only a few years ago have been shaken out of the industry, and the most capable have survived to take advantage of the recent rise in prices. But though the best of these men still maintain the supremacy of British farming over that of any other country, nothing is more striking than the contrast between them and some of their neighbours. In every district we visited we found good and bad farmers close together, men who are earning good incomes on one side of the hedge, and on the other men who are always in difficulties, who in many cases are only kept going through the tolerance of their landlords. Sometimes a man always manages to scrape his rent together, but he lives miserably, his farm is an eyesore and a source of weeds and infection to his neighbours. As a rule these backward men are not unacquainted with the art of farming; they know how it should be done, and can be very critical of other people's management, especially of a college or county council farm near them. What they lack is determination, the ability to organize their labour and to manage their business; they are not ignorant but slipshod. We suppose it is the same in all businesses, the good and the bad

are mixed up together because both are inherent in human nature, only the farmer's mistakes lie patent to the eye of every passer-by. It is in Scotland that one seems to find a high general level of farming; there not only are the good very good, but those at the bottom of the scale are still respectable farmers. This difference, of course, is partially racial, but we cannot fail to correlate it to some extent with the differences in education in the two countries, and by education we mean the general outlook of the man more than his technical instruction. We may fairly say that the ordinary farmer is a pretty good master of his craft; he knows how to manage his land, he has an instinct for stock, and he gives very little away in the practical day-to-day management of his business. He is, however, very closely bound inside the routine of his district, he has little acquaintance with the methods by which other people attain the same ends, and is impatient of even attempting to think whether he cannot introduce modifications into his own system. He is apt to regard his style of farming as inevitable, something that nature imposes upon him and that he ought not to attempt to alter. It is just this lack of flexibility of mind, this power to look abroad and consider his business in a detached fashion as a whole, putting aside for the time details which are otherwise essential, that marks the imperfection in the education of the farmer to-day. The same defects may be seen in his organizations for social and political purposes. As a rule the Chambers of Agriculture and Farmers' Unions only draw in a small proportion of the farmers in each district; their action is often confused and unenlightened, and they by no means carry the political weight that the agricultural party ought to possess. Again, we may

see, in the unresponsiveness of the British agriculturist to any co-operative schemes, the same lack of appreciation of general ideas. For all these reasons we feel justified in concluding that the average British farmer is not educated up to his position or his opportunities; but it is not so much technical education that is lacking as an awakening to ideas, and that, probably, is more likely to come in the next generation from the general tuning-up of the country grammar schools than from the growth of agricultural colleges. Of course, we would not for a moment minimize the value of the work these latter bodies have accomplished; no one can fail to see the entire change in the attitude of the better farmers towards science and education during the last twenty years, and this change is most marked in the districts in touch with an energetic agricultural college; but still both the inclination and the ability to make use of the technical advantages provided by the agricultural college depend on the preliminary training of the grammar school and the mental attitude that it creates. If we can only create that respect for the things of the mind which so markedly characterizes the Scandinavian agricultural community, to take perhaps the most striking example available, the British farmer need never fear the competition of the new countries. In one technical detail, also, the British farmer's education is defective: he has never learnt a system of book-keeping adapted to the farm, a system which will show him the profit and loss on each branch of his business—cattle raising, milk producing, crop growing—instead of merely his indebtedness or otherwise to A, B, and C with whom he trades. It is true that the teachers of book-keeping have never put such a system before him, but it is a problem that our

schools and colleges ought seriously to take in hand, and it is a problem capable of solution.

If by 1910 the farmer had succeeded in readjusting his position since the depression, the condition of the labourer was still not satisfactory. It was true that wages had risen to a level more on a par with those prevailing in the towns, but they were still low; and the difference, coupled with the excitement and companionship the town offers, will continue to draw the majority of the young men away from the land. On far too many of our farms labour is still being employed wastefully. The farmer allows his men to work clumsily and slowly by hand rather than take the trouble to teach them labour-saving contrivances. Five men may be found receiving 15s. a week when the ideal to be aimed at should be two men earning 30s. each and doing the same work with the help of machines. It is less, not more, labour we want on most of our farms, but then the labour should be of the best and paid at rates competing with the wages of the artisan. Not only higher wages are needed, but above all the agricultural labourer wants a better outlook; he is tempted to send his son away from the land, not so much for the immediate cash as for the chance, however small, of mounting up the scale. It may be true that not one boy in a hundred takes his opportunity, but what thinking father in any class of the community but will give his son the off-chance if he can? If the small holding movement succeeds, its greatest boon to the agricultural community will be that it sets a chance of social advancement before the agricultural labourer.

We may criticize both labourer and farmer, we may sometimes even get angry with what may seem to be their waste of opportunities, but if we look

back, on the one hand, to the advances the farmer has made within the last generation and the way the industry has taken a new lease of life since its apparently approaching extinction in the early 'nineties, and, on the other hand, to the enormous improvements in the life of the villages in the last fifty years as measured by the early Victorian accounts of country life, then the situation becomes full of hope. British agriculture is not only alive but is advancing, and still provides the most stable and tenacious element in the fibre of the nation.

SECOND JOURNEY, 1911

I

THE VALE OF PEWSEY

IN 1910 our farming pilgrimage lay through the southern and eastern counties, and diversified as were the forms of agriculture we saw they had this in common, that they mainly depended upon the arable land. In the east the chief source of income is the sale of crops, and even where stock form a leading feature in the farming the sheep are fattened on the arable or the bullocks on the roots that are drawn off the land for the winter. In 1911 we determined to take the western route, where we knew we should find systems of farming in which live stock on grass land play the most important part.

The difference between east and west is very largely one of rainfall; elevation and contour count for something, because on the more accidented western side of our island lie the older rocks that had already been elevated and disturbed by volcanic action before the sandstones, oolites, and cretaceous formations which stretch across the Midlands were laid down on their flanks; but the chief factors are the extra five or six inches of rain and the softer airs which prevail from Gloucestershire to Cumberland. More rain, less

evaporation, steeper surfaces add to the cost of the ploughland, but, on the other hand, give rise to more certain and luxuriant grass, tempting the grazier to forgo the risks of cultivation. When the great depression came a generation ago it was the arable farming in the east that was most hardly hit; corn prices fell while wages tended to rise, whereas beef and milk continued to be profitable. As the Royal Commission afterwards reported, the gross returns on the arable farms fell to something like one-half of their former values, and most of the older farmers retired or ruined themselves before they learned to adapt their methods to the new conditions. In the west, however, it was an easy process to lay down a few more fields to grass and to continue without any change of system or great reduction of rent. In consequence there has been less of a revolution among western methods and western men; grazing is an easy and conservative business compared to the management of ploughland, and the grass farmers have lived along without the violent stimulus for good and evil which overtook the arable men, until as a consequence there is nowadays a larger proportion of slipshod backward farms to be seen west of the Severn than on the other side of the country.

But the west is, after all, not wholly grass; just as in the east the chalk with its many ramifications is the source of a great area of thin soils under the plough, so in the western Midlands the New Red Sandstone equally gives rise to light land, and all the way from Worcestershire, through Shropshire, Cheshire, and Lancashire, up to Cumberland, accounts for a very considerable expanse of arable farming. It is true that the New Red Sandstone is largely obscured by drift formations of considerable thickness; but this

drift has very generally been derived from rocks of similar character, and the light red sandy soils resemble the rock below, though the included pebbles speak of a glacial origin.

But in the character of the season our second pilgrimage provided a far greater contrast than the change from east to west. The previous season had been marked by dull weather, rain, and wind all over the kingdom until the end of August, whereas to match the drought of 1911 taxed the memory of the oldest farmers; 1895, 1887, 1874, 1863 being variously referred to, according to the age of the speaker. Over much of the country no rain to count fell between Easter and the Coronation, and that slight break in the weather was soon succeeded by the even fiercer heats of July. In some of the eastern counties, it is true, heavy thunderstorms fell in June, sufficient to establish the root crops and give the spring corn a chance to develop; sufficient also to drown the young partridges, so that some of the choicest partridge country was again without a show of birds for about the fifth season in succession. But the thunderstorms were only local, and their beneficial effect was soon swept away by the intense sun and the fierce, drying airs, until the face of the countryside lay brown and parched as few men had ever seen it before. As we left London on the 21st of July harvest was in full swing in the Thames Valley; winter oats were already carried; in one place wheat was being threshed in the field, and we even saw men opening out a field of barley for the binder. And what a difference there was in the look of the corn! In the previous year, south of Yorkshire one hardly saw a field that was not laid and twisted in all directions and all of a grey, dingy hue; in 1911 the corn stood like a regiment,

the wheat a shining red gold and the barley almost dead white. In the Thames Valley it was evident that many men would before August be through with the cheapest harvest on record, for probably the straw had never been so light and upstanding since the introduction of the binder. Unfortunately the roots did not match the corn, and the pastures looked so burnt that one doubted whether they could recover very rapidly even with rain; hence the prospects of winter keep seemed low indeed.

Our journey had again its starting-point in Wiltshire, but this year we took the road from Warminster north-eastward over a shoulder of the great chalk massif of Salisbury Plain, and very white and blinding did the down lie in the sun-glare and the drought. In some ways the chalk country bears up well against a drought; crops keep growing in an unexpected fashion, as though the porous chalk rock acted as a sponge always slowly raising water from the great stores below; but in 1911 the early spring had been too dry and the crops had never got a hold; moreover, even on the heights, where one usually counts on cooler airs and night mists to maintain the vegetation, the sun had scorched the grass to the roots. Men were being hard put to it to find any keep for their sheep, as the current prices showed only too clearly, for a drop of at least 10s. a head was reported from the early fairs. Over the whole South of England, indeed, the fall was accentuated rather than relieved throughout August, until towards the end of the month, on the borders of Romney Marsh, prime lambs, as nearly fat as might be in such a season, were being sold at 14s. each and ordinary lambs for wintering from 7s. 6d. down to as low as 1s. apiece. At that time the apprehensions of the Wiltshire sheep farmer were acute, for there

seemed little promise of roots or catch crops. At the end of July, indeed, with harvest beginning, one hardly saw what was recognizable as a field of roots on Salisbury Plain; as a rule the great bare stretches showed only here and there a green tinge to indicate something coming up, and only occasionally had it been possible to hoe and set out the roots to the eye in defined lines. Harvest was in full swing on 22nd July, even a field of barley was being cut, and the heat was such that in a tropical country it would have been thought dangerous to work in the sun in the middle of the day. We wondered what the occasional flocks of Cheviots and Blackfaces which we saw, recent introductions into the down country and apparently growing in favour even in this classic home of the Hampshires, were making of the novel torrid conditions.

Our first object was the Vale of Pewsey, the broad valley which traverses the central mass of chalk from east to west and separates the Marlborough Downs from Salisbury Plain proper. As the natural gateway to the west it is traversed by the great high road through Devizes; and though at first the two railroads turned the chalk by way of Swindon and Salisbury respectively, the Great Western now drives straight through the Vale of Pewsey to Westbury. In the west the floor of the valley has been cut down through the chalk to the Upper Greensand and the Gault, so that on the lower levels the soil is of a distinctively heavy type, at that time cracked wide with the drought; very generally again the soil shows that black or leaden colour so characteristic of the Upper Greensand all over its outcrop. The Vale farms, like most of those in Wiltshire, run large, 800 acres being no uncommon figure, while small holdings have no place in the farming of the district. Again, as is

usual in the chalk counties, the farms stretch in strips from the valley to the summit of the downs. At the base lies the heaviest land, in permanent pasture, to be succeeded by three-field land—*i.e.* land farmed on a rotation of beans, wheat, fallow—while still higher on the loams at the base of the chalk the Wiltshire four-field system is followed. This rotation, so general over all the chalk in the South of England, differs essentially from the Norfolk four-course system in that two corn crops are taken in succession, generally wheat followed by barley. Then the land lies for two years under successive green crops, which are eaten off by sheep; rye, winter barley, vetches, and rape being sown in succession as the stubbles are ploughed, and followed up with more vetches and rape or summer turnips, until the land carries at least three crops during the two years of fallow. At the summit of the farm comes the "bake," land which either grows alternate oats and rape, or is unbroken sheep walk, the down proper. Small as is the productive capacity of this grassland, it is yet of great value to the farmer as affording a dry and healthy run for the sheep, which otherwise obtain their food by folding upon the arable.

Even considering that a considerable proportion of the farms, up to one-third of their area, consist of this poor bake and sheep walk, the prevailing rents of 12s. to 15s. an acre could not be considered high: but more was then being asked wherever a vacancy occurs, and no farms were in the market. The lower land is probably as good as any that exists in England, a deep and well-tempered loam blessed with an excellent climate; and forty years ago Topley speculated why fruit- and hop-growing had never established themselves in this district, where the conditions were apparently just as

favourable as in Kent on the one hand or Hereford on the other.

While the old Wiltshire farming was mainly dependent upon sheep and barley, in the Vale of Pewsey conditions have been changing, and the production of milk for the London market has now become almost the mainstay of the industry. The cows are largely fed upon produce drawn from the arable, though there has been some laying down of land to grass, and as the grass is heavily stocked it requires a good deal of attention to keep it in good heart. The arable mostly derives its fertility from the cake and corn consumed by the folded sheep, together with superphosphate sown for the root crops; thus the dung made by the dairy cattle can be largely retained for the grassland, to which it imparts some staying power in the dry conditions which are normal. Farmyard manure seems to be less essential for the arable land, in which the constant folding can maintain a sufficient stock of humus. One great merit of the Wiltshire system is that no attempt is made to sow barley on the irregularly folded and often late-ploughed fallow; whereas the wheat crop is not affected by the poor tilth and rank manuring which often results from folding, and on its stubble there is plenty of time left to prepare for barley. One of the best barley-growers in the Vale holds that no good barley is likely to be obtained except after an autumn ploughing, followed by the minimum labour in the spring that will just drag the furrows down preparatory to sowing. That year his barley was short in the straw, yet still a fair crop that had just missed being first-rate through the last drought of July; the sun had bleached it to a remarkable whiteness, but the recent want of rain had prevented the grain from filling properly, and produced a somewhat thin and steely sample. One field that had

been sown on 3rd February, we saw ready to cut on the 22nd of July, the earliest harvest in that district since 1874.

Of the other crops, wheat was good, as elsewhere the crop of the year; oats were fair, but beans almost a complete failure, having been ravaged by aphis. Early-sown mangolds were good, as were some of the turnips that had received the benefits of the Coronation rains; but, as often in Wiltshire, late sowing is most general with turnips, to which indeed rape is preferred. The heavier land of the Vale is very good for mangolds, of which a large stock was wanted for the five hundred milch cattle on the farm we were visiting. On this good land, too, a strict rotation was not always followed; our host told us that one valuable lesson he had derived from the Rothamsted experiments was the possibility and safety of growing three or even more corn crops in succession. The difficulty of finding milkers does not seem to be felt in the Vale of Pewsey; instead, we were informed that the supply of labour was quite satisfactory, the provision of good cottages being the chief factor in retaining men in the district. We gathered that the labourers were perhaps a more stable population than the farmers; most of the older occupiers had been ruined or had retired in the depression, and new men had come in to take their place, but the labourers, even if they did a little wandering when young and restless, generally came back to their native country. And, indeed, we could well believe that the Vale, with its deeply-bowered cottages, its look of sleek enduring fertility, with the shapely downs backing the outlook north and south, would develop an enduring discontent with any other land.

II

THE UPPER THAMES VALLEY

FROM the Vale of Pewsey our road struck northward over the Marlborough Downs, where the soils are deeper and heavier than on Salisbury Plain. On this northern section there are more indications of the formations which once covered the chalk but have been destroyed without being quite denuded away, until there remains on the surface something approximating to the red Clay-with-Flints of the North Downs and Herefordshire. Another sign is the presence of the Sarsen Stones or Grey Wethers, huge blocks of fine-grained sandstone which lie like giant flocks about the grassland of the Marlborough Downs, though too often they have been broken up for building and road-making, gate-posts, and the like. They are supposed to be indurated cores from the Tertiary Sandstones which once lay above the chalk and have disappeared in the making of the Clay-with-Flints.

From Marlborough the Ogbourn valley allows of an easy passage northwards until, a few miles short of Swindon, the chalk terminates in an escarpment looking over the broad vale formed by the Oxford Clay and constituting the western end of the Vale of the White Horse, through which winds a well-nigh derelict canal joining the Stroud Canal with the Thames at Abingdon, and running almost parallel with

that other solitary waterway which leads from the Kennet through the Vale of Pewsey to the Bath Avon. There we left behind the chalk with its characteristic farming for the rest of our journey. The land below the escarpment in this part of the vale is heavy and tends to be wet, the farms are neither large nor highly cultivated, but consist mainly of small grass enclosures producing milk for local markets. It was not until we reached the middle Oolites in the Thames Valley, with their thin brashy soils, that arable farming once more prevailed. There, however, a considerable variety of soils is found, because the strata, which are comparatively thin and possess narrow outcrops, weather down, some to sands and others into materials approaching clays, though sharp loams containing a good deal of rock predominate, while the clays are tempered by an abundance of calcareous matter.

We were bound for one of the best-known farms in the Upper Thames Valley, famous the world over for its pedigree stock—Shorthorns and Oxford Down sheep—though our interests lay more in the general farming than in the very special export trade our host the[illegible] built up. The breeding of fancy stock, for which perhaps[illegible]onies, America, and the Argentine form the [illegible]ost of [illegible]t, is a business quite outside the operations of [illegible]ed in the[illegible]ary tenant farmer. Besides that rare endow[illegible] their [illegible]e fancier's eye, it demands considerable capital [illegible]id a long waiting period before the breeder can build up his reputation and secure prices on a scale which will repay him for the heavy expenses necessary fo[illegible] success in the show ring in first-class company. M[illegible]re fashion plays all too large a part in dictating the character of the demand; moreover, the buyer and even the agent who effects the purchase are themselves advertising, so that the vagaries of prices

are comparable to those of the "old master" market, and profits can only be averaged over a long period. The amazing thing is the comparatively small influence our classic breeders seem to be exerting upon the general stock of our farmers; although Great Britain is the fountain-head from which every other great stock-producing country draws its blood, the general level of the animals which may be seen on sale at any local market is below that which prevails, say, in Canada or the northern United States. It is only in a few districts, particularly in the North, that the ordinary tenant farmers keep stock showing any uniform high quality, and appreciate the fact that it costs as little or even less to rear the better animal.

Our host farmed over a thousand acres of land of variable character, and the exigencies of his stock business called for a certain amount of flexibility in his management. The old Norfolk four-course system chiefly prevailed in the district, and to this in the main he adhered, though he would often take barley twice in the rotation, after the clover ley as well as after the roots, and introduced occasional catch crops to secure more keep. Vetches in particular were sown over one-third of the root break and followed up with turnips. Red clover was not successful at such short intervals as four years and so was alternated with a mixture of grass seeds, trefoil, and alsike. One field was always kept for lucerne, which grows well on the warm brashy soils, and in a dry season proves of immense value, being, indeed, at that time the only green-growing crop upon the farm. Cabbages were also a feature, and our host was a great believer in the value of transplanting as compared with drilling this crop, and could show us a couple of fields to demonstrate his opinion. Not only was time gained for the preparation of the land,

but the transplanted cabbages gave much the greater yield; the shade of old William Cobbett, who was never weary of recommending cabbages and their transplantation, might well have smiled on the result. As in Wiltshire, late sowing answered best for the turnips; we saw swedes that had been drilled as late as 20th June, and they were better than those put in at the beginning of the month, while common turnips were rarely sown until July was well advanced. To secure a root crop our host depended on the horse hoe, and he favoured a particular tool with a broad flat share, which pulverized an inch or two on the surface, and tightened up the layer immediately below, the root-principle of all dry farming. But if he kept his root sowing until late he was ahead of the ordinary farmer in his hay-making, thanks to which he had secured that year an abundant aftermath from the two inches of rain that fell in early June but on most farms had merely knocked about the standing crop without inducing any appreciable extra growth. It is as yet far too little recognized that the hay crop in its later stages, even when increasing in weight, is still degenerating in feeding value; the maximum production of digestible material is reached before the crop is ripe, before even the general filling of the seed. In a droughty season it is more than ever desirable to cut early and win the first growth in a good condition rather than hang on in the hope of rain to make a thicker bottom. When the rain does come it will be turned to better account in the aftermath, as on this farm, where the meadows were carrying the best grass we had seen since our journey began.

Though not a specially early district, harvest was in full swing, most of the wheat was cut and showed a nice crop, though not particularly heavy; comparatively

speaking, the barley was better, and promised a good yield for the season. Here we saw some of the general purpose Shorthorns for which our host was famous, as well as his equally notable Oxford Downs, descendants of one of the earliest flocks that were formed of this breed. It was thereabouts, indeed, that the Oxford Down was created, the foundation being the Cotswold sheep of the uplands close by and the Hampshires, of which the type had been fixed not long previously. Only that spring had died John Treadwell, one of the founders of the breed, though he belonged to the Aylesbury country, and was proud to tell you how he was the farmer selected to nominate Disraeli for the county of Bucks; a characteristic figure at the great shows and on his regular visit to London for the round of agricultural meetings which takes place in Smithfield week. His undeviating garb seemed to be of a piece with his firm fixed opinions and tenacity of purpose; he stood in this generation a living witness to the masterful early Victorians who made English farming what it is. The Oxford Downs have become the largest and most rapidly growing of the Down breeds: indeed, they find place amongst the heaviest British sheep, and they have established themselves in several districts remote from their origin—as, for example, along the Scotch border, where there are several flocks of repute. Like all Down breeds they are properly sheep of the arable land: but they are greatly valued for crossing with Cheviots and other upland breeds, the draft ewes of which are brought down to the lowlands to raise one crop of lambs. The Oxford Down breeders claim that no other ram will impart to their crossbred offspring quite the same measure of rapid growth and size.

In one corner of the highly-cultivated farm we were

visiting we suddenly fell across a few neglected fields overrun with weeds and with the fences in the last stages of decay and disrepair. This was the local small holder, a cheerful soul whose acquaintance we afterwards made. By dint of working from dawn till dark he managed to keep his end up; but we gathered that the general body of labourers—and labour in the district was described as both sufficient and good—showed no particular desire to follow his example. Our host naturally held strong views on the policy of expropriating farmers like himself to replace them by men who would either put acres together in their turn or sink into slipshod skinners of a bare sustenance from an impoverished soil; but he considered that the small-holding movement had lost its force. What he did fear was the continuance of the sales of estates and the disturbance of the current farmers by new men with exaggerated ideas of the profits attached to farming; but even the present rush to sell land was no new phenomenon, for much the same thing happened forty years ago, during the last period of rising rents and land hunger in England. Men do not become bakers or millers just because times are good, but there are always men ready to rush into farming as soon as the returns promise any sort of a living.

In the late afternoon we took leave, but our route still lay through the pleasant country where the Cotswold streams are finding their way down to the Thames, a country of warm stone-built houses, roofed, too, with stone, the "Stonesfield Slates," which take such an exquisite patina with time. It is essentially a soft country with a charm of its own that has been caught by one of its deepest lovers—William Morris. We passed close by his old house, Kelmscott, now known for its milking Shorthorns, but other places

hard by have also their niche in agricultural history. Buscot must ever be associated with Shire horses if with nothing else, and Pusey possesses more than ecclesiastical associations, for it was the seat of Philip Pusey, one of the founders of the Royal Agricultural Society, an indefatigable writer and experimenter, and one of the foremost of that select band of landlords who in the early years of Victoria's reign were real captains of rural industry. The associations of Burford are of another class; but if we know nothing of Speaker Lenthall's farming, he yet was a member of the same class of smaller English gentry who have served the State so well. They yet command the loyalty of the whole agricultural community and may lead it for many years to come, on the one condition that they will learn to farm and bring some intelligence to the business of being landlords. Burford itself may well claim to be considered as the most beautiful of English villages; the dignified houses, the long street descending to the bridge, the bridge itself, and the charming stream with its fringe of tree and meadow, not only compose so deftly but fill the mind with satisfaction as a complete representation of the most honourable English tradition.

From Burford the road runs up to the high Cotswolds, that broad ridge of Oolitic limestone which traverses England parallel to the chalk, though it changes considerably in character and gives rise to comparatively light sandy soils in the East Midlands. But in the Cotswolds themselves the soil is a strong loam kept friable and suitable for the plough, even at comparatively high elevations, by a certain amount of sand and carbonate of lime derived from the parent rock. Once on the elevated plateau that stretches from Burford to the escarpment overlooking the Severn

Valley, the effect of the summer's drought was less apparent than in any country we had seen. Most of the country is under the plough, but the second growth of the clover was green and luxuriant, and the root crops were all that could be wished, growing vigorously with scarcely a miss perceptible. Late-sown oats were still quite green and looked like making yields of over average, so heavy and well filled were the heads, even if the straw was short. Barley is extensively grown in this district, and was not ripening off so prematurely as on the chalk, while wheat was, as usual, the crop of the year, most brilliant in colour, with a gloss and shine about it that we had not hitherto seen even in that year of handsome corn crops.

The Cotswold farmers follow a very normal four-course rotation; two corn crops are sometimes taken after ley, which itself is often left down for two years on the heavier soils; occasional fields of vetches and lucerne vary the cropping, but we saw neither peas nor beans. Paring and burning the stubble is also a practice not often met with in other districts. The permanent grass was less attractive than the plough-land, much of it being weedy and looking in want both of management and of manure; the proportion increases as the land rises towards the escarpment, where, too, some very fine beech woods are encountered. Horned stock are not abundant, and we were much surprised to traverse the whole ridge without seeing a single Cotswold sheep, though there were Hampshires and Oxford Downs in plenty. Yet the Cotswold sheep once possessed a position in the export market, being valuable for crossing when both wool and mutton are wanted together. Big white-faced, long-woolled, a little coarse perhaps, the Cotswold is perhaps the most typical modern representative of the old English

long-woolled race which has been differentiated into so many local breeds; and its value both for home and for export lies not only in its long wool, but in the hardiness which has come from many generations on the bleak uplands. But, like many of the other big breeds, it is now suffering a little from the increasing demand for small and fine joints in the modern diminishing households, moreover it has a reputation for coarseness in the wool to which the practice of "raddling" has perhaps contributed.

III

THE VALE OF EVESHAM

THE western edge of the Cotswolds yields one of the noblest views England has to show: the road after a long gentle rise suddenly rolls over into space, and all the glories of the world are spread before one—the rich wooded valley of the Avon and of the farther Severn, beyond which rises the shapely line of the Malvern Hills, with the Clees more remote, and in the vaporous distance fold after fold of the foothills of the Welsh marches. The face of the escarpment falls 400 feet in a single wave to the fertile Evesham Vale, but the road zigzags down into a little coombe where lies Broadway, most admired of the Cotswold villages, with their comely houses of brown stone. Not far away in a similar gap lies Winchcomb, with its great orchards, memorable too in the past for the bloodshed which attended the suppression of tobacco-growing in these parts. In Charles II.'S time Winchcomb seems to have been the centre of a flourishing tobacco industry, but rather than collect an Excise duty the authorities preferred to abolish the English growth, prompted also by certain courtiers who were interested in the Virginia plantations and wanted a monopoly. At any rate, as may be read in Pepys, it was necessary to send down troops to destroy the tobacco fields, and, as in Ireland at a later date, an industry was deliber-

ately wiped out of existence which would by this time have developed such appropriate varieties, methods of cultivation and manufacture, as would give it a stable position in the general market. Nowadays, if tobacco growing is to be re-established in the United Kingdom, not only have the processes to be worked out by experiment, but the product, however good intrinsically, has to conquer an introduction into a highly organized and conservative trade.

The current interests of the Evesham country are, however, fruit and vegetables, in virtue of which the district has become one of the most highly specialized areas of English farming. The favoured region forms a belt on either side of the Avon, extending on the one side almost as far as Stratford and beyond Pershore on the other, with offshoots into the Cotswolds along several tributary valleys, Evesham and Pershore being the two chief markets. Near the river the soils are alluvial and on the light side, but their situation renders them subject to damaging spring frosts, and the most desirable land lies a little back from and elevated above the river level. On the north side of the river some of the soils are derived from the New Red Sandstone, but in the main the fruit lies on a stiff calcareous loam derived from the Lias clay, though in places there are lighter ridges with rock not far from the surface. Until it has been broken up and put under intensive cultivation this Lias land appears to be of comparatively small value, and mostly carries poor grass at a comparatively low rent. It is very striking to see how the highly cultivated orchards are abruptly exchanged for poor-looking dairy farms that certainly show no evidence of quality, though in the prevailing drought one would be inclined to underestimate their stock-carrying capacity.

The fruit farms in this district are not as a rule very large; some are as small as 3 to 5 acres, and a man with 80 acres is in a big way of business, 20 to 40 acres being perhaps the most common holding. Many are freehold, but in general they are rented under the Evesham custom, which makes the fruit trees the property of the tenant, and so great has been the demand for land that rents run high, up to £3 and £4 per acre, especially for the smaller holdings, on which a man with little capital may make a start. The County Council of Worcester have acquired several farms and cut them up, and where they have had to make roads and erect buildings the rent per acre naturally works out rather high. Still, the demand increases, and it mostly comes from men who are likely to succeed, because they began by working for the other growers and had both the courage to save money from their weekly wage and the ambition to adventure for themselves. A large proportion of the growers in this district has been thus recruited from below, and this class contains some very intelligent, hard-working folk; but there is also another class of young men drawn from the upper and middle classes, possessed of a small amount of capital, which they have sunk in a Worcestershire fruit farm instead of carrying to the Colonies. And very successful has been their enterprise; there are enough of them to form a society to themselves; they have not been afraid to take their coats off and use their hands; they have set to work as roughly as they would have done in the Colonies, and at the same time they have made their brains and education tell. On a small capital they are earning a reasonable living, and their numbers are sufficient to provide the relaxation and social intercourse which keep a gentleman from dropping out of

his class, as he may so easily do if he tries to live by manual labour in isolation.

The mainstay of the fruit plantations of the Vale is the yellow egg or Pershore plum, which far outnumbers all other kinds of fruit. It forms a loose, small growing tree propagated from the freely produced suckers, and it is generally planted comparatively closely, so that the older gardens look very thick and tangled. The fruit possesses no particular quality for table, but it travels well, makes excellent jams and tarts, and the trees crop so freely and so regularly that they are still preferred to the Victorias, Monarchs, Magnum Bonums, Pond's Seedlings, etc., which are grown elsewhere, and are also common enough here. Curiously enough, the Pershore plum has never been much planted outside its own district, though hardy and adaptable enough to flourish anywhere. Apples are also grown extensively; the newer men particularly have been planting apples, as a rule on the Paradise stock. Pears are also planted, but cherry orchards are not general; on the strong soils the trees are apt to die unaccountably just as they should be coming into bearing. Grass orchards are not common; the typical fruit plantation is under cultivation, and indeed has to carry much more than the plums or apples which most visibly cover the ground. Gooseberries are grown below the half-standard plums and apples, though perhaps not to the same extent as in Kent. In the more intensively worked grounds every inch of open space is occupied by a succession of vegetables; a cheaper method of farming is to plant wallflowers or narcissi below the plums. In other cases we saw bush fruit without any larger trees above them, as, for example, loganberries trained on a low wire trellis, and unfortunately affected by a fungoid disease which

attacks the stems. During the last season or two this hitherto unreported disease has threatened to destroy the value of one of the most useful fruits recently introduced.

If the Pershore plum made the district originally, the most recent factor in its success has been asparagus, of which great breadths might be seen on almost every holding. Years ago asparagus was regarded as only suited to light land, but it has been found to revel in the heavy Lias clay, establishing itself freely with no further aid than the old turf turned in, without any of the lavish dressings of farmyard manure which are usually considered necessary but are quite unattainable in this district. Moreover, on the heavy soil the asparagus grows bold, thick stalks of excellent flavour, and "Evesham grass" holds the highest reputation in the market amongst those who prefer the English asparagus, with its comparatively long green top, to the more artificial article, mainly tough yellow stem, which is imported from Argenteuil. The fields of asparagus formed the greenest feature in the landscape, and the tall stems, with their waving, feathery foliage, were evidently revelling in the heat; but the runner beans, which were not infrequently planted on the sides of the rows of asparagus (for in this country, with land so dear, every yard is doubly cropped), were at a standstill. Runner beans, not staked but kept dwarf by pinching, form a common crop, and were short and small this year, as also were the vegetable marrows, which often occupied a neighbouring strip. Indeed, the Evesham country appeared to be suffering from the drought more severely than any other district we had seen, and the nearer the land to the bottom of the valley and the river the worse it had been hit. The early season had been good; the asparagus had

experienced both ideal weather for its development and an excellent market, but July had not permitted the later vegetables or the succession crops to make any headway, and the fruit had now come to a standstill. Apples were plentiful but remained small, and were then beginning to drop; plums were less abundant and would not swell; some were being picked to sell in the unripe state to the jam-makers, and so by lightening the burden on the tree to give the rest a chance. A general brown look on the trees told of the ravages of "red spider," and among the plums in particular plenty of trees were seen to be dying outright, while all newly planted trees were evidently being kept alive with difficulty. Growers were very gloomy about their prospects, but their operations are so varied that it is almost impossible for all the crops to go wrong together; generally something makes a hit good enough to carry the rest, and last year's plum crop and the asparagus this spring have left a good deal of money in the district.

Though a check in the progress might be expected from the dry season, one could see in every direction that the industry had been extending rapidly; wherever a farm could be broken up there was an eager demand for areas of from 5 to 40 acres, and fruit-planting has been proceeding apace during the previous winter. The Evesham country is in some ways classic ground for the advocates of "small holdings," and they can point to the enormous increase both in the output of the land and the men it can support, that has taken place since what was but second-rate grass land has become available for division and intensive cultivation. Thereabouts one did find a definite feeling against the large farmer as a monopolizer and

waster of land; the labourers in the fruit plantations who are seeking a few acres whereupon to make a start look over the hedge at the thinly-stocked fields, and their land hunger is barbed by the contempt which the gardener always feels for the farmer, whose economic basis he does not understand. But Evesham is not strictly a "small holding" district; the plantations are of all sizes, and the man with five acres does not think of himself as a member of a community of equals, but as having made a first step towards the position of one of his bigger neighbours. Co-operative methods, collective buying or selling—even joint enterprises like jam factories—have made but little headway; there is a co-operative society at Pershore that is well supported, but the majority of the growers are fierce individualists, keenly on the look-out for some special private market, or content to do business through some friend who has taken to dealing. Of any organization to treat with markets or railway companies, such as would immediately embrace every grower in an American district, there are only the rudiments.

It is difficult to account for the special success of the fruit growing of the Evesham district: the soil is good without being in any way exceptional; the same might also be said of the climate; the railway facilities are certainly above the average, and two great markets in the shape of South Wales and Birmingham, with the Black Country, are close at hand. Probably this factor gave the district a start before it was customary to send fruit the distances that now are usual. Granted a start, the system of land tenure prevailing—"the Evesham custom"—seems to have done the rest, because it gave to tenants the security they need before embarking upon the

expensive business of planting up land with fruit. In an ordinary way a tenant who plants fruit trees does so at his own risk; they are his landlord's property; should he die or leave he will get no compensation for the extra value they have imparted to the holding—he may even be rack-rented on the improvement he has made. In Kent custom gives the tenant the bare cost of the trees if he goes out within seven years of planting, but he will get no compensation for making an established cherry orchard, which may have doubled the fee-simple of the land. Men have planted, relying (generally with confidence) on the equity and forbearance of the landlords, but such a system does not encourage enterprise. On the other hand, the landlord may rightly ask to be saved from rash speculations on unsuitable land; in any case he does not care for the possibility of being called upon to buy a lot of standing fruit trees at a valuation which he may not be able to recover from a new tenant. The Evesham custom made the planting the business of the tenant, and threw on him the responsibility of realising its value; if he wished to leave he had to find a new tenant with whom he made his own bargain for the standing fruit, often worth more than the land, and the landlord had to accept the new tenant or buy the trees himself. As a custom which had grown up by degrees and become familiar to all parties, this system worked admirably and was just between landlord and tenant; but it is looked coldly upon outside its own district, and the attempt to extend it by the Market Gardens Act over the whole country has only resulted in landlords refusing to let farms except with a specific agreement that they are not to be regarded as market gardens under the Act. The English landlord dreads the

suggestion of dual ownership and the possible imposition upon the estate of a tenant whom he does not "like"; he has been content to forego the chance of development and of a considerable increase of rent in order to remain master on his own land.

IV

THE WEST MIDLANDS

EVESHAM and Pershore lie at the beginning of the broad vale of Lias clay that stretches north-eastwards into Yorkshire, a grass-land country all the way, on which probably more milk is raised than on any other formation. Where we do find the land under the plough the soil generally turns out to be lightened by drift, even if it is not wholly of drift origin, as in an interesting little area of light, highly cultivated land in the Avon Valley, lying immediately to the east of Stratford. From Evesham to Stratford one road runs under the Oolite escarpment, at first through a tributary valley in which fruit predominates, much of it consisting of orchards of long standing; then just after the turning towards Chipping Camden and the hills has been passed the orchards give place to the typical Lias grass country, here of indifferent aspect, and not over well farmed, though in such a season one might easily do heavy grass-land less than justice. But near Stratford and beyond it one suddenly comes upon soils of a very different type, where a sharp sandy loam full of rounded pebbles occupies the wide valley, and only gives place to the clay as one advances up the flanks of the hills. Much of it is in a high state of cultivation, and as is so often the case it was standing the drought far

better than the clays, though the harvest had come very early and barley was already cut in places.

Barley is one of the staple crops of this district, and, though the area is restricted, it forms one of the few areas in the Midlands growing barley of high quality; it was not until we got up towards Shrewsbury that we again saw this crop playing any important part in the farming. We visited one or two farms and saw some very excellent management—large level fields carrying heavy crops and very few weeds. On one of them was to be found both the light soil and the clay, and so marked is the distinction that the two portions of the farm have to be farmed on different rotations. On the heavy land it is necessary to introduce a bare fallow in the rotation; in no other way can the tilth be preserved and the land maintained in a clean condition; even a crop of mangolds leads to such poaching of the land in their harvesting as is rarely made up for by the yield of roots. The rotation is one of six years' duration, the bare fallow being followed by wheat, in which seeds are sown; the ley only stands a single year, and is then ploughed up for wheat, to be followed by beans and wheat again. Wheat thus occupies the land in alternate seasons, the highest proportion we have met with in any part of the country. On the light land the course begins with a root crop, which is eaten off by sheep and followed up with oats. Barley forms the second corn crop, after which a crop of potatoes and then wheat is taken; thus in the five years no fewer than four crops are raised for sale. Indeed, part of the root break is devoted to peas to be picked green, and followed up with turnips, which can be sown successfully as late as the end of August. Vetches were also grown on the root break, and similarly followed by

summer turnips. Lucerne succeeds on this class of land, and for once in a way we saw a really successful stand that had been obtained by sowing without any cover crop, a proceeding that usually results in a dense growth of annual weeds, threatening to smother the lucerne, with its slow start and thin upright habit until the second season.

The corn crops were good without being out of the way; the wheat best on the heavy land and not, as in many districts, much superior to the other cereals; the barley, as usual, bleached in the intense sunshine and inclined to be a little thin and steely, greatly in need even at this late stage of some rain to mellow it. Beans were, as usual, the failure of the year; they had been ruined by the black aphis, and another black aphis was curling the leaves of the mangolds, which had also suffered a little from the attacks of the fly, whose larvæ burrow in the leaf substance between the two skins. Still, they were a good plant and had made considerable headway. Potatoes were very fine, and had only just begun to check and feel the need of rain; potatoes, indeed, formed almost the best crop of the year; the only danger being the likelihood of a second growth when the rain did eventually come to start the warm soil into activity. Probably one of the chief factors in the high quality of the Dunbar potatoes is the equable summer climate that maintains an even, long-continued growth without the pause due to summer drought which so often results in super-tuberation in the south. In this district potatoes constitute one of the most paying crops, Birmingham and South Wales providing accessible and remunerative markets.

Where so much was sold off the land there was clearly no great opening for stock; bullocks were

fattened more to trample down the straw into manure and consume the roots than for any profit they brought, while the sheep were flying flocks whose function was to eat off the fallow crops and consolidate the light sandy land. In addition a good deal of artificial manure had to be used to keep up the fertility, for the thin soils do not retain much from one year to another. It was evidently cheap land to manage, lying in large fields of easy or no slope, and mostly workable with a pair of horses and light implements, of which we particularly noticed a locally-made plough, of the short mould-board type, but with a coulter adjustable both as to angle and depth. Naturally for such choice and conveniently situated land rents were pretty high—35s. to 40s. an acre; but really good land is always worth its rent, and while a farm of this class could not then be hired anywhere in England, there was still land on offer at 10s. an acre.

Labour was reported to be satisfactory, both as to quality and quantity, though it was thought probable that the demand would increase and wages might have to be raised with the prosperity of the manufacturing towns on the edge of the district and their call for men. This highly farmed area round Stratford is not very extensive, but nearly all of it looked in good hands; on another farm we saw one of the finest oat crops of the year, and everywhere swedes and mangolds were surprisingly good, considering the drought.

We heard, too, considerable talk about experiments, both manurial and variety trials, organized by the County Council; and though this kind of work is often too slipshod and ill-conceived, too little cognisant of the limitations of its method to attain results to which any credence can be attached, it does lead men to think and discuss, to the manifest improvement of their

general practice. No man of any standing in his business likes to be formally instructed, but he will make use of information which he can pick up incidentally. It may become possible to organize local experiments so as to yield permanent results possessing authority, but their main function will long remain to provide texts upon which the informed instructor can develop principles and demonstrate good practice. We did not leave the Stratford district without one more look at the Avon, most typical of Midland rivers, which usually winds bank-high through its meadows and washes its grassy brink, but which at that time had shrunk down till it was almost as hidden as the deep-sunk Severn or Teme. Burnt up as the pastures were, we saw some very fine cattle still fattening on the rough, dried-up herbage, thriving as stock will do in a hot summer if only they have access to water.

From Stratford we struck across the edge of the Lias clay and limestones and the New Red Sandstone to Droitwich, through a poor country as badly farmed as though it were a thousand miles from a market. On the low limestone hills field after field was entirely derelict, given over to briars and rabbits, with the stones protruding through the thin scruf of vegetation as on a Bagshot common or the driest and thinnest scarps of the chalk. It may be true that it is waste of money to try to farm on bad land and make a soil where nature has not supplied the foundation, but for such entire neglect there can be no excuse in England. The rabbit is the curse; on poor land he affords some sort of return, enough to provide an excuse for letting things drift and for putting in neither thought nor money to turn the land to better account. Some people have no great opinion of the future of forestry

in England because it can never support the proportion of men to acres which ought to prevail in our densely populated island. But better a forest than a desert, better an organized attempt to earn three per cent. sixty years hence than the deterioration which the unchecked rabbit brings, even if he will earn a shilling or two per acre for "sport." The rabbit is reported to have destroyed much good land in Australia, but we doubt if he does not levy a greater if less obvious toll on England. Even where there is no question of a warren it is wonderful what damage a farmer will tolerate for the sake of the little shooting to which he is entitled.

On the New Red Sandstone the land was still very largely in grass, poor thin pastures, burnt that year to an extent we had seen in no other part, not even on the thinnest soils of the chalk or the stiffest Weald clays. The drought, indeed, lay heavy on the land; even the fields were absolutely brown and bare, in the hedgerows the leaves all hung limp and were beginning to discolour and drop, while some trees were evidently dying outright. As we neared Droitwich both land and farming improved, and from there to the Severn we crossed a belt of red sandstone land which runs up from near Worcester to Kidderminster and carries a thriving agricultural population. This side of Worcestershire is just as vigorously farmed as the Evesham country, and again very largely by small holders; but the chief crops are potatoes and vegetables rather than fruit, though considerable plantations have been put down of recent years. The soil is very suitable for growing potatoes of good quality, and the red land has the great advantage of yielding tubers which look bright and clean the moment they are dug up. Great virtues are sometimes ascribed to the iron which so

obviously colours the soil; but the real factor in the quality is the physical texture, a certain similarity of which runs through all these red soils. Actually they contain rather less than the usual percentage of oxide of iron. But no fallacy dies harder than the association of all sorts of virtues, particularly colour in flowers and fruit, with iron in the soil. The probable origin of the opinion is that blood is red and blood contains iron, and for the same reason whiteness and weakness are popularly associated both in bread and in animals.

Crossing the Severn at Holt, we immediately found ourselves among some extensive and carefully managed hop yards, the first we had seen since Kent, though one or two still remain among the fruit in the Evesham Valley. But the true home of the Worcestershire hops is west of the Severn, and less in the Severn Valley itself than in that of its tributary, the Teme. Alongside the hops were some orchards of the modern type, young, vigorous, and carefully tended, not the closely planted dwarfs and bushes of the Evesham district, but standards that were, or would be, laid down to grass. This belt of fruit and hop land near the Severn is only narrow, and is succeeded by the more ordinary farming country leading on to Witley, a somewhat highly polished region such as marks a rich and well-kept estate, but with a considerable local reputation for its agriculture. Its farming is perhaps most akin to that of Shropshire, though it also possesses some of the features of the Teme Valley; but it was not sufficiently special to detain us, and we pushed on up the steep ridge which divides the Severn from the Teme. Abberly Hill forms a northern continuation of the Malvern Ridge, a sharp intrusion of ancient igneous rock which for many geological epochs must have been an island in the seas in which British land was event-

ually laid down. The climb is steep, but one is no sooner at the top than another great vista is opened, comparable with that we had previously gained from the edge of the Cotswold scarp—the deep, richly-wooded Teme Valley from Ludlow downwards with the vivid outlines of the hills of the Welsh marches—the Clees, the Longmynd and the Stiper Stones, silhouetted against the dying sunset.

V

THE VALLEY OF THE TEME: HOPS AND FRUIT

THE Teme Valley, through which our course now lay, has some claim to be considered the richest stretch of land in England—at any rate, in its course from Ludlow down to Knightwick it possesses all the elements of beauty which commend it to the farmer's eye. The valley is carved out of a plateau of Old Red Sandstone, rising to a height of about 400 feet on either side of the alluvial plain, in which the river wanders in a bed cut by the winter's rains some twenty feet below the general level of the meadows. On one or other side the river generally shows a low scar of red sandstone, which also runs across the stream in low reefs, breaking it into a succession of rapid runs and still pools, appropriate the one to the trout and the other to the grayling, for which the river is famous. On its other bank the river bed shows the deep red alluvial soil, strong in its texture, but rendered friable by an admixture of sand and stones, giving rise to the most fertile land of the valley.

The alluvial flat proper has either been left in permanent pasture, peopled by the big white-faced Herefords which are so much at home in these their proper meadows, or else is cultivated for hop gardens, no

other crop being deemed worthy to displace the rich pasturage. The hops also occupy the lower slopes of the hills where the rain wash has made a soil that is almost as deep as on the flat land below, and on these lower slopes the orchards also begin, and run, in some cases, right up to the summit of the plateau. The hops are not affected by the late spring frosts which would do so much damage to the fruit, and are also more in need of the deep rich land where fruit trees would tend to grow too rankly. On the top of the plateau the soil is by no means deep nor over rich, and here may be found ordinary mixed farming, with a good deal of woodland and poor grass upon the higher levels, but, again, with fruit and hops occupying the hollows where there is a little more warmth and shelter.

The best of the Worcestershire hop-growing is concentrated into this stretch of the Teme Valley, though there is some in the Malvern country and even across the Severn in the Avon Valley. Altogether, Worcestershire has about 3000 acres of hops; and the neighbouring county of Hereford grows about 5000 acres under very similar conditions in the valleys of the Frome and other tributaries of the Wye. A few acres run into the next counties of Shropshire and Gloucestershire, making altogether less than 10,000 acres of hops in this western district, as compared with 20,000 in Kent alone, and about 33,000 in the whole country. Here, as elsewhere, the acreage has been declining considerably; though it is interesting to note that Worcestershire has only lost 18 per cent. of its hops since 1900, and Hereford 31 per cent., whereas Kent has lost 38 per cent., and Sussex as much as 47 per cent. within the same period.

These differences are not entirely a matter of yield; for within the same period Sussex has produced an average of 9 cwt. per acre and Kent rather more, whereas the yield in Worcestershire has been only 7½ cwt. per acre and nearly 1 cwt. less in Hereford. On the whole, however, the hops are grown more cheaply in the western country, and the land is better, for though there is perhaps not much difference between the best bottom lands of Sussex and those of Worcestershire, the chief grubbings in the former county and in Kent have been in the poorer gardens situated upon comparatively unsuitable soils.

Not only is the land rather better in the west, but the standard of cultivation and manuring is perhaps a little lower, so that the crop is left to grow itself to a greater extent than in Kent. Several of the operations carried out by hand in Kent—for example, covering up the hills with earth—are replaced by horse labour in Worcestershire. Wages are also at a lower level, both for the regular men and for the pickers, who are chiefly drawn from the Black Country; indeed, the way that the Worcestershire hop-growers have managed to weather the depression is an illustration of the fact that low prices can only be met by reduced expenditure. It is rather unfair to speculate about the human factor in these matters because one's judgment is apt to be based on too limited a range of examples, but we certainly have formed the impression that at the present time the average west country grower is a little more progressive and active minded than his competitors in Sussex; and this opinion is strengthened by the fact that we see installed in Worcestershire and Hereford many more of the recent attempts to dry hops by some form of forced draught of heated

air instead of by the old-fashioned kiln in which the products of combustion passed through the hops. It is more than possible that these innovators are upon the wrong track, and ought instead to be reforming their natural draught kilns as the most economical tool, thoroughly efficient if properly constructed; but at any rate the search after a more intensive and controllable plant may be taken as an indication of enterprise.

The Worcestershire hops are almost wholly grown upon wire and string, being planted closely together, not more than 3 ft. to 3 ft. 6 in. apart in rows from 7 ft. to 8 ft. wide, and trained at a very slight angle to two wires running nearly above the hills. The close planting is favourable to heavy crops, while the upright string saves some expense in training. But if the hops do grow rather more readily in the fine soil and kindly climate in the west, they are subject to more prolonged and intense attacks of blight than prevail in Kent and Sussex. The eastern grower may sometimes think that green fly cannot be more persistent in its development than with him, but without doubt the attacks are generally heavier and more lasting in the deep and close valleys of Worcestershire and Hereford. In 1911 we were told that the men in the Teme Valley had been compelled to spray their hops as many as nine times to get them clean, whereas the attacks, if for a time heavy, yet passed away quickly in Kent, where few men washed more than twice or three times.

The varieties of the hops grown are practically the same all over the kingdom; it is true that the western country has developed two fine hops—the Mathon and Cooper's White—which are in some respects distinct; but they are true Goldings, and have not diverged far from the parent stock which gave rise

to the old Goldings and the Canterbury and Farnham Whitebines. But the Kentish Bramlings, Fuggles, and Cobbs are most generally grown and have almost displaced the local varieties, of which in return only the Mathon has obtained a slight footing in the east. The west country hops generally have a reputation of being rather thinner in character and more delicate in colour and flavour than those coming from the corresponding varieties in Kent, still more so than the hops of the Weald and Sussex. They are largely sold in open market in Worcester instead of through factors as in London, Worcester being the only open market left now that the Weyhill Fair has become but a shadow of its former self. The harvest is a trifle earlier in the west, and owing also to the open market a strong trade is generally established rather earlier in Worcester than in London, a fact which of late years has been to the advantage of the western growers, for the price has often tended to fall rather than to harden as the season advanced.

The gardens that we saw along the Teme Valley were carrying a very fair show of bine considering the drought, from which, indeed, they did not seem to have suffered at all. They were not, however, set with quite as many hops as might have been expected from the bine; and this could be attributed partly to the heat and partly to the very persistent washing that had been necessary to free them from aphis, for washing when the flowering shoots are forming always injures the yield by causing the pin to drop. In some cases the cultivation was below the proper standard and weeds too prominent; but this, again, might be set down to the washing, which had occupied all the farmer's available strength of horses.

Hop-growing is, however, a specialist's business, and here, as in Kent, opinions are divided as to whether it is good for a farmer to have hops upon his farm. If he is a small man he is certainly tempted to rob the rest of his land to feed his hops, and is apt to be drawn into an acreage beyond his strength by the great profits that can be won in a favourable season. With each succeeding spell of bad seasons the tendency is for the little man to draw out and leave the business more and more to men of substance who have some reserve of capital and are hop-growers rather than farmers. But these specialists have also their difficulties; it costs more per acre to farm a hundred acres of hops than to farm ten, so many are the operations for which the large man has to provide specially, but which can be fitted in with other odd jobs upon the little farm where the hops are only an incident. Again, with the brewers short of capital and living from hand to mouth for their supplies, it has been of late years much less easy to dispose of a block of a thousand pockets of hops than of a little lot. It has been the "tied house" policy of the English brewers, with its inevitable consequence—the making of beer from any sort of materials that would promise cheapness—which has been the real cause of depression in the hop trade. However, by 1911 the acreage under hops had been reduced to a level far below the normal requirements of the trade. Stocks were depleted and there was no foreign surplus, so that prices promised to rise that season to a point rarely seen of late years, unless too many of the brewers should decide to go without hops entirely.

From the time when both were "fetched out of Flanders" fruit and hops have gone together in English farming; and Worcestershire is no exception

to the rule, being one of the six counties containing more than 20,000 acres of land under fruit. The great part of this area is occupied by grass orchards growing cider fruit, though more than any other county west of Kent do we find new plantations of highly farmed table fruit occurring in the Teme Valley, as well as about Evesham and Droitwich. In Kent 40 per cent. of the fruit is grown on tilled land and 60 per cent. in grass orchards. Worcestershire has 23 per cent. of its fruit on tilled land, but Hereford only 13 per cent., Gloucestershire and Devon about the same, while practically the whole area of the Somerset fruit land is under grass. On the whole, fruit trees in the Teme Valley, with the rich soil and the softer atmosphere, tend to make more vigorous growth than they do in Kent. In consequence they do not come into bearing quite so early, and require a different system of management and pruning in order to make them fruitful, their tendency being to run to wood rather than to fruit. In the Teme Valley the more recently planted land generally carries apples, with a smaller proportion of plums than in other districts where railway facilities are better; cherries are not so much grown, and pears in England rarely form a very profitable market crop. Perry pears are, however, a great feature of the district, being confined to the Worcester, Hereford, and Gloucester area, and occurring rarely in the other cider-making counties of Devon and Somerset. We heard, however, of very little planting of vintage fruit; in the old orchards worn-out trees may be replaced from time to time by new ones, but in general the tendency is for the cider fruit to give place to table fruit. The pear trees in particular are generally very old; indeed, on our way to Tenbury we passed what is reputed to be the

largest pear tree in Great Britain, still in full vigour and yielding an enormous weight of fruit in a favourable season.

Cider-making is confined to the western counties because there alone has been maintained a stock of the true vintage fruit, a stock recuperated by the introduction of some of the best Normandy varieties about the middle of the last century. From kitchen apples—even from the best eating varieties—but a poor, flavourless cider can be made. The true cider apples possess an exceptional richness in sugar, combined in some sorts with an extra amount of acid, and in others—the bitter-sweets, which are almost essential to a proper blend—with a special proportion of tannin.

It cannot be said that the cider industry is in a satisfactory way. In general it is made in the roughest possible fashion for home consumption—a considerable allowance of cider being part of the daily wages in this district. A few farmers make a special article for sale, and take trouble over the grading and blending of their fruit, as well as in the processes of fermentation and storage. For their assistance a considerable amount of information has recently been acquired by the investigations started by the Bath and West of England Agricultural Society, which led up to the foundation of the Cider Institute near Bristol. Their chief difficulty is the unorganized state of the market; makers of a high class vintage cider have the same difficulty in finding a remunerative customer as a casual buyer at a distance has in ascertaining trustworthy sources from which to fill his cellar. Lastly, there are a small number of manufacturers who purchase apples in large quantities and try to produce a standard article in quantities that will permit of extensive advertisement; and their trade

is injured by the both indifferent standard of the public taste—which is inclined to demand cider sweet and sticky—and the competition of certain other manufacturers in whose products apples play only a part, and that not always a leading one. These manufacturers generally name their wares something else than plain cider; but anyhow they are allowed a free hand.

Without doubt there is a considerable desire on the part of the public to obtain good cider, and a big trade might be worked up if the good makers would only organize into the sort of union for the purpose of selling a guaranteed article that prevails in every German wine-producing community. Each village on the Moselle has its own *Verein*, and the right to use the proper label is accorded only to those members of the *Verein* who conform to certain regulations as to manufacture, and whose products are passed by the appointed tester. And there is no reason to give less care to cider than to wine; cider from vintage fruit of a good year properly selected and blended becomes on keeping a beverage of extraordinary delicacy and quality, but it is rare to find it even in the best cellars of its native district. We thought the season of 1911 ought to produce something exceptionally good; there was a fine crop of apples, which must have possessed an unrivalled sugar content and flavour, a real vintage year when a good make of cider ought to keep and steadily improve for ten years.

Though the hop gardens and the cider orchards were green enough in that year of drought, the most refreshing feature in the Teme Valley was the meadow-land by the stream, where, for the first time for many weeks, we saw real grass deep enough to give grazing cattle a full bite. In previous dry seasons these

Temeside pastures have been a welcome sight to any one going from the drier soils of the east, but this year the west has been in general just as parched, and it was only in this valley that we saw big cattle looking as though they were getting their fill of grass. Few other cattle besides Herefords are to be found throughout the district. Distinguished by a hardiness and adaptability to rough conditions, they are bred upon the upland farms and will fatten out with very little assistance upon the rich grass by the river. Many are also tied up for winter feeding, especially by the hop-growers, who want to make considerable quantities of dung; but the excellence of the Herefords rather lies in their performances upon grass under unfavourable conditions than in the fatting stalls. It was with considerable reluctance we turned away from the Teme Valley. It is beautiful to the most casual observer, with the shapely hills on its flanks, its flashing river and vivid contrasts of red and green; but most of all is it attractive to the farmer's eye. More than perhaps any other district does it give an impression of easy natural fertility, where a kindly soil and a well-tempered climate make both crops and stock flourish with a good deal less of the effort than is usually required from the farmer.

Ludlow is classic ground for the geologist, for immediately to the north the whole series of the Palæozoic rocks from the pre-Cambrian of the Long Mynd up to the Coal Measures are set out within a short compass. The strata dip sharply to the south-east so as to form a series of parallel ridges and sudden valleys, all possessing the same trend from north-east to south-west, the most important of which is the Corve Dale, which lies between Wenlock Edge and the Clees and forms a broad vale of arable land whereon

a good deal of barley is grown. From Ludlow we turned, however, into a minor valley which traverses the high land between the Teme and the Severn and is situated almost entirely upon the Old Red Sandstone, running between the two Clee hills, outliers of carboniferous rocks which have been preserved by caps of basalt now extensively quarried for road stone. In this upland district the Old Red gives rise to easy working strong loams; and because of the elevation, 600 ft.-700 ft., the farms are mostly in grass, only about one-fifth or less being under the plough. The grass is good and abundant enough in the soft climate which prevails, but it is rarely of sufficient quality to fatten stock, and the whole of these Shropshire and Worcestershire uplands are essentially breeding districts. It is, in fact, typical Hereford country, and many even of the smaller farmers possess very good workaday strains of the favourite white-faced breed. Away from the rich pastures of the valleys the farmers can hardly hope to grow on their stock fast enough for show purposes and build up a trade in pedigree cattle; and some little jealousy also seems to exist between the Shropshire breeders and the Hereford men, who claim to be guardians of the true type. Thus a certain number of other breeds of cattle are finding their way into the country.

On one farm we visited it was the custom to buy Shorthorn heifers, which are allowed to rear one calf and are then sold as milch cows just before calving for the second time, the second calf being bought back and reared by one of the other heifers. Thus, in a general way, each animal bought had to rear two calves, and was sold in its most profitable condition for the milk trade. On another farm we found Galloways had been introduced in order to obtain

rapidly-growing cattle for the butcher. Crossed with a Herefordshire bull, the animals were black but retained their white faces; and crosses of this type from either Galloway or Aberdeen Angus cattle are not unfrequently seen in the district. With an ordinary red or roan Shorthorn the Galloways produce completely black cattle, although from the same cross when a white Shorthorn bull is used come the blue-greys which are so well known in the South of Scotland and about the Border.

A certain amount of light horsebreeding was done by the farmers among the hills; and the local Hunt had been very active in promoting this industry and in helping men towards a better type of horse, even to the extent of lending farmers brood mares of quality from which they could raise a foal and obtain a certain amount of light work. We did not, however, gather from the farmers that any use was made of the Board of Agriculture's Horsebreeding Scheme, or even that anything about it was known in the district, though the men with whom we were talking both bred horses and were connected with the Hunt.

Of the live stock of the district, however, sheep afforded perhaps the most interesting problems. We were on the borders of the district where the Shropshires originated, and many of the upland farmers keep pure flocks, though, like the other Down breeds, they are more properly sheep of the arable land. We were also within easy reach of the extensive upland sheep walks of Mid Wales, and the lower hills of Radnor and Montgomery have from time immemorial held a race of sheep which has, to some extent, been locally differentiated and yet again hopelessly intermixed by crossing and by a greater or less infusion of Shropshire blood. The foundation of all the breeds seems

to have been the light-framed, grey or tan faced, short-woolled forest sheep, which in the earliest times occupied the more elevated lands throughout the Midlands and South of England, extending also into Wales and perhaps now represented in its least modified form by some of the Welsh mountain sheep. Next we find that a century ago the Ryelands of Hereford (poor forest land south of the Wye) were occupied by a white-faced hornless breed celebrated for the fineness of its wool and the quality of its mutton, and that the Clun Forest, a great stretch of open elevated country round the head waters of the Teme, also carried the same white-faced breed, whereas the Long Mynd sheep across the valley were both black-faced and horned. The Ryeland sheep have preserved their characteristics unimpaired; they remain strictly in their own country, and though they were once nearly extinct they form to-day one of the most distinct of English sheep breeds, and the one possessing the finest wool, due, as some breeders think, to a strong infusion of Merino blood, though others consider them as a particularly unmixed race. But in the west of the forest country crossing has been rife, and it is difficult to be certain how the breeds have been built up; at any rate, in the Clun Forest and in the neighbouring Kerry Hill, and again in the Radnor Forest we have a race of small hill sheep weighing up to 15 lb. or 20 lb. per quarter, of excellent quality as mutton and with very fine wool. The tails are left long, and the wether mutton, dressed with a tuft of wool at the end of the tail, is sold as Welsh, though it is considerably larger than the true mountain mutton.

The Kerry Hill sheep are now recognized as a breed to the extent that they have a flock book, a

Breed Society, and classes at the Royal Show. Their mixed origin is, however, still to be seen in the face colour, which should be spotted with black, the spots extending to the legs; yet however pure the breeding a certain proportion of the lambs are always thrown, some with pure white and others with entirely black faces. In fact, there is some evidence, from counts that have been made of the proportion of spotted, white, and black faces, that in the Kerry Hill sheep we are dealing with a perpetual hybrid form which, like the Blue Andalusian fowl, cannot be fixed to breed true. The Blue Andalusian is, of course, one of the stock cases of Mendelian breeders. When two blue Andalusians are mated, however long and exact their pedigree may have been, the chickens always contain a certain percentage of all blacks and splashed whites which are thrown out by the fanciers, though when black is mated with white the Blue Andalusian is again produced. Probably the spotted-faced Kerry Hill is like the Blue Andalusian, a true hybrid form which contains the elements of both the parent forms and must continue to split. But whatever the success of the breeders' efforts to fix races of the forest sheep, collectively they form very valuable stock which are bred under comparatively rough conditions on the uplands, and are sold in great fairs at Knighton, Craven Arms, and other markets on the outskirts of the forest. The ewes are taken into the low countries and crossed with a Shropshire or Down ram to produce lambs which grow rapidly and can be sold fat in the early summer because of the large quantity of milk the ewes always possess. To the low country farmers perhaps the greatest defect of these Kerry Hill and Clun Forest sheep is their activity, something exceptional in the way of fences being required to keep

them within bounds. They make very good park sheep with their elegance and activity, and like many other of the hill breeds they are singularly free from foot-rot, and answer well when continually run over a wide area of poor grass without that regular change of pasturage which the lowland sheep farmers consider necessary to keep their stock in health and condition.

All over this hill country farming seemed to be in a quietly prosperous way, and we gathered that farms were in considerable demand and could only be obtained at an increased rent. Indeed, in that summer of heat and drought it looked specially flourishing; for although men complained that they were short of pasturage, the grass was everywhere green, and almost in every field there was a little stream still running abundantly. Rents were not high, as indeed might be judged by the roughness of some of the fields and the rank hedges, for men will always be found to keep dear land pretty closely trimmed up. Of course some of the pastures run up to considerable heights, and they are a good deal invaded by fern, which, injurious as it is to the grazing, is still of service as providing the farmer with litter. It is valuable where men fatten bullocks in winter, and yet grow, as in this district, comparatively little corn. The root land looked very promising; mangolds are not so much grown as turnips, which had made considerable headway, though many of the fields showed that a second sowing had been necessary to establish the plant.

Poultry were common, especially on the smaller farms; and we were told that a co-operative egg society had been very successful in collecting the eggs from the farmers, packing them properly, and marketing them wholesale. Another association existed for the purchase of manures and implements, so that

thanks to the action of one or two energetic men, co-operation was making some headway in what was otherwise rather an isolated and old-fashioned farming district.

From the Clee hills we dropped down into the valley of the Severn; and after Bridgnorth, one of the most attractive of old-world Midland towns, returned on our track a little and struck once more north-west, through Much Wenlock and over that surprising ridge of Silurian limestone and shale known as Wenlock Edge. This is a scarp of limestone about seven miles long, which when viewed from either end looks like a single perfect peak, so straight is the ridge and so sharp is the slope on either side, but especially so towards the north-west. Once over the ridge we regained the wide Severn valley, where we ran through a flat country of light alluvial or drift soils, mostly under the plough and highly esteemed for barley-growing, all the way into Shrewsbury.

VI

SHROPSHIRE: SHEEP AND BARLEY GROWING

WE had now come into one of the most highly farmed districts of England, where a considerable area of light sandy soil gives rise to the most specifically arable district of the west. The extensive county of Shropshire embraces some very diversified land, much of it, like the part we have just been through, hilly and given over to grazing; but from the valley of the Severn eastwards and northwards stretches an extensive plain of gently undulating country, covered with light drift soils derived from the underlying New Red Sandstone. The quality of this land may be seen from the fact that Shropshire possesses a higher acreage of barley than any other county until we come to the group of eastern barley-growing counties—Essex, Suffolk, Norfolk, Cambridge, Lincoln, and York. Again, if we take root-growing as one of the best tests of good cultivation, the average yield in Shropshire is only exceeded in one other county as regard mangolds, and in two or three of the northern counties as regards turnips.

From Shropshire we followed the Severn up for a few miles to one of the best-known farms in the district, famous as the home of pedigree Hereford cattle and

Shropshire sheep. The soil was on the light side, sharp reddish loam, whose drift origin was evident from the rounded stones with which it was intermixed; but the sandstone rock below showed up in occasional exposures and had chiefly contributed to the making of the soil. From its texture and the easy slopes that prevailed, the land was easy to work, while its warmth and excellent drainage rendered it grateful for, if not very retentive of, manure. The chief defect of this class of land is the lack of lime, which was indicated by the very general prevalence throughout the district of "finger and toe," and the occasional failures that occur in the clover crops. At times, again, little basin-shaped areas occur where the drainage is defective, and a black soil, even a layer of peat, has accumulated.

The farm we visited was an extensive one, which had been subjected to very considerable improvement during the long tenure of its present occupier, who had drained one of these hollows, and had been to considerable expense in removing the old small enclosures and throwing them into large fields with straight, well-kept hedges. It is astonishing what an obstacle to good farming are the old hedgerows in many parts of the country; not only is there the waste due to the land occupied by the sprawling bank and fence and the harbour for birds, weeds, and other vermin that it affords, but the greatest loss of all comes from the time consumed in cultivation by the constant turning and awkward shapes of the old enclosures. Small fields and hedgerow timber are incompatible with economical farming, and on far too many estates in England the land never gets the tenants its quality deserves, because a good farmer will not look at a holding that renders his work so ineffective. A green sheltered country of little fields may make a charming property, but to the

farming eye it denotes the same retail way of business as the endless tiny shops in the suburbs of a manufacturing town.

Our host farmed on the strict four-course rotation, which is nowadays far more characteristic of other counties than of Norfolk, that gives it its name. The dung was put on to the turnips, which were eaten off by sheep and followed by barley, but red clover could only be sown in alternate rotations, its place being taken other times by a mixture of alsike, trefoil, and grass seeds. Our host recognized the value of lime for his land, and applied it each time the seeds came round, with marked benefit to the stand of the clovers.

It was early land and harvest was already in full swing; the barley had been cut, and we could see a much better plant of seeds had been obtained than was usual that year. Throughout this district the barleys are nearly all of the wide-eared type, Goldthorpe, Burton Malting, etc., and the local buyers will not look at anything of a Chevallier type. The slightly higher rainfall in the west may be the cause of this preference for the wide-eared barleys; in the east they only begin to be grown when one gets to the Lincoln Wolds and from thence northward into Scotland. The preference of the maltsters and brewers for one or other type seems to be based on little more than custom, but from the farmer's point of view the wide-rowed barleys are generally credited with being a little stronger in the straw and therefore better for heavy and highly farmed land. On the other hand, they are very long in the neck—that is to say, the joint between the ear and the first node is both longer than usual and is not supported by the sheath, so that heavy wind when the corn is ripe is apt to break off a large proportion of heads.

Fine as were the crops of this farm, the stock formed its most notable feature. It was one of the original homes of the Shropshire sheep, and for nearly half a century now has been sending prize-winners to the great shows, and furnishing flocks in all parts of the world with the pure blood that tells in new countries as well as old.

Shropshire sheep constitute the most widely-distributed of all the short-woolled breeds, as much at home in other parts of England and in Scotland as in their native county, and highly prized for crossing in all the newer sheep countries, especially in Australia. The formal history of the breed begins towards the middle of the last century, its first appearance at the Royal Show being in 1853, and there is little doubt but that it was formed from the local forest sheep crossed repeatedly with the Southdown. It has become a typical Down breed, heavier and more thick-set than the Southdowns; a Shropshire ram, indeed, shows a big head set on a short thick neck that is equalled by no other breed, and this masculine look is increased by the way the face and neck are muffled up to the nostrils. The two points its breeders insist on are the shapely legs of mutton and the dense coat of fine wool, which must show no black hairs and be set on a clear pink skin, face, ears and knees being alone brown. The Shropshires are prolific, and will thrive on grass, but are more properly sheep of the arable land, the wethers growing to more than 20 lb. a quarter when well done. Although it inherits some of the hardness of its forest ancestors, the modern Shropshire, like all Down breeds, requires to be looked after and suffers from foot-rot on unsuitable land, but as it is larger it is also more robust than its closest relation—the Southdown. The rams are in considerable demand all over the Midlands for crossing with

white-faced ewes to produce early and rapidly-maturing lambs, and they have a marked prepotency and stamp their characteristics upon their offspring. Our host catered for the very highest class of trade in pedigree stock, his flock having a continuous history of success in the show ring since the breed was established, and certainly both the ram lambs for sale and the ewes of the flock itself were very impressive animals. Of course, they were grown on in a way the ordinary farmer does not attempt, and at first sight might be objected to as very artificial products; but the breeder who has to keep himself before his special public must not only win a position in the show-ring but must maintain his flock almost in show condition. The flock-owner engaged in grading up the quality of a country flock wants animals with a long and carefully selected pedigree, because they alone transmit their excellences and impress themselves upon a commoner run of sheep, but when buying he is apt to be more taken by the present performance of a shearling ram—his size and symmetry—than by any cold record of his pedigree. Seeing these Shropshires in quick succession after Oxfords and Hampshires, one could not help feeling that up at the top all the great breeds of the various Down races have arrived at much the same result. Size varies somewhat, so does face colour and general aspect, but all the breeds agree in the essentials —the closest possible fleece, a symmetrical frame with the weight put on the best joints, and a power to grow and mature rapidly on arable land. The differentia, however passionately insisted upon, are becoming fancier's points, and the danger is that the restricted breeding which results from the multiplicity of pure breeds may lead to loss of constitution and of adaptability to varied conditions.

Notable as were our host's sheep, his Hereford cattle were even more striking. Herefords always look very uniform, but we had never seen anything to match his herd, where all the cows might be own sisters, so close were they to type. After the Shorthorn the Herefords have travelled the most widely of all cattle, and this they owe to their power of ranging and putting up with rough conditions, which causes them in many places to be preferred to the Shorthorn, though the latter undoubtedly yield meat of finer quality and grow more rapidly on the better class of land. The Herefords are probably descended from the old race of red cattle which are supposed to have come in with the Saxons—the Devons, the Sussex, and the Lincoln Reds being other offshoots of the same primitive stock. Some features in the shape point to this common origin, while the characteristic white face and the very massive head are known to have been evolved at no very distant date. Like the Sussex and the Devons they are exclusively beef cattle; some of their supporters claim that they can be made to milk freely, but under ordinary management the dams always suckle their calves, and it is well known that only the greater strain of milking will develop the udder to the extent required of a true dairy cow. Our host's animals were all bred with entire white faces, the red ring round the eye, which a few years ago was demanded by the foreign buyers because it was supposed to render stock less liable to ophthalmia in hot countries, being no longer in fashion.

Despite the drought the crops were good on this light land, though the barley had come rather too early to harvest and was on the thin side, but the grass even down by the stream was suffering and was

cropped very close. The roots were at that time promising enough and were no doubt helped by the dung they had received. In this favoured district, with its easy-working, responsive soils that have always been under high cultivation, farms ran large, mostly from 200 to 500 acres, and the rents had remained at a high level, from 30s. to 35s. an acre. Changes of tenancy had for many years been few, and vacancies were eagerly taken up; indeed, we saw some thinner land, evidently not over fertile, which seemed over-rented at the price it was commanding. Labour was reported to be both good and plentiful, better both in quality and quantity than it had been for many years. Altogether a study of the Shrewsbury district may be recommended to those who declare English farming to be a lost and unprofitable art.

Though the open valley of the Severn is mostly occupied by large arable holdings, Shropshire farming is not wholly of this character; for close at hand is to be found a region of small dairy farms on grass. A low range of hills divides the Severn from the Dee, and on the way to Oswestry we turned off the barley land to the rather steep and diversified country prevailing on this ridge. In the early morning light we got an extensive panorama of the plain, surrounded by the many sudden hills which give character to Shropshire scenery; Wenlock Edge presented only its face, but the shapely Wrekin stood up boldly from the sun haze, and away to the west were the Breiddan Hills above Whitchurch, with a craggy, mountainous aspect out of all proportion to their height. A little to the north lay Oswestry, backed by the long, rolling uplands of the Berwyns; for Oswestry marks the western termination of the English plain, and beyond it begins quite abruptly what was of old "Wild Wales."

The farm we had come to see was not extensive, only 110 acres and all in grass, but it was a remarkable example of what hard work and thoughtful management can make of the land. The farming was based on the production of Cheshire cheese, there being round Oswestry a small colony of cheese makers who had originally migrated from Cheshire. On the farm there were then 58 cows in milk, which, with their calves, represented very heavy stocking for so small an area, and, indeed, necessitated, with the pigs which were also an essential feature of the system, a yearly expenditure of nearly £5 an acre on feeding stuffs. The cows, mostly of a Shorthorn type, were all bought in when ready to drop their second or third calf, and were sold again when dry in a forward condition to be finished off for the butcher. The calves were reared and sold, but no breeding was attempted, the grass being all wanted for the production of milk; for the same reason little attention was paid to breed in buying in, provided the cows seemed likely to yield a good supply of milk. Cheese-making was in full swing, and we saw the great mass of curd being gathered to one end of the vat, preparatory to draining off the whey, after which the curd is placed on a hot stone over a small fire over-night to bring out the rest of the whey, and is then divided and packed into the wooden tubs which form the mould. Cheshire is a soft curd cheese—that is to say, in comparison with a cheese like Cheddar; in its manufacture the milk is not allowed to develop much acidity before curdling, nor is the curd afterwards encouraged to shrink and toughen by growing acidity and a high temperature, nor, again, is the made cheese subjected to the same amount of pressure. The result is a more rapidly ripening and softer product—indeed, a good

Cheshire cheese should have a fat and crumby structure long before it has reached the green and full-flavoured stage that is esteemed by the specialists. Cheshire cheese is mostly consumed in the big Lancashire towns and in the Potteries; the best makes—as, for example, the cheeses that form part of the rent on some of the big Cheshire estates—are in great demand to stand on the table for lunch in the leading hotels of Manchester and Liverpool. Little Cheshire cheese comes to London, and that is mostly coloured, though the old-fashioned make is more properly white. The yearly output of the farm we were visiting was 15 tons or somewhat more in a favourable season, and as our hostess was accustomed to win prizes at the big shows her average price would be about 60s. per cwt. About a gallon of milk is required for a pound of cheese, so that the scale of production necessitated about 600 gallons a year from each cow on the farm, and the price made was about equal to what would have been obtained for fresh milk, while the whey remained on the farm for pigs. Pigs fed on the whey and purchased meal formed the second chief source of income, and the extensive sties were all ranged under a big covered shed. Though the shed provided plenty of ventilation it was on the whole a mistake; for pigs must have sunshine, and probably because of the lack of it the herd, as we learnt, was not so healthy as it might have been in much inferior buildings.

The soil of the farm was a fairly strong loam, and carried a fine sward, which if short was still keeping delightfully green in the hot season. As in Cheshire, bone manures were highly esteemed for the grass in preference to superphosphate or basic slag; all the pastures had been dressed more than once, and the occupier had no doubts about the benefit that had

accrued. The neighbouring farms were similarly stocked with milch cattle, and in one of the adjoining fields a great herd of rather well-bred Shorthorns formed a beautiful sight in the still morning sunlight, all gathered together as they were on the summit of a sudden mound to avoid the flies and to get what air was stirring.

The farm we were visiting was the property of the occupier, who had been left a widow with five sons to bring up, and had not only managed to maintain it at its present pitch of success, but had educated the sons until each had reached either the University or an Agricultural College. One son was at home, and with his mother, a maid, and a hired man and his wife, did the whole work of the place, no light task with nearly 60 cows to milk, when we remember that 12 cows to a milker is a very usual allowance. And yet there was no suggestion of the sordid toil that is often associated with a small grass farm; it was a refreshing example of courage and good management, where the head was made to tell as well as the arm. The farm was successful in virtue of the brains that were put into it; after all there is no special virtue in manual labour, though you often find masters objecting to labour-saving devices for their men on some quasi-moral plea of not encouraging laziness. Just in the same way we have recently read a distinguished personage arguing in the daily Press that English agriculture will never be prosperous again until the farmer does his own ploughing, while his wife scrubs the floors. That a farmer can take his day's hunting and give his womenfolk a piano and a dogcart is surely one of the best proofs that he can make his intelligence and his capital pay. Even on this small farm the sons had made themselves a lawn-tennis court and worked none the worse for it.

At Oswestry we turned, leaving Wales untouched for the time, and made our way back through Shrewsbury and eastwards into the plain that extends across Shropshire and Staffordshire as far as the central backbone of England. It is a level country of light drift soil nearly all under arable cultivation, though we were somewhat surprised in one place to meet with a village given up to fruit growing partly in the open and partly under glass—an enterprise, we found, of the Co-operative Wholesale Society, which has also erected a small factory to jam and bottle the surplus produce. Before we reached Newport we called at one of the larger farms in the district, typical of the best management of this light land on the New Red Sandstone. It was farmed very strictly on a four-course rotation; occasionally a barley crop might be taken after wheat, and one field of oats was being grown for seed, but in a general way the cropping was roots, barley, seeds, wheat. Swedes were only grown over half the root break, so as to make the interval eight years before they came round again on the same land; finger-and-toe was very troublesome in the district, and our host had often demonstrated to himself how the disease is carried on through the rotation by the charlock. The swedes were grown wholly with artificial manures, the dung being reserved for the potatoes and for the wheat. In all cases, even for the potatoes, it was spread and ploughed in during the autumn, our host being a great believer in the virtues of autumn dung and autumn cultivation for that class of land.

Potatoes formed one of the most profitable crops on the farm, and were looking extremely well at the time of our visit, showing no effects of the drought, which, indeed, did not seem to have hurt the swedes, though the mangolds appeared a little short of growth.

Potatoes sell well in the neighbouring markets of the Potteries and of the Black Country, whose distant chimneys we could just see; and with this market at hand a good deal of vegetable-growing was done on the root break, even some of the swedes being sold for table when there was a scarcity of other vegetables. Carrots were a speciality; they required a deeply-worked fine soil that had been manured in the autumn, and they needed a great deal of labour because they had to be weeded and pulled by hand as well as repeatedly moulded up. As we saw them they were a very even crop, wonderfully clean, though they had not yet covered the ground as they would have done with a little more rain. Off the fine red land the carrots pull with a good shape and a clean red colour, so that they can be bunched up straightaway without any washing. The cost of the crop is great, as much as £30 an acre, and there are years in which they sell very badly; not only must trade be good but potatoes ought also to be cheap, for the working-man's household buys potatoes first and carrots only if there is some money left over. Another breadth was in parsnips, again a speculative crop, even more so than the carrots.

Among the corn the deficiency of the soil in lime and its tendency to become acid were indicated by the presence of both spurrey and sheep's sorrel as weeds, and this despite the fact that the occupier has begun to lime the land regularly. Salt had also proved to be a valuable adjunct to the other manures, which would point to that lack of potash which is generally associated with sandy soils. The wheat was a fair crop generally, well above the average on some heavier land which occurred on one part of the farm, Standard Red and Stand Up being the varieties

chiefly grown all over the district. Some of the barley, of which a large acreage is grown, was also very good, blinding white in the sunshine; and we shall not readily forget making our way through a twenty-acre field of it about noon on one of the hottest and stillest days of that torrid summer. The drought had told worst on the young seeds in the barley, for they seemed to have perished entirely and to be beyond even their great powers of recovery.

Only about one-quarter of the farm was in permanent grass, some of this on black peaty land sloping down to a little stream, and the grass was used to carry without much expense cattle that had been bought in for winter fattening. The farm possessed a very fine range of buildings, for it was the custom to tie up about a hundred head every winter. Our host had exchanged the Hereford for the Shorthorn, finding stores of the former breed too dear to buy. It was his custom to buy in a good many young milch cows when dry after their first or second calf; run on the grass in the summer they would lose their bags and then could be fattened and sold as heifers. The black Welsh runts which are brought to Shrewsbury market were also profitable, if comparatively slow fatteners. With so many bullocks to be fed sheep did not form a considerable feature in the farming. Our host bought in Shropshire and hill ewes and crossed them with an Oxford ram, gaining thereby a little size, so that the crossbreds filled the eye and were taken by the butcher in preference to pure-bred Shropshires of equal weight.

Though it was not the most favourable season in which to view a light land farm, we were greatly impressed by this holding as one of the best examples of clean purposeful farming we had seen in any part of England. As on the other side of Shrewsbury

rents ran from 30s. to 35s., and the holdings were mostly large, 400 or 500 acres, all supplied with excellent buildings; covered yards and Dutch barns for the corn and hay being general. Labour was said to be good, wherever, as on this farm, there was a proper supply of decent cottages; of late, however, with the good trade in the manufacturing districts close by there had been a scarcity of casual labour for getting up the vegetables and potatoes.

Within the same district we visited another farm, a little larger and with perhaps a heavier soil, but farmed on similar lines. Here the great feature was the organization of the extensive buildings to save labour in fattening the 160 bullocks tied up every winter. Water power did all the grinding, root slicing, and chaff cutting, the food travelled along a little tram line; and so carefully was it all designed that two men were sufficient to look after the whole batch of cattle. But with all his ingenuity the occupier was still content to let the liquid manure drain away and be lost, though with it went one of the most valuable constituents of the cake he bought so freely.

VII

CHESHIRE: DAIRYING AND INTENSIVE CULTIVATION

BEFORE leaving Shropshire we called at the Harper Adams Agricultural College, an institution serving this and the neighbouring county of Stafford. It is situated on the same gently undulating plain as the farms we had previously been visiting, and occupies a stretch of similar light, easy-working soil, with a range of good buildings, more modern than but resembling those prevailing on neighbouring farms. The fields were largely divided into plots, which showed varieties, methods of manuring, etc., without interfering with the general run of the farming, and some of the root crops, especially the mangolds, looked particularly well for the season and the soil.

But the most important fact concerning the college, which we learnt both from the farmers we saw going round and from others at a distance, is that it has now become recognized as an integral part of the agricultural life of the district, not only to be visited as a novelty but to be consulted in difficulties. When we remember the feeling of farmers towards such institutions fifteen or twenty years ago, the attitude of patronage, suspicion, or hostility which was adopted with regard to their every action, we realize what an intellectual revival has taken place in agriculture—a change of temper, of which the consideration given to

the colleges is only one sign, but in the making of which they have borne an honourable part. The time is not far distant when, as in America, the colleges will give the lead in all matters agricultural, each in their own district, supplying the judges at the shows and doing much to shape the counsels of all the farmers' societies, whether commercial or political.

At Newport we were not far from the borders of Cheshire, and the intervening country showed no change of management; indeed, the farming of Shropshire and Cheshire has much in common, it is only the neighbourhood of the great manufacturing centres and the density of the farming population in Cheshire that gives its agriculture a special turn.

The County Palatine of Cheshire may be described as a continuation of the New Red Sandstone plain that lies between the Pennine Chain of carboniferous rocks and the sea. On the borders of Derbyshire it runs up into somewhat elevated moorland, but elsewhere the heights are trifling and the slopes gentle; the sandstone ridge, which runs from north to south and divides the valley of the Dee from that of the Weaver, being rarely more than 400 ft. above sea-level. Though the sandstone rock is never far away and determines the character of the land, the soils are mainly of drift origin; and, putting aside the areas of true alluvial bordering the Mersey and the Dee, three types may be seen all over the county. Most generally the soil is a strong one, sandy loam varying in colour from dull red to an ashy shade—a soil that is not a clay, but wants some care in working, because its fine particles easily run in heavy rain and then set with a hard crust. This shades off in the vales, especially on the Dee side, into heavier soil approaching true clays. On the ridge, particularly towards the

borders of Delawere Forest, but sporadically elsewhere, come some very thin sands, generally light red in colour, sometimes bleached almost white. Much of this land was barren heath up to very recent times, has been reclaimed and made into fertile arable by the marling which was so general a practice down to about the middle of the last century. The Keuper beds of the underlying New Red Sandstone furnished the material, and in many parts of Cheshire every field carries a little pond, the old marl pit, though in a few cases the process was carried out over a large area in a single operation conducted by the landlord. Some of the land would be the better for a renewal of the marling, for the soil is both light and hungry and very lacking in lime; many of the old grass lands still show a thin layer of the old marl now sunk a foot or so below the surface. In addition to the loams and sands, here and there over the Cheshire plain one meets with areas of black soil passing into peat—the "mosses" that represent undrained basins on the surface of the sheet of glacial drift covering the county, where waterlogging and the absence of lime in the soil have combined to produce an accumulation of acid, peaty humus. Many of these mosses have been reclaimed, but a few still are wastes, or carry scrubby plantations of firs and silver birch and other trees tolerant of peaty conditions. We say scrubby advisedly, for it must be confessed that trees do not flourish over well in Cheshire.

It is not merely the soil, it is the atmosphere; almost from the moment of entering the county one is conscious that the trees look very black in the stem and possess rather small and rusty foliage; even the hedges, though well enough grown in some respects have also this indefinable air of malaise. Smoke is

the cause; for though Cheshire lies to the south and west of the great manufacturing districts of Lancashire and the Potteries, the winds do blow pretty frequently from east and north, and the county is itself thickly populated. The annual crops and the grass are not perceptibly damaged, but the effect accumulates on the perennial trees and shrubs, and chiefly shows in the reduction of the leaves both in number and in size, though they are not killed outright as they are in South-east Lancashire. We realized the smoke in the atmosphere in another way by the extra state of dirt acquired by one's face and hands after a day's knocking about in Cheshire; the result was more like that which follows a day in London. But, despite the smoke, Cheshire is a most productive and intensively farmed county, for nowhere else is there such an area of good land close to one of the densest and richest town populations in the world. On the south-western side of the county and up the Dee valley the soils are heavy, and grass-land farms for cheese-making prevail; but on the lighter lands, especially on the northern side of the county, the land is too valuable for anything but arable farming, and is mostly held in smallish holdings of from 30 to 200 acres.

Whether on grass or arable, the mainstay of Cheshire farming is milk production; with the exception of Lancashire, no other county contains, as Cheshire does, more than 100,000 milch cows, and in no other county do the cattle of all kinds outnumber the sheep. We were unfortunately unable to see anything of the cheese-making grass farms, as our visit happened to coincide with one of the leading cheese shows which every one was attending, consequently we left the Dee valley and the sandstone ridge, and made our way by Crewe towards Manchester.

But grass-land farming is much the same anywhere, and we had recently seen one cheese farm managed on Cheshire lines. For a century or more bones have been the great standby of the Cheshire grass farmer—in old days in a rough state, quarter and half inch bones, but nowadays more generally as bone meal or in various mixtures containing a little added nitrogen. Slow in their action as all experimenters declare bones to be, they yet do keep the land supplied with the phosphates and nitrogen that are taken away in the milk, and that without forcing the grass to any abnormal growth. Despite the introduction of superphosphate and basic slag, the Cheshire farmer still believes he gets the best returns from bones, both in the proportion of clover and the milk-yielding power of the herbage.

As we entered the county from the south, the most noticeable feature of the arable land was the absence of barley, which constitutes little more than 1 per cent. of all the cereals grown in Cheshire. Oats are the staple crop, more than 60,000 acres out of a total of 80,000 of corn being occupied by oats, a proportion which is to be explained by the great demand for oats from horsekeepers in the Lancashire towns, in addition to their value for milch cows. Oat straw is also saleable, as barley straw is not, and a great deal of straw is sold, for complete freedom of cropping and sale prevails in the county. Another unexpected feature was the prevalence of rye on the southern and eastern side of the county. This is grown for the straw, for only rye straw is long and tough enough to be suitable for packing certain kinds of vessels made in the Potteries. The rye grown for this purpose is autumn sown on good land, cut when nearly ripe, and gathered into bundles, the corn being knocked out of the heads

by hand so as not to bruise the straw. When thus treated it will command as much as 2s. per stone—*i.e.* £8 a ton—and the farmer has also the grain for feeding or sale as seed. The other great Cheshire crop is potatoes. Lancashire, Cambridge, Lincoln, and the West Riding possess a large acreage, but nowhere else except in Lancashire do the potatoes exceed all the other root crops put together. They are found all over the county, though the most considerable areas are on the alluvial flats by the Mersey, where they join on to the Lancashire potato-growing district. On the light, sandy soils, however, early potatoes are very generally grown, and had been almost entirely cleared when we passed through in the first days of August. They are generally interplanted with cabbages or broccoli, and when the potatoes are lifted one or two drills of turnips, to be pulled small for table purposes, are generally sown in their place between the cabbages.

With markets for all kinds of produce so close at hand, Cheshire farmers are not usually very particular about their rotations, but it is customary to follow a four-course shift, containing two years of oats, one of potatoes and other roots, and one or sometimes two of seeds. Seeds hay is specially important in Cheshire, occupying almost as much of the land as old land hay from permanent grass, a proportion which can be explained on the one hand by the intensive character of the Cheshire farming (for temporary leys will yield much bigger crops than permanent meadows, especially with a smoky atmosphere), and again by the very good markets which Liverpool and Manchester afford for coarse hay that can be chaffed. Considering the season the seeds were looking very green and flourishing, and had grown more since the first cut than any

we had seen farther south. But the clover was flowering prematurely, and with the weather that followed our visit we expect a good many men saved a light crop of clover seed where they had meant to get a good second cut of hay. As in Shropshire the lack of lime in the soil sometimes causes the clovers to fail; speaking generally, Cheshire soils respond to liming as also to dressings of salt, a fact which was recognized more than a century ago.

We turned a little aside to visit the Cheshire Agricultural College at Holmes Chapel, the earliest institution of its kind founded by a County Council and still supported entirely by Cheshire, though it has become affiliated to the Manchester University. The farm was very typical of the district, only to be distinguished by a little better polish and a higher level of production even in this intensively cultivated district. Though we had seen better individual crops, probably nowhere had the whole farm looked so well; the permanent grass was closely grazed, but still green and affording a reasonable bite to the business-like herd of deep-milking Shorthorns which is the pride of the College authorities. This College seemed to give special attention to making its students take their part in the routine of the farm; owing to the small size of their holdings most Cheshire farmers have to be both master and man, and the practical nature of the training the College gives was being generally appreciated throughout the county. Not that it lacked criticism; the Cheshire farmer is like any other North-countryman, eager to denounce anything with which he does not agree and to brand as nonsense whatever he does not understand. It is a bracing discipline for an institution, provided always its authorities have an equal amount of courage to go their own way when

they know they are right. And the Cheshire farmer's criticism is apt to be coloured by the extreme land hunger that prevails. We read in the local Press of one man objecting to the College because, while it pretended to help the farmers of the county, it was really turning out young men who became competitors against them for farms; and it was in the same county that the farmers at a land sale hooted the County Council representatives, who were trying to buy part of the estate for the establishment of small holdings thereon. But if the College had its critics, we also learnt from some of the farmers we visited that it had very good friends; and, as it strengthens its position as one of the regional agricultural colleges by its association with the University and by being called upon to play its part in the general agricultural service of the country, it will shake off these parochial objections and get more support in taking its own line for the assistance of the local industry.

VIII

FACTORIES AND FARMING IN LANCASHIRE

As we approached Manchester the Cheshire plain grew flatter and duller; the light also, on what should have been a brilliant August afternoon, was sensibly flattened and dulled, and the trees and hedges were even more dingy and unhappy. But the farming was as intensive as ever, the land was evidently being used to the best of the capacity of these rather indifferent loams, which are not exactly easy to manage, and possess little inherent fertility, lacking as they are in both lime and potash. We were bound for a suburban farm on the very outskirts of Manchester, typical of a system of management dictated by the proximity of a market and entirely independent of the routine of ordinary farming.

In the first place, no stock were kept except pigs and an odd cow for the use of the house, solitary on the one little grass paddock on the farm. The rest of the land was under the plough, and everything produced was sold, hay and straw as well as corn and roots. Rarely have we seen farming reduced to such simplicity; the rotation consisted of a five-year shift—oats, seeds, wheat, seeds, potatoes, the seeds being red clover on one occasion and a mixture including alsike on the next. But there was always some difficulty in getting the clovers to stand

the winter at these close intervals. Oats had not been profitable of late years, and the occupier was looking for a good spring wheat wherewith to replace them, as it was not easy to get the potato crop out of the way in time for autumn-sown wheat. Wheat straw always sold a little better than oat straw, though Manchester formed an excellent market for either. The produce was carted into Manchester as required, and the returning waggons brought home some of the dung needed to keep up the draft upon the soil's resources that was involved in selling everything away. But the fertility was more than maintained, something like 1000 tons per annum of farmyard manure being brought on to the 200 acres of the farm. This was lavishly supplemented by artificial manures, and the farmer not only took what advice he could obtain from the College, but was a student himself and a careful reader of recent literature on fertilizers, from the scientific and experimental side as well as from the purely practical. The result of all this manuring was to bring the land up to a very high condition; only big crops could pay for the high rent and the expensive labour.

Potatoes looked like a very heavy crop, the haulm had made growth such as we had not previously seen, with more of the lush character we had been accustomed to find on the rich potato lands of Lincoln in the previous year's damp and growing season. Certain pieces were being sprayed as an experiment, but potato-spraying is not general in Cheshire, possibly because the little touch of sulphur in the smoky atmosphere keeps the disease in check. The haulm is also said to grow so rankly early in the season as to make spraying difficult. The oats and wheat were both heavy crops, especially the latter, and they both

had that dull grey look we had not seen on the corn crops this year, but which was so general over southern England in 1910. The corn grown on the black Fen soils and on the wheat plot at Rothamsted that receives farmyard manure every year get just the same appearance. For these reasons we have come to associate it with a comparative excess of nitrogen, such as will exist on land as highly farmed as this.

The great desiderata in farming of such an intensive character are cereals stout enough in the straw to carry the heavy heads produced. Whatever the cause of lodging, whether weakness of straw due to a too rapid and dense early growth, or shading resulting in fungoid attacks at the base of the stem, or mere weight of grain, it is always associated with rich land, particularly when the richness has been produced by recent heavy manuring. Some soils grow stiffer straw than others for an equal weight of grain, but on all soils farmers are apt to get their corn crops spoilt as soon as they raise the land to something like its *maximum* productivity for roots and seeds. It is not only the farmers who can buy town manure who reach this pitch, but men who fatten bullocks as they do in Norfolk or Shropshire or Northumberland, or again, the men who fold their land repeatedly with sheep getting a good deal of cake and corn. Various would-be reformers of farming write of the possibility of doubting the production of wheat by deep cultivation or some other formula, but they forget that at present the real limiting factor which prevents the average crop of wheat rising above a certain limit is the strength of the straw, because not only is the formation of grain very much restricted when the crop is laid, but the expense of harvesting is enormously increased. Of course, 1911 has been an ideal year to

keep the corn standing; we have seen one wheat crop of over sixty bushels to the acre only very slightly laid in places, whereas on the same soil in an ordinary season anything over forty bushels might be expected to go down. The prevalence of names like "stiff straw," "stand up," among cereal varieties grown in Britain show what an all-important factor the straw is here; names of the same type are not found among the varieties grown in countries like America, where the acreages are large but the average yields low.

On this land near Manchester the rents were about 40s. per acre, and that for farms with no great equipment of buildings, of which, indeed, few are wanted where stock are not kept. Wages naturally were high—22s. to 24s. per week, but no particular difficulty was found in obtaining or keeping good men. There was a growing scarcity, however, of casual labour for potato digging, hay-making, etc., but that might only be temporary and due to the recent good times in the manufacturing districts close at hand. Our host was giving much attention to the question of how to dispense with such casual labour and make the farm entirely self-contained. The solution must, of course, lie in the greater application of machinery to all farm operations, and he was greatly interested in machines, having himself invented one or two skilful improvements or additions to farm implements. Of course on general social grounds it is desirable to render farming independent of casual labour, just as its ideal should be always to make skill replace numbers in doing any particular operation. Back to the land is a retrograde cry if it is to mean many men doing by hand what a few men can accomplish by machines. The former density of the agricultural population meant

that an excessive number of men were being wretchedly paid to do slavish sort of work, because with labour at that price it was not worth the farmer's while to scheme out labour-saving devices. However, time did not permit of any long discussion of policy and tendencies in agriculture; at any rate our host had furnished us with an example of one kind of a modern farm—a highly effective crop manufactory designed to make the most of the conditions prevailing. It was very good business, if not very attractive farming, and it must be recognized that many men farm in particular ways for the pleasure it gives them; they like fattening bullocks or rearing pedigree stock, or growing barley, to the point of being careful not to inquire too closely whether their particular hobby pays.

For the rest of our journey in northern Cheshire we left the low land by the Mersey and travelled through a succession of parks and suburbs, until we turned to cross the Mersey at Warrington. There we saw where the smoke came from, for Warrington itself seemed to be dispensing enough black smoke to darken the air of a whole county, while a little farther seaward lay Widnes and Runcorn, where it has been suggested that cast-metal trees should be set up, so poisonous is the atmosphere to living ones. But for all the smoke the cultivated land, highly farmed too at that, comes right up to Warrington, and we saw the shadows from the chimney-tops wreathing over good crops of wheat and oats, which appeared to have taken no greater harm than a little dinginess of aspect. We were soon into the region of the "moss" farming which prevails all over South Lancashire, where a moss signifies a low-lying area of black peaty soil generally on a substratum of sand. The underlying rock is almost invariably New Red Sandstone, but it is overlaid by

drifts which have left flat areas with imperfect drainage in which peat has accumulated. Chat Moss, nearer to Manchester, is one of the most famous of them, known for the difficulties George Stephenson experienced in building the first railway from Liverpool to Manchester across it. Not long ago the mosses were waste heath and swamp, but they have been drained and now yield great crops by the aid of the town manure with which they are so liberally fed by river, canal, and railway. The great crops are potatoes and oats (both of which are well known to like a black acid soil), and wheat; seed hay seems to occupy rather less than the fifth of the land due to it on the prevailing rotation, and very little of other roots are to be seen, just a few breadths of swedes and cabbages. There was little permanent grass to be seen, usually only small paddocks, and those poor and weedy with quantities of ragwort flowering; no stock were about the fields, though a considerable amount of dairying is done indoors, and will probably increase as town manure becomes more difficult to obtain. The crops were heavy, the potatoes magnificent, mostly maincrops, though here and there a cleared field replanted with cauliflower or cabbages showed that earlies had been already harvested; the wheat and oats had the grey look on which we have already commented. On that particular day the air was full of corn thrips, and we drove for many miles before getting out of the sphere of the irritating pest.

South-west Lancashire is not particularly attractive; the soil is black, the roads are black, and though the crops grow and flourish, trees are few and stunted, and the horizon is always bordered by chimneys, for the coal district is not far away—St. Helens, Rainford, and Wigan itself on one side, Prescot, with its factories, on the other. Towards Ormskirk the land rises, and

the Red Sandstone rock crops out in places, the corn takes on a better colour, and though the land is still mostly arable, dairying becomes more general, and we saw some fine herds of milking Shorthorns in the fields. We had left behind the extensive farms that occur on the mosses, though even there comparatively small holdings are common; in the rest of the county, as in Cheshire, a farm of 200 acres is considered large. The countryside is thickly populated, and in a small way a good deal of fruit and vegetable growing goes on; the holiday-maker is a factor, for we were not far back from Southport and the Lancashire coast. A few miles from Preston a change takes place in the farming, surprising in its suddenness: the arable farming ceases, and is replaced by small dairy farms on poor grass land. The change must be due to a soil factor; and though the soil is still of drift origin, it looked as if it had been derived with little change from the Coal Measures, which generally give rise to clayey soils of indifferent fertility.

Before leaving Lancashire, where the farming is so entirely conditioned by the proximity of a large manufacturing population, we went a little farther east into the steeply undulating country that was once forest, but is now occupied almost entirely by great towns. All along the valleys from Manchester northwards, through Rossendale to the Ribble and the Yorkshire border, towns and townships are strung out in an almost continuous line, with little oases of grassland between, running up to moorland wherever the elevation is considerable. All these farms depend on the sale of milk; they are mostly small, and the living is earned as much by the retailing as by the production of the milk.

We visited one such farm on the outskirts of

Blackburn, about 60 acres in extent, all grass, about half of which was mowed every year. The soil was but poor, derived from drifts overlying the Coal Measures, and the grass, though green, would hardly have satisfied an eye accustomed to the fat pastures of the Midlands. It was well treated, however; the hay land received the manure from the cows, and both lime and bones were regularly applied to the pastures, which were also carefully attended to, the dung spread, ant-hills pared, rough places cut over, etc. Of course the grass alone could not carry a cow per two acres all the year, many feeding stuffs had to be bought, and the cows received 5 lb. of meal a day in the summer and 8 lb. in winter. Thirty cows were kept in milk; usually they were bought in as heifers in calf, the calf was reared and sold, and the cow was sold when dry and again in calf. A very good class of milking Shorthorn was kept, for which high prices were paid in Hellifield, Preston and other local markets making a speciality of milch cows. The cows were kept in very big stone "shippons," even the partitions being flagstones set on edge, and the local authority insisted on the considerable air space of 600 cubic feet per cow. No bedding was used in a country which grows on straw, and the manure was cleared out at once. Milking began at five in the mornings and about two in the afternoons; as soon as the milk had been put through the refrigerator the cart started on its round in Blackburn, where the milk was retailed at 1s. per gallon. For the working of the farm there was the shrewd old farmer, well over 70 and active, though, as he himself confessed, more of a head than a hand, his two sons and a hired man, none of whom could be idle in order to keep such a business running.

All the neighbouring farms were managed on exactly the same lines: farther out rents were lower, and because of the difficulties of getting the milk into town early enough it was turned into cheese. As this was sold new and therefore moist at about 7d. a pound, the farmer received the equivalent of 8d. a gallon for his milk, and also had the whey on which, with purchased meal, to raise pigs, themselves a profitable trade. This retail milk selling is not very impressive farming, but it is cheap and thrifty in virtue of the immense amount of work and personal care the small occupiers put into it, so that it can continue to compete with the big herds at a distance, however highly organized they may be. In its turn also it does keep going a more purely rural industry—the raising of the milch cows.

IX

NORTH LANCASHIRE: STOCK-RAISING

ONE is accustomed to think of Lancashire as a dreary conglomeration of factories and smoke-blackened houses; but all the little valleys of the Mersey tributaries in East Lancashire show the remains of their old beauty, and the upper dales on the fringe of the moorland were still fair to see within living memory. Even to-day there is a large piece of the county north of the Ribble that is purely agricultural, some of it as remote and solitary as any spot in England. Between Ribble and Lune the flat country of the seaboard is known as the Fylde, rich, easy-working land that is highly farmed and depends chiefly on the production of milk. Our route, however, lay inland into the hill country known as the Forest of Bowland, where rise the headwaters of the Wyre and of some of the Ribble tributaries, a region of moorlands on the Millstone Grit forming an outlier of the Pennine Chain, but separated from the great limestone masses of Ingleborough and Pen-y-Ghent by the upper Ribble valley up which runs the Midland line to Scotland. From Blackburn we travelled by Whalley, with its ruined Abbey—memorable for its association with the Pilgrimage of Grace, but now stranded in the midst of factories—

to Clitheroe and over a limestone ridge into the valley of the Hodder.

Here all traces of the drought were left behind; the flat strip of meadow land in the bottom of the vale was deep in lush grass, and the pastures above were gloriously green right up to the open fell; only the clear, peat-stained stream spoke of the deficiency of rainfall. But the elevation is considerable — 400 ft. in the valley, 1200 ft. or more on the fells by which it is shut in—and the annual rainfall, even on the low grounds, is more than 60 in. Naturally enough there is no arable farming, everywhere grass; and the hay was just being carted in the first week of August, an exceptionally early date for that district. We followed up the valley through the little town of Slaidburn to one of the larger farmers, who occupied about 400 acres of land with grazing rights on the fell. It is a rough and steep country; each farm possesses a few flat fields by the stream, which are cut for hay, then some good grazing land considerably accidented, divided by stone walls and traversed by runnels of water, then bigger fields and poorer land with a good deal of bracken, above all the open fell of grass and heather. The homesteads, built and roofed alike with grey stone, lie in the hollows a little way up the hillsides, each sheltered by a few sycamores, the only tree that will stand the elevation and the climate.

The farmer on whom we called was himself worth a long journey to see, he had spent his whole life, as his forbears had before him, in Bowland; active, shrewd, and talkative, with the vein of dry, chuckling humour of the Lancashire man, instead of the dour contempt which the hill farmer farther north, and particularly across the Border, accords to all strangers.

A born fancier of all kinds of stock and no respecter of persons, he would yet give some consideration to the opinions of the son of his landlord on the type of sheep to be encouraged, and was even open to advice on that touchstone of knowledge—the management of grassland—though his joy when he managed to trap two "authorities" in a contradiction was great and unconcealed. A would-be buyer happened along, and we sat on the hillside and watched the play—the preliminary feintings when the buyer made much of the cows he did not want to purchase, and then asked casually what was the price of the others that were a bit off, the systematic examination point by point with appropriate depreciations on one side and praises on the other, the final offers and walkings away—all for the pure love of the game, for each man was aware of the quality of his antagonist and confided to us afterwards that "he knows nigh as much as me." A matter of 5s. a head separated the parties at the end; the buyer, who had never ceased to lament the lack of keep on his place, was to write if he really found he had any grass when he got home.

The whole of the farm was given over to stock-raising, and we never saw a finer stamp of general purpose Shorthorn than on this and the neighbouring farms in the valley. A warm roan was the favoured type, neither all reds nor whites being in much esteem locally. They were not registered, but the blood was there; the local farmers all breed for quality and take the greatest care in the bulls they buy. The original country stock was always of good repute, and the famous Townley and Knowlmere herds which half a century ago were close at hand have doubtless left their mark on the cattle of the district. Our host had

twelve cows in milk and made some butter, but chiefly he sold bull calves and milch cows as heifers before or after their first calf, the staple trade of the district being to supply the demand of the cowkeepers in and about the Lancashire towns for heavy milkers. In the local markets of Preston, Hellifield, Settle, and Skipton these milking Shorthorns of the finest type are sold in great numbers; and English stock-raising is suffering a great and continuous loss in that these magnificent animals do not reproduce themselves. They may raise two or three more calves, but the dairyman is generally quite indifferent what sort of bull he uses, and disposes of the calves for veal, also fattening off the cows themselves when still in their early prime. Improvement of the milking strains becomes very much slower through this practice; for the town dairyman pays long prices and picks out the deepest milkers and the finest frames, only to withdraw them from future use as breeders. Walking about these upland pastures and looking at the noble groups of heifers and milch cows on almost every farm, we could not help feeling what a set of scrubs and misfits was the ordinary milking herd in the Midlands or the South.

Of course the cattle cannot graze far up the hillside; sheep are therefore equally important items in the farming of the district. We were fairly in the region of the mountain breeds, and confronted with some of the knottiest problems of classification and origin that exist. Even the local experts were content to merge some of the hill sheep as "roughs"; and to the end of our stay we should have remained incapable of distinguishing between Lonks and Swaledales or even Scotch Blackfaces, if we had been set to sort out the common bred country flocks. But we were in the proper home of the Lonk, a big, upstanding sheep with

a speckled face, massive curling horns, and a dense shaggy fleece of the thickest carpet wool, almost hair, which occupies the hill country and the moorlands from Craven to the southern border of Lancashire. There the Lonk merges into or is replaced by the Penistone sheep and the Gritstone sheep of the Peak country, both of which seem to belong to the same general stock, though they now differ in the face colour, the horns, and other points. The Lonks are supposed to have the finest wool, and to any one accustomed to the soft fleeces of the aristocratic lowland breeds it is amazing to hear that stuff of such incredible coarseness sells as well as, if not better, than the finer article. The Lonk is perhaps the biggest of the hill breeds, hardy and prolific, needing no better keep than the roughest grass and heather, and capable of finding food in anything but the deepest snow. A Lonk ram in full fleece is a very impressive animal, higher on the leg and bigger generally than the Blackfaces he most closely resembles. Rams are sold to some extent for crossing with other hill breeds, to which they give size and substance. In this district the wethers and off-going ewes are sold in October to be fattened on the lowlands, and a little earlier the ewe lambs are also sent down to be wintered on grass land that has been cut for hay, only the breeding ewes being kept at home. About 7s. 6d. a head is paid for the wintering, payment only being made for those which come back again in April. A certain amount of crossing is also done in the district, the country ewes—Lonk or Swaledale—being crossed with a Wensleydale ram. Wensleydales, which come from no great distance, are curly-coated sheep of a Leicester type, but big, active, and hardy, which get lambs on the hill ewes that soon outgrow their mothers, and can be sold off the grass to the butcher.

Sheep and cattle did not exhaust our host's interest in breeding; there were one or two foals running about, and he was something of a fancier of both poultry and ducks, of which some well-bred examples wandered about the homestead.

The grass land varied in price with the elevation; the meadows by the stream which would fatten cattle commanded as much as 50s. an acre—an astonishing price when one considers their remoteness—and from that high figure the rent varied down to 5s. an acre for the land immediately below the fell. Bones were the chief manure used, and their action was plainly visible; more recently basic slag had begun to be appreciated. One of the greatest troubles was the extension of the bracken, which threatened to spoil much of the higher land, and no effective method of keeping it in check had been devised. The fells, which, roughly speaking, include all land above the 1000-ft. line, are partly heather-clad and partly "white land," which carries no heather and has been to some extent reclaimed, in most cases by liming. An enclosed fell was worth from 1s. 6d. to 2s. 6d. per acre for grazing, and should carry one sheep to the acre; the shooting rights were worth another half-crown per acre. But many of the fells are held in common, each farm being allowed to run so many "stints" of fifteen sheep each on the fell, and over these rights considerable quarrels arise. The sheep require to be acclimatized and go with the farm; but they are taken over at market rates, and there are none of the fictitious premiums that have become such an awkward question in the Highlands.

The whole work of this 400-acre farm was done by three men and the occupier, but the men were well paid. Those who lived in got £30 a year and all found; the married men got 21s. a week and a

house, with various allowances of milk, coal, etc.; but our host, who had worked his way up, opined that the young men living in were better off than they ever became afterwards, even as masters. For the hay harvest Irishmen are engaged; the same men came to this farm every year and got £6 for the month's work, whether it lasted the full four weeks or was over in a little more than a fortnight, as it had been that year.

The rest of the district, the tangle of little valleys down which flow the headwaters of the Hodder, was of much the same character. South of the Hodder the underlying rock is limestone, which breaks out in scars here and there, and was answerable for the big pale blue bell flowers in the hedgerow and the more deeply-hued geraniums on the wayside wastes; but northward the higher fells were all gritstone, with a more gloomy and restricted vegetation. Everywhere grassland and everywhere fine cattle, and as we turned away with some reluctance from the valley, hospitable always but fairer than its wont in the sunshine of that brilliant summer, we promised ourselves to come again whenever we wanted some good milch cows, though we felt we should need a shrewd dealer on our side to stand up to the local bargainers.

The easy routes to the north were either to turn down the valley into the Lancashire plain until the great high road running from Preston to Lancaster was struck, or to follow up the valley to Hellifield and there get on the northern through route by way of Kirby Lonsdale and Shap into the valley of the Eden. However, there is a rough but feasible road straight over the moor into Lancaster, and this we took and were well repaid. To begin with, it traverses the Trough of Bowland, a steep-sided valley that seems completely barred as though it led into a deep circular

basin hemmed in by a black and forbidding wall of moorland. But the stream one seems to be following up to its source turns a flank; the road climbs steeply to a col at less than the 1200-ft. line, and after a stretch of fell, some black and some white, but all inhabited by the active, dark-faced sheep—roughs let us call them—drops through woodlands into the upper Wyre valley and over another fell along a plain-sailing, if somewhat switchback, road into Lancaster. It was grass country nearly all the way; only within a mile or two of Lancaster, where the limestone begins again, did we find any land under the plough.

X

FURNESS AND THE LAKE DISTRICT

BEYOND the Lune there is still another detached portion of Lancashire, the hilly fringe of land south of the Lakes, extending westward as far as Barrow, a town which has grown into a busy steel-making and ship-building centre, owing to the existence in the neighbouring Mountain Limestone of masses of the purest iron ore found in Great Britain. This Furness district runs right up into the Lakes; indeed, it is somewhat of a surprise to find that Coniston Water and half of Windermere itself lie in Lancashire, another illustration of the difficulty of making the county area the unit for many forms of agricultural administration.

From Lancaster northwards through Carnforth the underlying rock is limestone, and the soils are partly drift and partly the thin, sticky red soil which generally arises from the limestone. On the lower ground arable farming prevails, and the proximity of the sea results in a fairly early district with a mild climate, as was shown by the recurrence of barley, all of a wide-eared type. But oats form the general cereal, and some very fair crops were seen, good, indeed, considering the unfavourable season for oats. The roots also were good, perhaps not so full of growth as usual, but at that date the northern farmers had

nothing to complain of as regards their swede crops. The drought, however, then lay heavy on the country-side; the thinner pastures near the rock were burnt up, and the air came hot and dusty off the white limestone roads.

The belt of cultivated land is not very broad, and quickly runs up into rounded hills scarred with terraces of limestone, sheep walks pure and simple. One of these isolated hills which rises from the plain a few miles north of Lancaster—Farleton Knot, is notable as possessing a breed of sheep of its own, although the whole hill accommodates only three farms. These "Horned Crag" sheep have been known for the last half-century; they are white-faced, and though now distinct are probably derived from the same general stock as the Lonk and the Scotch Blackfaces. It is perhaps the most remarkable example we have met with of the extreme segregation of breeds of sheep which prevails in the British Islands, because there is nothing to suggest that this breed is either better or worse than its neighbours, or that it possesses any characteristic which renders it particularly appropriate to its limited habitat. Doubtless any owner of a speciality gives a little extra care to his stock, and in this case continued selection and watchfulness seem to have overcome whatever disadvantages have arisen from the close in-breeding that must have prevailed.

At Milnthorpe we turned westward across the head of the great sandy bay that is formed by the estuaries of the Lune and Kent, and visited several farms in the Cartmel country, which is a similar district of free working soils upon the limestone, with a mild and equable climate and a considerable rainfall. The sea-board is fringed by breadths of flat salt marshes and mosses, some of which have been deliberately reclaimed

and are protected by a sea wall and drained. The upland farms, mostly in grass, are of varied size though rarely large, and are rented at about £1 per acre; to them are often attached allotments—wide areas of rough grazing where the fells run up to some considerable elevation. Most of the farms possess a small proportion of arable land on which a rotation of oats, seeds, turnips and potatoes is followed, though the seeds are left down for several years. Indeed, the farmer may be said to move a three-year shift of cultivation slowly over all the better fields that are fit to put under the plough, because in this moist, mild climate no difficulty is experienced in establishing a good pasture immediately after it has been sown down. A few fields of wheat were to be seen, but barley has practically disappeared from the district.

On one farm we visited the production of milk was the chief industry, and a large proportion of it was made into butter, for the fringe of small watering-places round Morecambe Bay provides a good local market for dairy produce. We argued out the old question of the profitableness of butter-making when a gallon of milk can be sold wholesale for 7d., yet, under the best of local conditions, a pound of butter for which nearly three gallons of milk are required will not produce more than 1s. 3d., on the average for the year. Butter-making can only be a poor business, unless a very exceptional profit can be made out of rearing calves on the separated milk. The farmer's wife whom we visited had learnt to make first-rate butter by modern methods, and had no doubt about its profitableness, but that was only because she was obtaining 1s. 2d. a pound when 10d. was the ordinary price for country butter. Even her price was a poor return for the milk, considering that the butter-making

process itself costs a trifle both for labour and material. When a station is within driving distance and large towns are not more than 100 miles away, it is difficult to see that anything can be more profitable than the sale of the milk itself.

On this and the neighbouring farms a very good class of Shorthorn cattle was to be found; doubtless the foundation stock of the country was good, for we were at no great distance from the original Tees-side home of the Shorthorns. Moreover, the landlord kept a celebrated pedigree herd, from which he sold bulls of the best blood, perhaps not quite up to show form, cheaply to his tenants. The same cause, the presence of a celebrated stud of Shire horses on the estate, accounted for the fine class of horses seen on the farms, on most of which a few foals were bred every year at profitable rates. The ordinary farmer finds heavy-horse breeding much more feasible than the raising of light horses, even though in the latter case he may have cheap access to the best stallions, simply because he can use a heavy horse during that critical period from 2½ to 4 years old during which it is being made, whereas one or two light horses of the same age are a considerable nuisance upon a small farm.

These Cartmel farms possess a certain amount of good grass and also a little arable land, for which reasons some of the horned stock are grown on and fattened; but, as in the district we had just left, the sale of heifers and young milch cows was perhaps the most profitable part of the cattle-rearing business. Sheep were, of course, important items in the farming, though no particular breed seemed to be dominant in the district. Ewes were bought off the hills—Herdwicks and Blackfaces—and were crossed with Wensleydale or Border Leicester rams. The mild

climate made it possible to let the lambs come rather early in March, and the lambs and ewes together were fattened off on the grass. The value of these mountain breeds for crossing purposes seems to lie in the fact that when brought on to the low land the ewes make very good mothers with an abundant supply of milk, so that the lambs thrive exceedingly well up to the time they are weaned. Then they ought to be sold, because as soon as they are taken from their mothers they prove much less profitable animals and fatten more slowly than the lowland breeds proper.

We then went down to see another farm on reclaimed land at sea-level; it was protected from the tides by a sea wall and had been under cultivation half a century or more. The soil was the usual fine alluvial stoneless material found in such situations, easy to work but reasonably retentive, and not to be played with in any weather. The fields were large, laid out in comfortable rectangles and cropped on the rotation we have described above, where five or six years of temporary ley are followed by three years under the plough—oats, turnips and mangolds, oats and wheat. The cereal crops, especially the oats, were a long way above the average, though very weedy, and the temporary pastures were really magnificent, covered with a splendid springy sward full of white clover, such as might have been grassland from time immemorial. The tenant, indeed, was accustomed to take prizes for the best-laid-down pastures of various ages. One five years old especially took our eye, because permanent seeds, even when they start away well for a year or two, so often become very poor from the fourth to the seventh year, when the effects of the cultivation have worn off and yet the land has had no time to accumulate a stock of humus.

The tenant sold milk and butter; he also raised calves to sell as milkers, and again bought in Irish cattle to fatten off, but on the whole he considered he made most of his rent out of his sheep. He was tenant of an adjacent salt marsh, a piece of land that had once been reclaimed, but which through the breach of the enclosing wall was flooded at high tides a few times a year. This salt marsh not only provided keep, but was free from the parasitic diseases which so generally affect sheep, so that his stock remained very healthy and did not need to be sent away to winter. He made it his business to sell fat lambs, the ewe flock being composed of hill sheep —Herdwicks, etc.—and the rams of the old Leicester breed. Such lambs as did not come to sale in the first summer were wintered and then fattened. The tenant also bred several heavy horses each year, but was, if anything, rather inclined to the Clydesdale instead of the Shire.

From the tenant we got some information about labour, which, as is usual in the North, had to be well paid. He worked mainly with single men boarded in his own house and receiving £30 a year, and supplemented them with casual labour hired from the coast villages, where many men are half fishermen and half farm labourers, paying them by the piece. But he wanted to get rid of the men living-in; the quality of the food appeared to be a continual source of dispute, and the managing, cooking, washing, etc., made their presence a great burden on the wife.

The rent of this fine reclaimed land averaged about 25s. per acre, though part of the holding was without any buildings; but even taking this into account we could not help feeling that he was occupying some of the cheapest land in England. It was evidently

magnificent soil, capable of growing anything and with a great natural reserve of fertility; it was level and easy to work, the climate was good, and the rail and markets were close at hand. Yet in Bowland we had seen poorer land and more remote commanding just double the rent. Similar differences can be found all over the country; there are fashionable districts where both rents and farming are high, other districts where the land and opportunities are equal or better, and yet the whole level of production is lower both for the tenant and the landlord. This only shows how difficult it is to fit the economists' definitions of rent to the thing as it exists. That rent is the fluctuating margin between the profit made by the land and the rate at which the tenant is content to live represents a tendency and not a fact; and none of the other definitions that we have found in the political economy text-books seem to meet the facts any more closely.

In Furness we still had time to see the famous herd of Shorthorns and the Shropshire sheep belonging to the landlord of the farms we had been visiting. The Shorthorns contained a considerable infusion of the fashionable Scotch blood, and were beef cattle rather than the milking type so general in the country we had just left; the Shropshires were again strangers in that countryside, though well known in the great show rings. One talks lightly enough about the improvement of our live stock and the possibilities that the modern studies of heredity have opened to the breeder, but in face of flocks and herds of such perfection as we then saw it seems difficult to conceive of any further advances. For the mere manufacture of beef and mutton they leave nothing to be desired, so truly have the instincts of the practical man, working with great numbers and

over a comparatively long period, attained the end in view—good flesh rapidly laid on and in the right places. But these picked specimens are still too much in the nature of happy accidents, purchased sometimes at the cost of other qualities which the workaday farmer has to consider; the general average still shows plenty of scope for improvement.

We had one look more at the beautiful garden set on a gentle southward slope towards the quiet waters of the bay, where flourish in careless luxuriance many southern shrubs which other people in less favoured climates toil to keep alive as struggling specimens, and then took our way towards the hills. On the shores of the estuary of the Leven we saw one of the many mosses now being slowly reclaimed by cutting out the peat before beginning some sort of warping process; round Morecambe Bay there are great areas where the flat expanses of sand which have given the bay its sinister reputation are exchanged near the river channels for mud and ooze, haunts of wild-fowl and seabirds or at the best only occasional sheep, which might be converted into productive land. The approach to Windermere from the south forms one of those serene visions which move like a symphony of Mozart's; there is nothing terrific nor exciting, the river is set in wood and rocks, fern and heather, in a succession of quiet vistas until it opens out into the wide waters of the lake itself, when at last we attain to a vision of the mountains—Bow Fell and the Scawfell Pikes, to recall the more austere entrances into this hallowed land. The underwood upon the lower slopes of the hills is perhaps more important than the limited area of farming land; it is cut over every fifteen years or so, and yields hurdles, barrel hoops, charcoal for the powder mills, clog soles and bobbins, for the turning of which a few mills still

survive. But the value of underwood has declined here as in the south, and many of the woodland crafts which were so specially valuable as providing winter labour are of no account nowadays.

Sheep-breeding is the main agricultural pursuit, and the fells of the Lake District carry a breed of their own, the Herdwicks, which claim to be the hardiest race to be found in the British Islands—satisfied with the roughest of fare (a true Herdwick is said to refuse hay even in the worst winters—a statement more typical than true perhaps), and with their close coat proof even against the tremendous rainfall that prevails. The Herdwick is a small white-faced sheep, horned in the rams, but polled or doddied in the ewes, exceptionally slow to mature, but producing mutton of the finest mountain flavour and a close fleece of coarse wool. The lambs are almost black-faced when born, but the colour gradually lightens, and the adult sheep look truly white in the face. Like so many other somewhat isolated breeds, the Herdwick is supposed to be descended from some Spanish sheep which escaped from a wrecked Armada vessel, but there appears to be no evidence, either documentary or from affinities with existing Spanish breeds, to justify this popular opinion. The Herdwicks are mostly sold away to fatten on the turnips and grass of the lowlands; the lambs which are not yet acclimatized to the heavy winters are put out to keep in October on the grassland along the Cumberland coast. Like other hill breeds the Herdwick ewes are crossed when they leave their native fells, Border Leicester rams being generally used. A Border Leicester ram is also used on the Scotch Blackfaces which are in many places established in the Lake District; their progeny almost attain to the dignity of a distinct breed, and

are known as "grey faces," the ewes of which are often kept to be bred from again, as is very rarely done with any other first cross.

We followed the well-known road along Windermere and by Rydal Water and Grasmere up Dunmail Raise to Thirlmere, where we were interested in the planting operations that the Manchester Corporation are carrying out on their catchment area. These big upland water-collecting areas belonging to the great cities afford perhaps the best opportunity for trying forestry on a working scale in England, but the work wants the expert knowledge of forest management of which we as yet possess so little. To try to make timber out of trees that had been growing many years in the usual slovenly widely planted English fashion by pruning off the straggling lower branches and carefully tarring the wounds, is mere gardening, not economic forestry.

From Keswick, in the broad valley under the crest of Saddleback, we began to get back into more of a farming country, and approaching Penrith the soil lightens sufficiently to admit of arable cultivation, with oats, potatoes, and turnips as the staple crops. At Penrith one might be regarded as in the famous Eden Valley, though Penrith itself lies in a parallel tributary valley and a low ridge has to be crossed before reaching the Eden itself hard by Eden Hall. The valley is occupied by reddish drift soils which lie on Permian rocks to the west and on the New Red Sandstone (its most northerly outcrop) to the east of the river itself, the soils being derived mainly from these two formations, but also from the carboniferous limestones and shales farther to the west. All the land is full of stones and is light and easy to work, some of it rather too light for a season like that of 1911. The Permian

also yields a red building-stone, the material out of which the comfortable farmhouses and cottages are erected, the roofing slates on most of the older buildings being also finely coloured slabs of the same stone.

Most of the farms of the district have from one-third to one-half of their land under the plough, but the usual rotation keeps a considerable proportion under temporary grass. The seeds are left down for two or three years, mown the first year and grazed afterwards; on part of the ploughed-up lea potatoes will be planted, and oats sown on the rest. Then comes a year of turnips, then another oat crop in which the seeds are sown afresh. Wheat is not much grown, and barley, which was general enough but a few years back, has practically disappeared. Potatoes bring in the most money, but by the usual covenants only a certain proportion of the lea can be planted with potatoes. The farming is very dependent upon getting a good crop of turnips, part being drawn off for bullock-feeding and the rest fed off with sheep. Mangolds are grown, but to no great extent. The sheep mostly consist of flying flocks, Blackface crosses and the like, brought off Cross Fell and the long range of similar moorlands which we could see rising like a wall from north to south a few miles across the Eden. Cheviots and Wensleydales were not in favour in the district, and even the Herdwicks seemed to travel west and south rather than to the east. On many of the farms milk production is the most important feature, though the distance from a station and in one or two cases difficulties about a water supply for refrigeration, put obstacles in the way of selling the milk itself, and in consequence a certain amount of butter-making goes on. One farmer whom we visited estimated his

returns from the sale of milk as about £400 a year, from sheep at about £300, and from potatoes at £200, these being the main sources of revenue, for the oats grown were all consumed at home. The butter-making leads to a certain amount of calf raising; the farmer we were visiting kept a pedigree bull and grew on his calves indoors until they were about a year old, when they were sold. His light land did not yield particularly good grazing, so that he did not consider he could grow on his own stores cheaply enough, but preferred to buy Irish cattle in Carlisle market for fattening. The crops in the valley, except on some of the thinnest sandy soils beyond the Eden, had not felt the drought, the effects of which were more to be seen on the grass.

Despite the occasional boulders of limestone in the soil, the land was evidently very short of lime; finger and toe occurs in the turnips whenever they are grown on a short rotation, and spurrey was observed to be a common weed among the corn. The use of ground limestone was beginning to be recognized as a most valuable, indeed, necessary, amelioration for this class of land, better than quicklime because not so burning and more lasting in its action. Plenty of limestone existed close at hand, and one or two firms had erected grinding plant so as to secure from limestone itself those advantages of fineness and easy distribution which has hitherto only been obtainable by the use of quicklime. As the material was novel to the local farmers, one firm had begun to offer it at a price which included application to the land, sending out a machine for sowing and men accustomed to the work, and only asking the farmer to supply haulage from the station and the horses required for the machine. Such forms of letting out particular jobs that are only rarely called

for on a farm and perhaps require special implements and some skill in handling, seem to be growing in agriculture. Steam cultivation and potato spraying are cases in point, where one man equips himself with the outfit and does his neighbour's work at a contract price. In the old days the farmer did everything, not only in the raising, but in the after handling of the crop; nowadays he tends to become a grower only, leaving others to finish the business, especially when the produce is valuable and has to be put through something in the nature of a manufacturing process.

So far we had chiefly been seeing small farms, but we went some distance towards Carlisle to a large farm on the limestone occupied by one of the best-known men in the North of England, with a herd of pedigree Shorthorns that possessed a long history in the show ring. There we did see some grand stock, in which respect we had hitherto been somewhat disappointed, for we had come into the Eden Valley with some expectation of finding superior milking Shorthorns in every farmer's hands, whether small or large, whereas before reaching this particular farm we had seen nothing to compare with the general run of stock of North Lancashire and the adjoining districts of Yorkshire and Westmorland. All the farming on this holding was at a higher pitch; the crops were excellent, and the temporary pastures such as to fill a Southern farmer with envy. But our host was a man of mark, who had been active in public business of all kinds as well as in farming. He had broken away from the local custom of boarding the labourers, and had provided cottages for his own farms, so that he could have married men living permanently on the farm in their own homes.

With this exception we were a little disappointed with the farming of the Vale of Eden, perhaps because we had been led to expect too much. The land is sound without being of exceptional quality; it does not always seem to be farmed to the top of its capacity, and the stock kept are good without being in any way out of the common. In some places rabbits were a curse and really seemed to be getting most of the keep that was being produced in that dry summer. Rents were not high, about 20s. per acre, and the buildings were excellent—indeed, in many cases the houses seemed substantial and extensive, out of proportion to the size of the farm. This may represent the decay of the yeoman farmer. In one village we were told that half a century ago there were fifty "statesmen"—*i.e.* owners—in the parish, which had then become the property of a single man. Whatever might be our opinions about the relative advantages of large or small holdings, we could not but regret a change which had merely exchanged owner for tenant without any justification in the way of creating a more economic holding. But the Cumberland statesman has gone and with him has gone much of the independence and originality which was the birthright of the Northerner.

XI

IRELAND—THE ARDS: FLAX AND POTATOES

OUR knowledge of Irish farming was so slender that we may perhaps not unfairly gauge the ordinary Englishman's opinion on the subject by our own. The picture we had was made up of certain visions of great rolling pastures in Meath, a county of mighty hunters on the one hand and of cattle-driving on the other, contrasted with the distressful West, where men and women cultivate tiny patches of potatoes and oats in little pockets of soil among the rocks, soil that has often been carried there on the backs of the occupiers. These imaginings were also based on the fact that the only Irish produce we knew was butter and the store cattle which are brought over in such numbers into England to be fattened. That Ireland does not consist wholly of grass and bog and stones had been forced on our attention occasionally when we read that the average yield per acre of most of the staple crops—oats and turnips, for example—is higher in Ireland than in any other part of the United Kingdom. Flax, also, continues to grow in Ireland, a crop requiring much labour and skill, whereas it has almost disappeared from Great Britain. It was with some idea of seeing for ourselves where these things are done that at Penrith, instead of going on to Scotland, we

turned south again, and from Heysham sailed to Belfast.

Our first day we spent in the Ards, the low peninsula which runs south and east from Belfast between Strangford Lough and the sea—true Ulster, where the inhabitants are almost wholly of Scotch descent. On leaving the city we ascended pretty rapidly into an undulating country with a light reddish drift soil resting on slaty rock not very far below. One characteristic of farming in this district was immediately manifest in the way the road was blocked from time to time by strings of country carts drawing up seaweed, evil-smelling loads of which were deposited in bays by the wayside. It was not true seaweed, however, but the green Ulva, which flourishes wherever there is a discharge of sewage into the sea, and has become a serious nuisance in Belfast Lough. Indeed, we understood that it was collected by the sanitary authorities and could be had by the farmers for the carting, thanks to which assistance it was being plentifully used, though its fertilizing properties are lower than those of seaweed proper, and particularly of the deep-water wrack which comes ashore on many coasts. The country was divided up into small enclosures with good hedges, and possessed in many ways an unexpectedly English air —Scotch would perhaps be more correct, for the small whitewashed farmhouses and cottages by the roadside were more characteristic of certain parts of Scotland.

We stopped at one small farm not far out from Belfast, a holding of about 40 acres, farmed on a seven years' rotation. Oats were followed by flax and barley, to which succeeded a root crop (potatoes and turnips) manured with seaweed and whatever farmyard manure was available. Oats were again taken after the roots, and with the corn grass seeds were sown, to

remain down for three years. The old seeds were often manured with seaweed or farmyard manure, and artificials were also bought to keep up the standard of fertility. Here we made our first acquaintance with the flax crop, an acquaintance that was frequently renewed in the course of the next few days, indeed at that time flax was in the air persistently night and day as long as one was in Ulster. The crop is sown in the late spring on land that should be in good condition, though not through recent manuring; according to the experiments of the Irish Department, the only fertilizer that is pretty certain of a return is potash in one of its forms, and that more on account of some secondary effect in causing the plant to resist disease than for its direct nutritive effect. In early August the flax, still quite green and showing immature seed heads but with few or no flowers left, is pulled, not cut; and because of the large amount of labour required the farmers lend one another men for the purpose, or "do a join," as it is termed.

After pulling the flax fields look wretchedly foul and weedy; the land is not cultivated after the crop is up and, as the plant shades the ground but lightly, weeds grow apace. The pulling process also seems to leave whatever weeds there are much more visible than they are on a stubble. The pulled flax is made up into little bundles, tied with rushes wherever the farmer possesses a gathering ground close at hand, otherwise by a wisp of the flax itself, and carted off to the retting pond. In this case the pond was a mere hollow dug out in the rock and filled with rain water, which, in the present dry season, had needed to be supplemented with water carted from a spring. Into the pond the bundles of green flax are thrown, and there weighted down under water by large stones.

The water of the pond soon assumes a deep brown hue and a powerful putrefactive odour. The evil effects of flax water upon fish when it finally gets washed back into the rivers is a sore subject in the North of Ireland. In other cases on lower land deep ditches may be cut, or a small stream may be dammed or a pond dug out by the side of a river, so that it can be readily filled. In the pond the bundles lie for a week to a fortnight, according to the temperature and the character of the previous growth (on all public places we saw notices posted by the Department of Agriculture warning growers to steep their flax specially thoroughly in that year of drought), then the bundles are taken out, opened and spread abroad on a field from which seeds hay has been cut. Here the retting process completes itself in about a week, but the grower has to use his judgment when the flax is really ready to be gathered up into stacks. The flax plant has a green cylindrical stalk and the linen fibre for which it is grown forms a sheath round the central core just below the green outer skin. During the retting process the outer soft green matter decays away and also the material uniting the linen fibre to the core or pith, until a stage is reached when a brittle stick of pith can be pulled out whole from the sheath of freed fibre.

After stacking some time between October and February the flax is carted off to the scutching mill, where it passes under a simple tool which beats the straw until the core or pith is reduced to a powder and falls away from the clean fibre. Throughout all the processes from pulling to scutching the flax stalks are kept parallel and not bundled up together so as to entangle the fibre. The scutching mill makes a fixed charge of 1s. a stone, and from the mill the flax is also

sold, the buyers making a tour of the mills in order to see the quality and quantity of the grower's crop before dealing with him. For some years previously the price of flax had been very low and the acreage decreasing, but in 1910 there was a sudden rise of price which bids fair to be maintained, so that a considerably greater area was sown to flax in 1911. The continental area seems to have been reduced, for every farmer knows how scarce linseed is becoming, and how in consequence the price of linseed cake has risen to an abnormal level.

In Ireland we noticed that the seed was not allowed to ripen, the flax being pulled just when the seed heads were swollen but green; this valuable part of the plant is therefore sacrificed to the claims of the fibre, and the retting ponds are covered with the immature flax seeds. In the eastern counties of England flax used to be grown to a certain extent for seed; the ripe plant was cut by a reaper instead of being pulled, threshed, and the fibre roughly retted and sold as an admittedly inferior product. There seem to be two weak spots in the flax business: the seed all comes from Russia (sometimes after a year's acclimatization in Holland), and is a mixture of strains and varieties not so divergent perhaps as the different varieties of wheat which will be found on growing a handful of exported Russian wheat, but still, as one can see in the field, possessed of no uniformity. Side by side will be found short stems and long, some possessed by a tillering habit or a tendency to branch, others forming only a single clean stem. Then the retting process is very crude; there are no means of regulation; its duration and character are entirely at the mercy of the weather and the judgment of the farmer, yet the colour and strength of the fibre upon

which the price depends are entirely determined by the retting. Some waters are supposed to induce better retting than others, but nobody has determined why—indeed, it is only one or two foreign investigators who have studied the bacteria bringing about the change. But a crop that may be worth £20 an acre in the field will pay for a little attention and ought to be preserved in the country.

Naturally enough, so near Belfast a good many milch cows were kept, while a little farther down the peninsula near Newtownards, where a lighter soil prevailed, vegetable-growing was a prominent feature of the farming.

On the seaward side of the peninsula there are a succession of little watering-places between which the farms come down to the shore without any margin of unenclosed land, inland are several great demesnes enclosed each within its high stone wall, then other farms bordering the shallow land-locked bay which is Strangford Lough. Nearly all the farms possess shore rights and draw up seaweed as their main fertilizer, and what the countryside owes to this source of richness may be seen in the clean, prosperous villages and the excellent, neatly-kept farmhouses by the roadside. We visited another farm of about 50 acres farther down the peninsula, and were astonished at the size and excellence of the house and buildings maintained on so small an area. They had all been erected by the occupier and must have cost well over £1200 on an English scale of prices. But the farm was exceedingly well done, all under the plough, and showing magnificent root crops. The flax field was being retted, a small piece of wheat and a larger area of wide-eared barley were just ready to cut, but oats, the chief cereal on the farm, were still very green.

The sale of potatoes formed an important feature in the farming, and among them we saw a very characteristic variety, "Black Skerries," unknown to us though of long standing in the district, and grown because its flavour earns it a special market in Belfast. The hay from a seeds mixture, consisting of Italian rye grass with a little red clover, was being threshed for seed. All through Ulster the harvesting of grass seed is common, and a yield of rye grass seed of about half a ton to the acre at 5s. or so per cwt. may be counted upon. The threshed hay would ordinarily be considered of very little value, but curiously enough finds an export market, being practically all sent to Liverpool for the carters of that and other large Lancashire towns, where coarse, bulky fodder of the kind is valued. As far as oats went we were practically in the South of Scotland, Scotch varieties rich in fat and protein being grown for grinding into oatmeal, the only local variety being one of a similar type called Island Magee, the name of the little peninsula similar to the Ards but on the north side of Belfast Lough. When the Scotch crop is short the oatmeal merchants come across to Ulster to buy, but chiefly to North Antrim towards Coleraine, one of the chief oat-raising districts in the United Kingdom.

The fine crops and excellent management of these Ards farms spoke for themselves. How on their small acreages the comfortable houses we saw all about us could be maintained—the whole bright, thriving aspect of the countryside—wanted a good deal of explanation.

Everywhere in Co. Down we were surprised by the obvious prosperity and comparative wealth of the small farmers, men holding from 40 to 60 acres. To take an example, we were with one man near the

shores of Strangford Lough whose farm was a trifle over 50 acres, on which he had himself built a good modern house, as the agents would say, with two reception and five bed rooms, and a trim flower garden in front. It was clear that he and his family lived comfortably if plainly; he spoke of hunting, though that was in the way of business, because he bred a light horse or two every year. He spoke, too, as an expert of wild-fowling on the Lough; his style, in fact, was that of the English farmer, not of 50, but of 300 acres.

Now it is difficult to compare rents in Ireland with those in England, because in Ireland the landlord has only provided the actual land; the buildings, fences, roads, drains, etc, all the immovables which we know on English estates have often cost the landlord within the last seventy years more than the fee-simple of the land, have been provided by the tenant, and long ago in Ulster became his property under the old tenant right custom which later became legalized all over Ireland. We believe there is only one estate in Ulster, belonging to a City Company, where the English custom prevails of the landlord doing the improvements. The rent on the farm we were considering used to stand at about 20s. an acre. Then came the judicial rent system, perhaps the most demoralizing piece of legislation which even Ireland has experienced, and successive revisions lowered the rent by perhaps 20 per cent. Finally, under the Land Act the farmer bought at twenty years' purchase of his judicial rent spread in annual instalments over sixty-eight years, with the result that he is now paying 12s. to 14s. an acre instead of 20s., and gradually acquiring the land. Without doubt he has been thereby encouraged to better his farming, for though the old tenant right gave him

his improvements, yet he had always one eye on the Commissioners, who might raise—at any rate, not reduce—his rent every five years if the farm looked prosperous. But nowadays as prospective owner he has reformed the drainage, hedges are taken in hand, and the farming is tuned up as rapidly as the profits permit.

To obtain the real rent one ought to add to the annual instalment the interest on the tenant right which had been accumulated by previous work; indeed, on this account we must usually consider the Irish farmer as a substantial capitalist having as much money sunk in his business as the English farmer occupying an area three or four times greater. For example, nearer Belfast we found another farm the rental of which was 25s. an acre, but on which the tenant right had changed hands at nearly £50 an acre.

As a further factor in the prosperity of Ulster, farming labour is very cheap, about 10s. a week; and the farm does not find the cottages, for most of the men live in cottages built by the rural district council and let at a non-economic rent. Still, taking all these conditions into account, and the good prices that can be obtained for potatoes, milk, and on occasion flax, the Ulster farmer needs to be a good manager, working under a favourable climate, to live as well as he does on such small holdings. In the Ards seaweed is also an asset, and of the favourable climate we have evidence in the successes of the one or two firms of rose growers which have made this part of Ireland famous among horticulturists.

XII

ULSTER—ROUND LOUGH NEAGH

AFTER the Ards we set out again from Belfast to make a circuit of Lough Neagh, an area of water big enough to have something of the sea's effect in equalizing temperatures on the land surrounding it. From Belfast to Lisburn we ran through poorish country, mostly consisting of small grass enclosures with perhaps one-tenth only of the whole under the plough. There was no flax; potatoes, turnips, oats, and occasionally wheat formed the staple crops. Much of the hay was about in the fields in small pikes or being carried, but though it was the first week in August and as favourable a season as we are likely to meet with in this generation there was a good deal of clover hay still standing in its pikes. Many of the fields were gathered up into little stooks to be threshed for grass seed, and here and there we saw a party at work beating out the seed over a rail on to a sheet spread in the open. From Moira westwards the land and farming improved, the fields were larger, and the proportion under the plough greater. Occasional orchards, both old and newly planted, were to be seen, for along the south side of Lough Neagh a fair amount of fruit-growing goes on, thanks to the equable climate and the deep soils.

Not far from the eastern shores of Lough Neagh we visited an exceptionally good farm; it was about double the size of the usual holdings in the district, which mostly lie between 30 and 100 acres, and the well-kept hedges which lined the drive from the road to the house set the note of all the rest of the management. The land was nearly level and the soil a free working reddish loam shading off to clay in the bottoms, which were occupied by permanent pasture.

On this farm the harvesting of grass seed formed a prominent feature; not only was the usual rye grass grown but also Crested Dogstail, a special venture of this particular farmer. The land has to be made particularly clean and also brought into high condition, but in any case the crop leaves the land very foul, because Crested Dogstail makes but little growth in its first year and never forms a close sward covering the ground. The grass is cut with a scythe, gathered into bundles like small sheaves of corn, which are afterwards built into shocks in the field, carefully crowned to shoot off the rain, until they are mellow enough to be threshed. The yield of seed is never high, about 5 cwt. per acre, and the returns are very variable, but £3 to £5 per cwt. may be obtained for the seed as it leaves the farmer's hand. The grass is only sown as a one year's ley, and a little clover may be mixed in, as it improves the quality of the threshed hay, which, as in the Ards, is all exported to Liverpool. Besides its rather speculative character and the difficulties of harvesting, the pure grass ley forms a very poor preparation for the succeeding oat crop, for which a liberal manuring must be applied. Our host was also experimenting with one field of Cock's-foot for seed, but the dry season had resulted in but an indifferent crop.

His main business was perhaps potatoes, and he had developed a considerable business in "seed." An immense barn was devoted to storage, because it was found much more convenient for winter deliveries in bad weather than the usual pits, though great care had to be taken to ensure ventilation and prevent so large a mass heating. Our host sprouted most of his seed, for which again the barn was convenient, and was hard at work spraying at the time we were going round. Little disease was in evidence that year, though on the very same day we noticed a few leaves affected in a garden. The only cereal generally grown in the district was oats, and that wholly for consumption, there being little or no sale and at a low range of prices. In consequence the finer Scotch varieties we had seen in the Ards had given place to the coarser sorts yielding grain only suitable for stock.

On this farm we saw a choice herd of pedigree Shorthorns, and though our host complained that they were not in their proper condition for the time of year because of the shortness of grass through the drought, to any one who had just come from the scorched English pastures they looked to be thriving and on an abundance of keep. No dairying was done on the farm, the sale of yearlings being the form of realization adopted. No sheep were bred, but every year a certain number of lambs were brought off the mountains and fattened on the grass with turnips, as the land would not stand folding. On another farm our host went in for horse breeding, and there he had a mare of what is sometimes distinguished as the old Irish draught breed—an active horse that will do light ploughing and other farm work and is particularly adapted for artillery and other transport

purposes, which again, when crossed with a thoroughbred sire, will yield the typical Irish weight-carrying hunter. The complaint among horse breeders is that mares of the right stamp have become scarce; the thoroughbred has been used so much that only weeds are left, and the Irish Department of Agriculture is now trying to get into touch with the remnants of the old breed and work up a pure stock again. On this farm our host had erected cottages of his own for his men, to whom he was also paying about 12s. a week, with a patch of potatoes and a pig. Labour was not quite so abundant as it had been, owing to the constant demand for men from Belfast. The women still work in the fields at such jobs as haymaking and hoeing turnips, but he noted that they were less willing to come out than formerly. Not only was the pinch of poverty less severe, but from Belfast a large amount of embroidery work is brought out to the cottages, and, poorly paid as every such home industry is apt to be, the women prefer it to work in the fields. In this district, which, if not so rich as the Ards, still bore every sign of steady prosperity, the farms had all been bought—our host indeed had acquired his nearly twenty years ago under the old Act—so that the flourishing condition of the farming industry might be associated with the fact that ownership had been operating for some time.

We continued to follow the eastern side of the Lough; the country northwards became a little poorer, with, as usual, more grass and smaller enclosures. Many of the old land pastures looked poor and neglected, overgrown with knapweed or hardhead in particular; some fields must have lost a fifth of their grazing through the prevalence of the weed. Even a scythe would have effected an enormous improve-

ment, but, like other gifts, the grassland is apt to be the most neglected part of the farm. Still there were indications of a renewed interest in farming, a patch or two of young fruit, and a large new osier bed by the roadside, clean and well planted on land that really seemed unnecessarily good for osiers, which can be made to answer well enough where ordinary crops get drowned.

By the time we had reached Antrim the arable farming had nearly all been left behind, and the fields were occupied by cows of the usually Irish Shorthorn type, but showing evidence of care both in breeding and management. Sheep were rare or non-existent; the other live stock chiefly in evidence were the inevitable goats and the poultry which occupy every Irish road in force. Only on one farm did we see them in the fields, and there they were tethered by the leg and ran round at our approach in wildly fluttering circles. We have heard much of late of the increased trade in Irish eggs and poultry, but there is still plenty of room for more, since at present they occupy only the roads and not the fields.

On the northern side of Lough Neagh the road leads by several great demesnes with the enormous stone walls characteristic of Irish estates, walls that generally speak of work found for the people in famine times but always of the cheapness of labour. After the demesnes came stretches of bog, bright enough just then with heath and cotton grass, dotted here and there with stacks of peat drying in the sun, but at present valueless for agriculture. The drainage of the Bann valley is a sore question that has never got beyond the stage of projects, the magnitude of which has daunted every public body to whom they have been submitted. But after Toome Bridge and

on the western side of the Lough the farming grows more varied; the arable land sets in once more and flax again becomes common, with occasional fields of wheat in addition to the oats, potatoes, and turnips which form the staple of Irish farming. Between the Lough and the mountain range of Slieve Gallion, which bounded our westward view, there is a broad stretch of gently undulating land, covered by glacial drifts on a limestone foundation. Most of the land is under cultivation, but as it lies on a recently glaciated rock surface it includes depressions and undrained hollows, often basins on an otherwise elevated area, in which peat bogs form with an Irish rainfall.

In this district, which was generally well farmed, though the villages and towns looked poor and slatternly compared with those farther east, we visited another excellent farm of about 100 acres. It was one of the earliest farms to be purchased, and the instalments were only equal to a rental of 12s. an acre, but years ago the tenant right amounted to £1200 and had probably risen to something in the neighbourhood of £3000 at that time. Certainly the house and buildings were exceptional, the house such as one would find on a 500-acre farm in England, and the buildings extensive and substantially built. Several of the Ulster farmers were disposed to deprecate their expenditure on buildings, though in most cases it had been carried out, if not with their own hands, at any rate by their own men, and without the intervention of either architect or professional builder. Our host had certainly lavished labour without stint upon his property; the whole place had been drained, twenty fields had been thrown into eight and divided

by trim, well-brushed hedges, the condition of which as much as anything else indicates the keenness of the occupier of a farm. On this farm, as on most in the neighbourhood, rye grass was harvested for seed, and we saw one or two fields still in stook, the crop being just about ready to be carted in and threshed. But the exceptional feature of the farm was its root crops, which really looked enormous for this or any other season. Our host spoke of having weighed 56 tons of swedes per statute acre and 18 tons of potatoes, and in face of the growth we saw the figures seemed probable enough.

He did a considerable business in seed potatoes, sending them all across to Lincolnshire; in fact, he had been the first man to demonstrate that potatoes grown in Ireland afford as good a change of seed for English soils as the Scotch grown seed that is so generally planted. The intensive potato growers of Lincoln and Cambridge and even of the Lothians find it desirable to import seed at least every other year from a cooler and more backward climate, Forfarshire being one of the great sources of supply. But Ireland has proved to be capable of producing an equally good strain of seed, the cool equable climate leaving the seed potatoes with that touch of immaturity which seems to ensure their starting readily into growth in the following spring, whereas potatoes harvested from a hot, dry soil often start slowly and weakly or even fail to sprout at all.

The soil was a reddish free working loam resting on limestone rock not far below, but the turnips were all drawn off for the large head of horned stock on the farm. A quarry of the limestone had been opened, and the rock was burnt to lime not only for the farm, but for sale, all the land in the district

being benefited by a dressing of lime, despite the proximity of the limestone below. On this farm there was no flax, the only cereal grown being oats, all of which were consumed except a few sold away as seed corn. The finer oatmeal varieties had been exchanged for the stiffer-strawed fodder oats, stiffness of straw being a most desirable factor on land that had been brought into so high a condition. Potatoes, hay seed, and a few seed oats constituted the crops sold away; all the rest of the produce was devoted to a herd of pedigree Shorthorns, of which over fifty head were maintained on an area of less than a hundred acres, though not of course without a considerable expenditure on cake. The herd is well known, and the bull calves and heifers command good prices; the district immediately round Tullahogue is indeed of some repute for Shorthorn breeding, there being several registered herds within a comparatively small radius—more, we were told, than in any other area of equal size in the United Kingdom. Of course all the stock raised on the farm were sold for breeding, but a certain number of stores were also brought in every autumn to eat up the root crop and be fattened off before the spring.

Being more remote from large towns, wages were, if anything, even lower than on the other side of the Lough—10s. to 12s. a week, and 8s. for ploughmen and stockmen who lived on the premises. Nevertheless, the "Union" (Rural District Council) cottages by the roadside in which the labourers lived looked neat and prosperous enough, without the air of shabbiness and despair which is apt to mark the outskirts of an Irish town. All the way round the Lough to Armagh we were in a similar class of country, interspersed with occasional stretches of bog,

and perhaps not quite so well farmed, with a smaller proportion of tillage, though still including some flax. Armagh is a striking looking town crowned by the old Cathedral, but altogether dominated by its new Roman Catholic rival—immense and imposing, but with a touch of the skyscraper about it, set on an adjoining but higher hill.

Thence to Newry we crossed the low range which really forms the southern boundary of Ulster and into the valley of the Glenrye to Newry, the entrance to one of the most exquisite of the many beautiful roads in Ireland—that which runs along the southern side of Carlingford Lough, with the shapely heights of the Mourne Mountains across the water, soft rich woodland below, bare moor and crag above. An outpost of the same granitic mass has to be crossed before Greenore is reached, from which point southward, between the hills and the sea, stretches a fertile plain containing some of the best cultivated land in the country. It is especially suitable for the growth of barley, the low rainfall and the equable climate making for quality, until over the few favoured square miles there is actually more land under barley than under any other single crop. Most of the farms extend to about 50 acres, though the one we visited was exceptionally large; we were informed that they had not yet been bought, though the price had been fixed and would take effect as soon as the Commissioners had money available. Rents were a little under £1 an acre, and the tenant right would be usually equivalent to another equal annual charge upon the farming. The soils were evidently of drift origin and largely due to glacial action, for the grey free working loams were full of stones of all sizes and origin, on some of which, when dug out of the

unweathered subsoil, glacial scratchings could be seen. Despite the proximity of limestone and the presence of occasional boulders of the same rock, the soils showed evidences of a lack of lime, corn marigold being a not uncommon weed among the barley. We found a five-course rotation in operation, not unlike one that is practised in the Lothians, another potato and barley growing district near the sea. Beginning with turnips manured with most of the dung available, barley was then taken, and one-year seeds were sown in the barley. The ley was manured with seaweed before being ploughed up, and a crop of potatoes was next taken to be followed once more by barley. Very few oats were grown in this particular area, and we saw only one field of wheat. Practically all the land was under tillage farming, though on the heavier soils the ley might be left down for three or four years and then made very fine pasturage.

Barley is thus the leading crop, and its cultivation shows a marked and indeed admitted improvement as a result of the experiments conducted by the Department of Agriculture with the co-operation of Messrs. Guinness, the brewers. The main result has been the introduction of a pure strain of Archer barley into Ireland in place of the very mixed seed that was formerly handed on from one farmer to another. The pure seed was distributed widely as soon as the experiments had demonstrated beyond all the limits of error attaching to such work that this particular strain gave a consistently higher yield, sufficient to more than make up for the possible inferiority of quality which is ascribed by some judges to Archer. In the Dundalk district, in which wide-eared barleys of the Goldthorpe type had been universally grown, Archer was now making headway; indeed, we saw it on field after field

long after we had left the farm on which the experiments were in progress. The barley harvest was just beginning at the end of the first week in August, about a fortnight before the usual time. The farm also showed very good crops of roots; potatoes were a valuable item in the farming, as the proximity to Greenore enabled them to be marketed cheaply in Lancashire.

On such a farm stock are generally subordinate to the crops, and here were to be seen only "flying" flocks and herds, the more fugitive because our host could deal on either side of the Channel as the markets served. He kept a few cows for milk on which to rear calves; he bought stores in the autumn, and either sold them again in the spring as forward stores to the Midland graziers or fattened them off. Again, he bought cull ewes of the mountains in August, ran them with a Shropshire ram, and fattened off both ewes and lambs together. It was a very business-like style of farming in a smiling country under the brilliant summer sunshine, though we could imagine it hard and desolate enough when the Mourne Mountains are veiled in cloud and the cutting winds sweep in off the sea.

From Greenore to Dundalk there is a very good stretch of land, nearly all of it under the plough and well farmed in comparatively small holdings and rather restricted enclosures. Barley is still extensively grown, the balance being held about equal between barley and oats. Potatoes and turnips form the other chief crops, but from our cursory examination it hardly appeared that the seeds hay occupied the fifth of the land one would at least expect. Dundalk has breweries and distilleries, which form a market for the barley and explain its persistence in the district.

XIII

IRISH TOBACCO

BEYOND Dundalk southwards we continued through a pleasant country, with rather larger enclosures and a considerable proportion of permanent grass. The arable was moderately well managed, oats being the chief cereal, though barley was still common, mostly wide-eared varieties, though we did find one field of true Chevallier. In nearly all cases also the seed was deplorably mixed, and in one field there was a destructive attack of smut. There were fewer potatoes and the turnips were later and not so well grown as those we had seen on the other side of Dundalk. The indifferent character of the farming was perhaps most to be seen in the permanent grass, which generally looked very poor and was full of ragwort. It was generally grazed by Shorthorns of very fair quality, but no sheep were to be seen. The farmhouses lay by the roadside, but they looked distinctly less prosperous and well-cared for than those in Ulster. Finally, after Ardee we left the tillage lands behind and entered a gently rolling grass country, with fields of from five to ten acres in extent, divided by tall well-grown hedges. The turf was sound and good, though cropped rather close after the dry spell; it was also free from weeds and showed other signs of being looked after. Only occasional patches remained under

the plough; otherwise the whole countryside seemed given up to grazing both of cattle and sheep, and we tested it thoroughly, for we lost our way hopelessly in a tangle of lanes between Ardee and Navan.

At Navan we were among the famous grazings of Meath, in the heart of that great sweep of grassland so well known to hunting men, but we had come less to see the cattle than the experiments in tobacco-growing conducted by Sir Nugent Everard, whose determination and ingenuity has done so much to win back for this crop a place in British agriculture. At the first blush one is inclined to think of tobacco as a tropical or sub-tropical crop; Havana, Manila, India, Turkey leap to mind, even Kentucky and Virginia enjoy summers with heat and sunshine that we can only parallel in such favoured years as 1911. But we are apt to over-estimate the importance of sunshine to crop growth, for in some of the places mentioned it is necessary to shade the tobacco to obtain the highest quality of leaf; we also forget that Germany, Holland, and Belgium, even Norway, grow tobacco, not perhaps of high quality, but at least a good merchantable article. Again, tobacco was once a British crop; we have spoken before of its destruction in Gloucestershire in Charles II.'s time in the interests of the Customs and of the proprietors of the Virginia plantations, and less than a hundred years ago it was grown commercially in Wexford and similarly destroyed by legislative action in the interests of the importers.

However, speculations as to whether tobacco can be grown in the United Kingdom are futile; Sir Nugent Everard and his colleagues do grow it—grow it in bulk for sale either pure or blended with foreign tobacco. Irish cigars, cigarettes, and pipe tobacco are

procurable in Dublin, and the public has so far willingly absorbed as much as was offered to them. As yet it is by no means of the finest quality; there are barely 120 acres grown, and even that area has to be maintained by a substantial subsidy, but considering the entire lack of knowledge with which the experiments started as to varieties, methods of management, and curing appropriate to the country, the progress has been surprising and a commercial success is within sight.

Three difficulties attack the would-be tobacco grower at the outset, even if he has the necessary permission to attempt the crop (and a few years ago the Inland Revenue authorities would sanction no trials); he has to select out of many hundreds the varieties suitable to his soil and climate, he has to dry and cure the crop after growing, and he has to find a market. Tobaccos for cigars, cigarettes, or pipes demand different varieties, different soils, and management, and the leaf when grown is valueless until it has been manipulated into the form in which the manufacturer is accustomed to receive it. Moreover, the manufacturer has his traditional sources of supply and the usual trade belief that these are the only possible sources; he also possesses that mixture of mental inertia and legitimate business caution which disinclines him to disturb his accustomed routine. Lastly, the manufacturing of tobacco is in very few hands, and is very largely controlled by one combination.

Experiments in tobacco-growing began in Ireland under the Department of Agriculture in 1900. Since 1904 about 100 acres have been grown under subsidy in Louth, Meath, King's County, Wexford, Tipperary, and Limerick, and since 1908 three growers have added about 20 acres as commercial ventures. The

Department supplies an American expert to visit and advise the growers, but Sir Nugent Everard, who has throughout been the leader of the movement, himself possesses American experience. It is needless here to recount the difficulties that were encountered and the many failures that were experienced, but already the result has been to ascertain what varieties will grow with prospects of success, how they must be cultivated, and particularly how they can be cured and prepared for market in the Irish climate.

Any doubts one might have as to tobacco-growing in Ireland would be removed at the first sight of the fields on Sir Nugent Everard's demesne in early August, fields of five or ten acres broken up into blocks by narrow belts of tall growing hemp as wind-breaks, and covered with uniform rows of tobacco plants about 3 feet apart and as much high, with their broad shapely leaves touching across the rows. The uniformity and the vigour was what struck one most; the plants are raised in frames and set out towards the end of May, each plant is confined to a single stem and topped to prevent seed formation, whereupon it grows with the gusto of a field of drumhead cabbages. The most luxuriant of all was a field of *Nicotiana rustica*, a coarse variety which may serve for the manufacture of nicotine for horticultural purposes, the whole raised from some plants found in a garden in Wexford, where they had hung on from year to year since the end of the Irish industry eighty years ago.

Already by early August the prolonged harvest was beginning; the lower leaves as they first begin to change colour and droop are stripped off, and the process may be continued day by day until well into October, but more generally when the upper leaves

are getting ripe the whole plant is cut down and left to wilt for a time. The grower has now to begin the curing, and Sir Nugent Everard showed us the elaborate barns he first constructed on American models, with adjustable ventilators and steam-pipes by which the temperature could be regulated or the air moistened when necessary. Little by little he found he could simplify; the injections of steam so necessary in the dry American atmosphere were superfluous in Ireland, until at last he found that the first stage in the preparation of pipe tobacco could be managed in a portable shed made of a deal framework roofed with tarpaulin and covered at the sides with canvas, the whole costing less than £10 to deal with an acre of tobacco. These barns are filled with leaves strung upon laths so that they hang down without touching; the leaves gradually change colour from green to yellow and then brown, and the process is regulated and assisted at times by open fires of wood or coke on the floor.

Of course, when the tobacco has been through this process it is by no means ready for the manufacturer; it has to be re-handled, *i.e.* graded and put through a process of fermentation which develops the flavour; but the barn curing is as far as the farmer ought to deal with his crop, for it will then both keep and travel, and can be passed on to a centre where the produce of many growers can be duly worked up. Even in the curing there are nice points to be observed, according to the style of tobacco desired, but the re-handling is so much more critical a process that it is outside the range of an ordinary farmer.

However, it is now claimed that enough has been learnt about the right kind of seed to grow and the methods of curing in these cheap barns to enable any

good farmer to take up the crop with some chance of success if he can be given access to a re-handler and allowed a subsidy or rebate, which is really no more than the equivalent of the extra trouble and expense he is put to by the Excise authorities, for the crop has to be grown in bond, as it were. Cigar and cigarette tobacco demand more care and more expensive methods of handling; it is experiments on these special articles that have been so costly, like the famous glass barn erected by Lord Dunraven, who has been one of the most indefatigable supporters of the movement. As we looked at the crops as they stood and meantime tested last year's product, as we considered also the balance-sheets, we could hardly doubt but that Sir Nugent Everard and his colleagues were on the verge of commercial success. Year by year the cost of production has been diminished and the value of the crop increased, and considering how experience alone can suggest economies and perfect methods of cultivation, the successful termination of the venture and the establishment of a permanent industry seem now only a matter of the careful organization of the re-handling process. Probably the crop in the British Isles will never make big profits, its value will lie in the fact that the proportion the gross return bears to the rent is large, and when there is so much money at stake the openings for skill are considerable. We of all people ought to specialize on such expensive crops as can be persuaded to flourish in our climate. Moreover, out of the £22 or so per acre that tobacco costs to grow in Ireland as much as £6, 14s. is paid away in wages, even at Irish rates of 10s. a week. It is essentially the kind of crop for a small holder who can handle plants individually, provided they are valuable; he and his children, for example, can harvest all those

lower leaves at the right point, whereas the big grower has to let them over-ripen to the stage of "trash."

Of course there are many men experienced in Irish affairs who look upon this tobacco-growing movement as a will-o'-the-wisp, vainly diverting the Irish farmer from the straightforward prosecution of his business. Why trouble about an exotic like tobacco when over many parts of the country men do not know how to grow turnips? Even in Meath the little graziers have forgotten how to plough! The answer is that every farmer is not being counselled to grow tobacco; and again, that one vitally interesting and remunerative crop, even if only small in extent, has a way of stimulating and tuning up the management of all the rest of the farm.

XIV

CENTRAL IRELAND: THE GRAZINGS AND LAND HUNGER

THE tobacco-growing by no means exhausted the agricultural interests of Randlestown; there were also to be seen good crops of all kinds, the process of breaking the hemp grown as wind-breaks between the tobacco, the rope made from the fibre, and, not least, the best known herd of Hereford cattle in Ireland. Here again Sir Nugent Everard does not see exactly eye to eye with the conservative Irishmen, who, because Ireland is famous for its Shorthorn stores and milch cattle, would banish all other breeds. But the virtues of the first cross for putting on flesh rapidly were to be seen in some tremendous animals grazing in the park, animals being prepared to continue our host's repeated demonstrations of the virtues of the Hereford at the winter shows at Ball's Bridge.

In the main it is a grazing country round Navan, so rich and so valuable for this purpose that it is difficult to see how it can be made to pay equally well under tillage. Our host farmed his own demesne lands, having sold the rest of the estate under the Act; and the vagaries of Irish land legislation were never more curiously illustrated than by one case he recounted of land in the district formerly let to a tenant at 40s. an acre, and bought on this basis, or rather on that of a reduced judicial rent, only to be

re-let to the original landlord at 65s. an acre. The former tenant now lives in the town on the difference between the instalments he pays to the Estates Commissioners and the rent he receives from his former landlord! Of course these grazings are let for only eleven months lest the occupier should begin to acquire a tenant-right, and the original justification for tenant-right is less here than in any part of Ireland. The grass is so much a sheer gift of the soil that the buildings and improvements are comparatively of much less account than usual. The art of obtaining judicial reductions of rent was well understood, even to the coining of a word—"preparating" the land, for the process of blocking up the outlets of the drains and generally getting up a miserable look on the farm some six months before the visitation of the Commissioners was due. One of the most learned farmers in Ireland, holding, moreover, an official position for the promotion of agriculture, told us that he found it worth his while to run his farm down prior to the visit of the Commissioners. Such is the inevitable result of a Land Court; a premium is placed on bad farming, and the tenant is tempted to aim at a reduction of rent rather than the more distant profit accruing to enterprise and good management.

But in Ireland to-day all this is ancient history; the farmers are acquiring their land and are free to work out their own salvation without obstacles or temptations. The graziers, we were told, had been hard hit during that year of drought, a drought from which the Irish pastures suffered during the critical month of June, when a bullock should do the best of his fattening. In the spring good store cattle commanded an unprecedented price; they had grown but little during the summer, not enough to meet the fall

in the market resulting from the general shortage of keep, so that many men after paying £3 an acre for the land, found their cattle at the end worth less than their cost price.

From Navan to Dublin the road runs through this same smoothly undulating grass country, occupied mainly by cattle and a few sheep, but otherwise sparsely populated to a degree. The farmhouses seem few; one only sees here and there a labourer's cottage by the roadside, the villages sparse and thinly populated; only the demesnes broke the monotony of the grass. The preoccupation with grazing was to be seen by the goats belonging to every cottage; only in this way can the Irish labourer get milk, of which none is to be bought. One could not but sympathize with the men who want to break up these grazings, even though their methods are such as no State can tolerate, and the economic result perhaps doubtful. On the one hand are the landless men of Ireland, not merely the surplus population of the "congested districts," but the labourers, who are none the better off now the farmers have obtained the land; on the other hand lies this fertile country, hardly carrying as it seemed an inhabitant per hundred acres. But when land can command £3 an acre to graze, it is difficult to see how a farmer could earn such a rental by putting it under the plough; yet tillage is the only method by which a monetary return can be obtained from a small holding sufficient for the support of a family. But it is debateable whether the Irish grazings really earn the very high rents that are paid for them; of course the grazier makes his profit, but more by turning into marketable stock the half-starved yearlings bought from the little men in the poor country west of the Shannon than by grazing as it is known in England.

The profit is made at the original breeder's expense not by turning so many acres of grass into so many pounds of beef, and the system will cease as soon as the mountainy man who breeds can learn to get his stores ready for the British market without the intervention of the middleman—the grazier.

Out of Dublin again south-westwards we ran through the same grass country until in Kildare we were well into the great limestone plain which forms the centre of Ireland. The rock is generally buried deep beneath superficial drifts of glacial origin; sudden ridges like ramparts of gravel and stones—the eskers—mark the lines of flow of the old ice, which also scooped out flat undrained hollows, in which peat has accumulated. It is a wide country of green pasture and bog under a great arch of sky, with always on the horizon, seen far through the soft transparent air, one of the low ranges of smooth hills which here and there break up through the flat limestone floor.

In Southern Kildare the grass begins to give place to tillage, and on the Duke of Leinster's estate, one of the first to be sold under the Act, we saw a really big farm in a district where the holdings are generally comparable in size to those of England. The soil was on the light side, a stony drift, and though well farmed had felt the drought somewhat, so that the spring corn crops were below their usual average. A somewhat unusual rotation was followed, barley being sown on the ploughed-up lea and followed by a second crop of barley, which in its turn was succeeded by roots as a preparation for wheat. Our host explained the large proportion of barley by the fact that barley gave in Ireland a heavier yield than oats, and in his district at least could always be sold, whereas oats could only be grown for consumption and never

commanded a good price in the market. He himself only grew oats for his own horses and for seed; in fact, he rather specialized in growing seed corn of all kinds, and had many varieties and experiments upon his farm. He was disposed to increase his acreage under wheat, and was in search of a good spring wheat that could come conveniently after turnips in his rotation. We noticed the tall feathery-headed *Agrostis* as a troublesome weed in the corn here; it is one of the many creeping-rooted grasses to which the name of "couch" or one of its variants is given, and occurs sporadically on sandy soils in England, but always intensively when it does take hold.

The turnips were all drawn off the land for a herd of pedigree Shorthorns, and also to some extent for the sheep, of which a flying flock was kept and fattened on the grass, for even that comparatively light land poached badly if sheep were folded on it during an Irish winter. White-faced ewes were bought and crossed with a Shropshire or other Down ram, ewes and lambs being sold off together when fat. Sheep in Ireland do not seem to have attracted the attention of the breeder in the way that cattle and horses have; there is only one defined native breed—the Roscommons—and over the greater part of the country they seem to be of a very variable and unfixed type. As defined by the Flock-book, the Roscommon should be a hornless, white-faced, big, slowly-maturing sheep with long and somewhat lustrous wool and a strong constitution to enable it to pick up its living entirely off grass and to stand the heavy rains of the West of Ireland. It is generally credited with a considerable infusion of Leicester blood of many years standing, and indeed to-day looks not unlike a heavy, coarse Leicester. White-faced sheep of this class are found

all over the lowlands of Ireland, though their owners would rarely define them as Roscommons. Then there are mountain sheep—generally of a more or less Cheviot type—and Scotch Blackfaces on the hills of Ulster. But the wet climate, the small proportion of arable land, and the lack of large adjacent meat markets all combine to render sheep comparatively unimportant in Ireland. Our host told us that labour had become a little scarcer; he was paying his men 11s. a week; but his chief complaint was of the numerous holidays, as, for example, on that very day his men were off to an athletic sports, which explained the beatings of a distant drum that had from time to time fallen on our ears. When we left we met both men and girls hurrying along the roads, and passed near enough to the field to get a taste of the quality of the whole band, mixed with the cries of the people cheering on their favourites, while we picked our way delicately through a stretch of road littered up with screws and vehicles of every imaginable stage of age and repair. From Kilkea we changed our course a little and headed north-west through Athy, Stradbally, and Maryborough, towards the distant Slieve Bloom mountains.

The country did not change much in its aspect; big peat bogs alternated with the cultivated lands, which in the neighbourhood of Stradbally and Maryborough showed a fair proportion of tillage land neither specially well nor ill farmed.

The towns for all their wide streets and whitewashed houses looked gaunt and dull in the absence of gardens, though the district council cottages were often bright enough, and the chief occupants of the roads were the poultry and the goats, with the ass carts drawing peat.

West of Maryborough the proportion of grassland

increased until at Roscrea, which marks the pass through which both road and railway penetrate the Slieve Bloom range, our road turned northward again to Birr or Parsonstown.

We were now in West Tipperary, close to Limerick, in a county in which dairying assumes considerable importance, and where co-operative organizations, not only in the direction of creameries, but also for the purchase of manures and seeds, and again, for the sale of eggs, have made considerable headway. But we were not anxious to see creameries, which have been reduced to a system, and, except for size, are now much the same all over Western Europe, and we turned aside into the low and frequently boggy country which slopes down towards Lough Derg and the Shannon, there to visit a large and energetic farmer. Occupying 400 acres in one farm, with more land outside, our host was a very large farmer for any part of Ireland, but then he was a man of education and capital—an example of the gentleman farmer out for business and not merely holding land as a pastime or for the sport it brings in its train. He represented a type that is much rarer in Ireland than in England, though some of the younger landlords are now taking to the active management of their demesnes, the only land left to them after purchase. The soil was a light loam resting upon limestone, and extremely stony; on the lower parts of the farm it passed into a black peaty soil—the remains of a former bog. The rent stood at about 12s., but the tenant-right on the place would amount to nearly £10 an acre, so that to compare it with an English farm the rent would have to be reckoned at about 25s. an acre—no light burden even for good land, considering the remoteness from the rail and the distance thence to big markets.

About one-half of the farm was under the plough, a higher proportion than was usual in the district, where our host considered there was a tendency for tillage to decrease. In part he set this down to increasing difficulties over labour, due both to an actual scarcity through emigration and also to the trouble caused by the numerous holidays; in part, again, the good prices realized by store cattle of late years have persuaded men to stick to milk and calf rearing. The general tendency in Ireland has been supposed to be towards an increase of tillage; for instance, we have heard much of the gain of 67,000 acres in 1910, but as this followed a loss of nearly 46,000 acres in 1909, and was succeeded by a loss of 22,000 acres in 1911, despite an increase of over 20,000 acres in the flax area, the fluctuations cannot be regarded as showing as yet any definite trend in one direction or the other. The exceptional summer of 1911, the resulting failure of grazing and the store stock market, together with the rise in prices of cereals, did induce farmers to plough more of their land, but as yet no definite movement towards arable farming is manifest in Ireland. We did hear that the small farmers, alarmed by the high price of flour, were beginning to grow wheat again and get the grain ground locally for their own consumption. An increase of tillage is, of course, the great necessity for Irish agriculture, especially in the areas that have been resettled by the operations of the Congested Districts Board. The output from a 40-acre holding, either in food or money, can be but small if it remains under grass; it can rarely pay for any extraneous labour or support more than the occupier. Moreover, grazing is lazy farming, and though it may leave abundant opportunity for improvements both in the land and the stock, there are never the same openings for increased

production nor the call upon the energies of the farmer that arable land provides.

The arable land of the farm we were visiting was worked on the four-course system, though oats largely took the place of wheat, and potatoes occupied the greater part of the root break. Barley-growing was an important feature, Tipperary being one of the chief barley-growing counties of Ireland, second only to Wexford. Our host did a considerable trade in seed corn, both of barley and oats, and on his farm we saw, in addition to the Archer barley which has been introduced through the experiments of the Department, one field of black land sown with the Sprat barley we had only seen elsewhere in the Fens. It had grown with great vigour, and formed a coarse and rank crop, partially lodged even after the fine summer; but its most extraordinary feature was its deep red purple colour, suggesting an affinity with some of the Oriental barleys with their black or purple-skinned grain. The farm carried some specially heavy crops of oats, good for any season, but remarkable for 1911; indeed, the whole of the land was being maintained at a high pitch of fertility by a considerable expenditure on artificial manures. Harvest was in full swing though August was barely a week old, and the settled weather promised that it would be carried through cheaply and quickly at an early date, such as few men could remember in Ireland. Indeed, we heard later that the Irish farmer got his threshing done if anything too early, for he sold the greater quantity of his barley before the great and quite unexpected rise in price that occurred in the autumn of 1911 had taken effect. After the slump in barley prices in the previous winter and the accounts one had of the stocks carried by the maltsters, with a fair if not heavy crop in prospect,

who would have anticipated that Norfolk barley would be selling in October at 40s. a quarter! The potatoes we had seen in Ulster had rather spoiled us for ordinary crops, but the considerable acreage on this farm was by no means ordinary, but fit to set beside the results of the most intensive growers in any part of the United Kingdom. The climate of Ireland certainly suits the potato; the equable temperature, the abundant moisture, and the long period of growth that ensues all make for heavy yields, and again, the plant is none the worse for the touch of peat in so many of the soils. The permanent grass was also in excellent heart and showed a fine sole full of white clover, always prominent in the late summer when rains have followed a period of heat and drought. But we were told the pastures always carried a good deal of clover, as a result of careful management and applications of basic slag, to which the land responded freely. The grass was occupied by pedigree Aberdeen-Angus cattle, of which our host possessed a notable herd. Though they are very far from being the cattle of Ireland, our host yet found a good market for bulls, because on the ordinary Irish Shorthorns they get stores with exceptional capacity for quick growth and fattening. The stores would be mainly sold to England to be finished on the turnips of the eastern counties, for the Aberdeen-Angus crosses, like the pure breed, are essentially animals to be tied up rather than to fatten on the grass. Our host also bought in a certain number of native yearlings to carry on, or if occasion served, to fatten for local markets. Altogether it was a thoroughly modern, energetically-managed farm, and the occupier was not only making the land do its duty, but by his example and his advice was a factor of great value in tuning up the whole of the agriculture of his district.

Our next stopping-place was Nenagh, a big, formless town, dependent entirely upon the agriculture of the country around, and some of our party acquainted of old with Nenagh were not slow to remark evidences of increasing prosperity in the town. The most notable feature, perhaps, was the number of agricultural implements, especially reapers and binders, on view in the street; evidently there was an improving market for farming tackle, and the shops themselves showed here and there a fresh coat of paint or a regilded sign, as though trade was producing a few shillings to spare and a little encouragement to enterprise. Our route now lay due south to Cork, but we had to wind considerably to turn the ranges of Old Red Sandstone hills which break up through the limestone floor in the south of Ireland. From Nenagh to Thurles the road lies between the Keeper and the Devil's Bit Hills, a country of small farms with perhaps one-third of the land in tillage; thence the road traverses the limestone plain again to Cashel. Approaching Cashel the the farming improved, the corn crops were very fair, and we saw more barley than oats, more roots than potatoes. Cashel is one of the holy places of Ireland, with its exquisite ecclesiastical ruins set high on a great crag of limestone in the midst of the town, but the town itself is depressing in the extreme—houses in every stage of unoccupation and ruin, and a general air of decayed greatness and present squalor over all. Thence to Cahir, the proportion of tillage declined, and the farms were mostly in grass and stocked with milch cows; the soils are thin and the limestone near, but the bogs are no longer in evidence; indeed, from Nenagh southwards we saw little or no bog. At Cahir, a bright little town, we entered the broad green valley between the Galtee and the Knockmeledown

protracted harvest, as to introduce green fodder crops—rye, vetches, broadcast turnips, rape and kale, which can be fed to the cows and so increase the milk output of the holding. An acre of tilled land in green crops will carry twice as much stock as an acre of grass. But, of course, men have to be taught this new kind of farming, and, above all, provided with implements that will make their labour economical. Yet a farm of 30 or 40 acres, even if the holder can raise the necessary capital, cannot afford to possess the range of implements necessary—a mowing machine for the few acres of hay, a binder for the small acreage of corn, a potato-digger, and the appropriate ploughs, harrows, and cultivators. Small farmers must either share such implements or hire from one another, and we were glad to learn that considerable success had already attended the formation of co-operative societies for the purchase and common use of implements, some of which societies had acquired a considerable stock, even including such expensive plant as a motor-driven threshing-machine, and had paid off all their indebtedness. We passed several co-operative creameries, and were always meeting the ass carts bringing a few churns of milk along the road to some depot of the kind. In that part of Ireland the spirit of co-operation was certainly abroad, for one successful enterprise of the kind soon leads to other ventures of a similar character.

XV

THE WESTERN SEABOARD: RESETTLEMENT AND CO-OPERATION

FROM Limerick we struck west into Clare, but there, as in Connemara, Mayo, and Donegal, farming may be said hardly to exist. The characteristic feature of Clare is the limestone rock, which covers, as a rule, more of the land than the grass. Here and there are areas amenable to cultivation, as for example the kindly land about Oranmore just south of the city of Galway, where on a limited area some of the best barley in Ireland is grown, but, speaking generally, the mountainous west is covered by rock and bog. In places it still carries an incredibly large population, living, as one resident told us, largely on American postal orders, but struggling with heart-breaking little patches of cultivated land won from the wilderness. The potatoes have to be grown on lazy beds to raise them above the level of the saturated peat, and despite the spraying that has become universal are subject to a number of other diseases of appalling intensity in that soft moisture-laden atmosphere. Cultivation on more than a garden scale must be a mistake under such conditions; the only economic use of the land would be to keep it in extensive grazings for ponies, sheep, or rough cattle, and some of the lower land could be profitably improved by the use of lime and basic slag. Such grazing can only support a small

population; for the rest there is but the fishing and the tourist traffic, if they are to live at any higher level than the bare subsistence that can be wrung from their little patches of cultivated ground. It is one of the tasks of the Congested Districts Board to resettle these men on the grazing lands farther east, but the difficulties are great. In the first place, the Connaught men are very unwilling to move, and the inhabitants of the district to which they are transferred resent their intrusion; in consequence it is easier to migrate a man from Connemara to America than to the centre of Ireland. Then, again, they know little of farming and are almost helpless on twenty or thirty acres of proper land, unless they happen to belong to the class who have been in the habit of going over to Yorkshire or Lincolnshire for the summer, and have there learnt something of the management of arable land. It is a sad region full of anguishing stories and bitter memories; one cannot say that the situation has arisen through the misdoings of any one in particular, and no one can see any immediate solution other than the slow diminution of the population to an economic level; the only redeeming feature is that for all their disadvantages the people seem neither unhappy nor underfed. Indeed to the casual passer-by the men and women seem more prosperous in Connemara than they do farther east, and of course climate and type have worked together to produce the most beautiful faces in the world. Farther east in the flat plain of bog and pasture that lies between Corrib and the Shannon we visited a colony of small farmers on a "resettled" estate. It was the famine that gave the great impetus to the Irish grazing system; then the bulk of the tenants lost their holdings and sank to petty cultivators of two or three acres on the poorest part of

the estate, the rest of which was cut up into two or three big grazings to be let on the eleven months system. When an estate is bought out and resettled by the Commissioners the landlord's demesne and grazings become available for division; the whole is parcelled out afresh, a work requiring considerable patience and diplomacy, until, as in the case before us, men who formerly held from two to four acres each had been placed on "economic" holdings of twenty to forty acres, on which also decent houses had been built by grants from the Commissioners. Instead of rent the farmers have the usual sixty-eight years annuity to pay, and one of the chief problems now before Ireland is how to teach these colonies of small holders to live at something above their old level of bare subsistence and to make the land reasonably productive for the community. There are no leaders left, the gentry are gone, and there is no middle class except the priests, the dispensary doctors, and tradesmen in the distant towns. There is also no tradition of good farming, and few examples of dealing with the land except by grazing, yet grazing on thirty acres means little more than idleness and destitution. Fortunately most of the men on the estate we saw had been in the habit of hiring themselves out in England, and were with great toil tilling as much of these holdings, four or five acres each, as was possible with their limited stock of horses and implements. It is to these districts that Sir Horace Plunkett's co-operative movement is most particularly addressed: not only can it make the farming earn its due profits and save the men from being sweated by the gombeen man even more oppressively than they ever were by the landlord, but also the prophets of co-operation see in the society an outlet for men's social energies and a democratic form of leader-

ship that will more adequately replace the lost influence of the old owners who have failed and been driven out. That they did fail was again impressed upon us as we drove across the great midland plain from Ballinasloe to Dublin—mile after mile of undulating grassland showing no great evidence of good management, though the tall untidy hedges demonstrated the capacity of the soil and climate. All the sparse villages begin and end with ruined cottages; the country between contains no habitations; rarely was a man to be seen in the fields; it is hard to avoid exaggeration, but the land might almost be described as a green fertile desert. That such a state of things should have come about the landlords are not alone responsible; but for good or evil in this generation they have been made to pay.

Still our visit had impressed upon us a more hopeful view of Irish farming, for everywhere we found men on the look out for improvement, persuaded that they could make more of their land, and anxious for new ideas as to how it could be done. On the material side land purchase has undoubtedly been the most potent factor in creating this feeling; it has not only given the occupier security and the sense that he is entirely thrown upon his own resources, but it has removed the temptation and even the external pressure to farm badly in order to reduce rents. But the material is not the whole or even the most potent factor in the situation; we have to recognize the quickening of national consciousness, the new spirit in young Ireland, which, as regards agriculture, has been expressed and organized by Sir Horace Plunkett. Not only do many of the landlords see in the settlement of the land question a chance of winning back their position of leaders of the people, of being of service to

their own countrymen, by living on their demesne lands and working like their neighbours at the great industry of the country, but the small farmers themselves are grasping the truth that in co-operation lies their opportunity of offering a successful resistance to the pressure of modern competition on the small producer. Co-operation advances not because it can promise a halfpenny a pound or a shilling a quarter more profit, but by its appeal to the spirit; and Ireland, devastated but renascent and always sensitive to the spiritual side of things, is answering to the appeal. Of course the Department of Agriculture is doing wonderfully good work in educating the farmer by precept and example, work of which the fruit is manifest even in statistics. But government in Ireland has always had a strong centralizing tendency; officials will take charge whenever a people do not resent despotic methods; and a Department, necessarily paternal in its procedure where it has to deal with farmers of a very rudimentary type, may possibly become in the end tyrannical and both clog and demoralize the spirit of initiative and enterprise which alone makes for lasting success in agriculture as in any other walk of life.

Here comes in the special value of the co-operative movement to Ireland; above all other things it affords a training in the duty and method of self-help; it is democratic because every member of the society has a vote, but a vote checked by its immediate result upon his pocket and that of his fellows, but upon nobody else. No training can be better for the newly emancipated farmer, no stimulus more salutary, than the experience of collective enterprise which a small co-operative society affords, even if it only begins by collecting the members' eggs or buying their manures wholesale.

The co-operative movement is the true complement of the Department, both as preparing its way and afterwards realizing its educational activities; above all, as giving to the people the suggestion of initiative and dependence upon personal effort—the moral force—without which education is wasted. One hears of friction between the two organizations, but every true friend of agriculture, every well-wisher to Ireland, realizes that each is necessary and neither can do the work of the other, and so trusts to see the work of both continually expanding on parallel lines long after the present unhappy legacy of old feuds has been forgotten in Ireland.

THIRD JOURNEY, 1912

I

STOCK-RAISING IN MONMOUTHSHIRE

DURING the previous stages of our farming pilgrimage it had been possible to take a line of country and go straight ahead, so that there was a geographical sequence between the districts visited, even if the style of farming changed abruptly from day to day. Such a method, however, inevitably leaves certain parts of the country untouched, margins that lie outside the route, and interior tracts between the eastern and western roads. Our pilgrimage in 1912, undertaken to fill up the gaps, therefore resolved itself into a series of otherwise disconnected tours, and the first district we set out to see was Wales from south to north.

We broke new ground first when we left the city of Gloucester for Monmouth, and as geographical boundaries are of little importance in farming, we might very well consider that we entered upon Wales on crossing the Severn. We took the most direct, but, because of the gradients involved, not the quickest, route across the Forest of Dean, certainly one of the most characteristic wooded areas in the British Isles. The great stretch of oak-clothed uplands form the only places south of the Highland line where you get the impression of a real forest; and though the actual

plantations look casual and uncommercial in comparison with such forests as the Spessart or the Thuringer Wald, you do see something of timber-growing as a business and not as an ornament or game shelter. The strangeness of the scene is intensified by the sudden patches of coal workings and spoil heaps, themselves looking very much out of place among the trees to any one accustomed to the bare coal districts of the North or Midlands. The descent from the forest to the smiling valley of the Wye provides another notable view, though not so extensive nor so varied as the outlook from the edge of the Cotswolds into the wider Severn Valley.

Agriculturally, Monmouth consists of the valleys of the Wye and the Usk with the ridge of land between; and practically all of it lies on the Old Red Sandstone formation, for the elevated mining area to the west is of little importance agriculturally. The soils are nearly all red in colour and heavy in type, and as the rainfall is high, averaging something like 40 in., the land is mainly under grass, though most of the farms carry a little arable land, about one-tenth or so of the total area. Only in the south of the country on the light alluvial soils near the river do we find true arable farms. Generally, the holdings run small, from 40 up to 200 acres, the most typical size being about 100 acres. Rents may be said to average about £1 an acre, the upland farms more remote from the railway letting at 15s. or less, while for small farms on the richer lands to the south of the county as much as 35s. an acre is paid. On the smaller holdings but little labour is employed, and all over the district labour is dear because of the proximity of the coal-fields. On the smaller farms, as a rule, there would only be a single hired man living in, but in other places the

stockman would get £1 a week or its equivalent; and whereas on the larger farms the living-in system has been abandoned we heard several complaints about the lack of cottages as a potent factor in keeping the industry short of labour.

The first farm we visited was typical of the small holdings of the county. It was about 100 acres in extent, undulating land of the usual rather heavy red soil, by no means rich and somewhat remote from a station, yet commanding a rental of about £1 an acre. It was farmed by a widow and her son, with the help of a single hired man, and even with this small amount of labour about twenty acres were kept under the plough. No very strict rotation was followed, but the custom here, as throughout the greater part of Wales, was to keep down the land in grass for some years and then take three or four arable crops before laying it down once more. Wheat and oats, turnips and mangolds were the crops grown, the only thing unusual seen being a breadth of peas. The grassland was not of very high character, the hay in particular did not look promising because of the drought earlier in the year; but there we saw a very good example of the extraordinary result which basic slag gives on some of these poor heavy soils where the rainfall is abundant, for in one of the fields the agricultural instructor of the county had laid out some plots to which basic slag had been applied. To the eye the vegetation on these manured plots appeared to be trebled; indeed, they were the only parts of the field that were sufficiently covered to hide the bare soil between the scattered plants, and there was a great profusion of white clover. We should imagine that a systematic use of basic slag on the farm might easily double the production of the grassland. Despite the heavy nature of the soil and

the fact that limestone occurs in the county at no great distance, we could not hear that liming was at all a common practice amongst the farmers of this generation.

Another item usual upon Monmouthshire farms is an orchard of cider trees, cider-making being one of the regular sources of income. With the help of the county council on one of the fields of this farm a new demonstration orchard had recently been planted, containing trees of four selected varieties which are known not only to do well in the district but also to yield fruit that will blend together to produce a good flavoured cider; for there are many kinds of cider apples that are excellent when blended with other appropriate varieties, but give rise to a very poor liquor when fermented by themselves. The Fruit and Cider Institute provides the trees gratis as one return for the county's contribution, the tenant plants the trees under supervision, and undertakes to cultivate them properly.

The stock upon the farm consisted almost entirely of Herefords, with a few crossbreeds for milking purposes. On the second-class lands the Hereford is said to answer better than the Shorthorn—"a Hereford will thrive where a Shorthorn will starve." It is thus essentially a poor man's cow; and though it has no repute for milking purposes, its supporters always maintain that, if properly handled, both the Hereford and its crosses yield at least an average amount of milk. Farmers, however, all too rarely keep any record of the amount of milk yielded by individual cows during their lactation period; in consequence we have very little real knowledge as to the milk-producing powers of several of these breeds which are usually valued solely for beef purposes, but are used in their own district, especially

by the smaller man, for the dual purpose of both meat and milk. Systematic record-keeping would open the eyes of the smaller farmers to the unprofitable nature of many of the animals they continue to keep in the herd. On this farm about half a dozen cows were in milk, and the bull calves and such heifers as were not wanted for the herd were grown on cheaply and sold at two years old as stores; for it was by no means the kind of land upon which it would pay to try to fatten animals for the butcher. Being somewhat remote from a station, the milk was not sold as such, but was converted into butter and cheese, which, with the chickens and the eggs that also formed an important item of production, were sold weekly in the not very distant market of Pontypool. Small farmers must have some regular source of income of this kind, and cannot well depend entirely upon the sales of crops and of stock that only recur at somewhat long intervals. It was this point of view that reconciled the young farmer to the chickens; he did not like them about the place, but agreed that they fitted in with the rest of the farming, and that you had to regard a farm of this kind as a whole with as many different articles as possible working in together to produce the income.

Farther south we visited a larger farm, extending to two hundred acres, of which about thirty were under the plough. The pastures, which stay down for from five to seven years, carried excellent grass with an abundance of white clover; they had all been dressed with basic slag once and some twice within the seven years. The occupier was mainly a stock farmer, breeding Herefords of good quality, and at the same time rearing extra calves bought in from the dairying districts. Some of the bull calves were

sold for stock purposes, but the chief output of the farm was forward stores and down-calving heifers. He also bred some good horses, and looked to have three or four colts running about each year. Sheep formed a more prominent feature of the farming than was usual in the district; the stock consisted of Hampshires and crossbreds of Ryelands with a Down ram. The Ryelands are one of the oldest breeds of English sheep, doubtless an early segregation from the short-woolled sheep of the hills countries, but they are unlike the Shropshires and Southdowns in being white in the face. They are famous for the fineness of their fleece, and perhaps because of their distinctness produce very rapidly-growing first-cross lambs, but are, however, little known outside their own country—the red uplands of Hereford.

This farm carried an excellent cider orchard, clean and well managed, and, as we tested for ourselves, produced an unusually good vintage of cider. No cottages were attached to the farm, and accommodation for labourers was scarce in the district.

Farther down the valley, where it widens out and includes a wider tract of level alluvial soil, we visited another farm of exceptional size for the country, about 300 acres over all, from one-quarter to one-third being under crop. The soil was light and easily worked, drying out somewhat readily in seasons like that of 1911, but permitting of the successful growth of barley, and benefited by folding with sheep. It carried good potato and corn crops as well as the promise of an excellent breadth of roots, and, as the main business of the farm was with stock, most of the produce was consumed on the holding. Two flocks were kept, one of the Clun Forest breed, light, short-woolled sheep from the Welsh marshes, which

were crossed with a Down ram in order to produce early lambs, while the second flock of Hampshires was kept to eat off the turnips in the winter. About twenty cows were in profit, a little butter but mainly cheese being made from the milk. Caerphilly was the standard cheese, though when milk was plentiful and the markets over-stocked with Caerphilly the manufacture of Wensleydale cheese took its place. The Wensleydales have to be ripened for some months, but then command a much higher price than the Caerphilly, though of course the market is a restricted one. The introduction of this Wensleydale cheese has been wholly due to the County Travelling Dairy School. Stock-rearing, however, was of more importance than milk on this farm, the steers being fattened and the heifers sold after one or two calves as young cows in full milk. The proximity of the colliery districts resulted in excellent markets for cows in profit, as well as for fat cattle and produce of all kinds. In consequence dairying has been extending in the district, the sale of milk being very profitable wherever the farm is near enough to a station.

It was chiefly the returns to be obtained for milk that caused a considerable demand for small holdings in the county, but the resulting transfer of land had not always been to the good of farming or the increase of the food supply. Our host had been forced to give up some 25 acres of his best grassland to a small holder who, instead of attempting to live upon it, simply cut and sold the hay and then let the grazing of the aftermath, a procedure which is undoubtedly remunerative for a time but ruinous to the land, and as such had been forbidden by his covenants to the original occupier. Still, Monmouthshire does

contain a large proportion of genuine small holders, who by hard work and extreme thrift make up for poor farming and an indifferent exploitation of the land. We had been seeing men above the average, but on the whole Monmouthshire farming seemed of the rather easy, unprogressive type that is possible on grassland with the genial rainfall and kindly climate of the west.

II

CARMARTHEN AND CO-OPERATION

FROM Abergavenny northwards the beautiful valley of the Usk presented much the same farming characteristics as those which prevailed near Monmouth. There were the same deep red soils, the same predominance of grasslands with about one-tenth of the fields under the plough, and the same light hay crops, which told of the effects of the earlier drought. Here and there on the deeper soils on the lower slopes there would be rather a greater proportion of arable farming; and we noticed one farm on which all the labourers wore very distinctive red coats, patches of brilliant colour in the general green landscape. From Brecon we still followed the Usk on to gradually poorer lands as the elevation increased until we crossed the low watershed, and, leaving the Old Red for the Silurian rocks which cover so much of Wales, began the descent down the deep wooded valley that led to the Towy.

In the Towy Valley itself there is even a higher proportion of grassland than along the Usk. According to the Agricultural Returns the average size of the holdings in Carmarthen is only 38 acres; the typical farm, however, is one of 80 to 100 acres, of which only four or five acres will be plough-land, growing a little corn and a few roots for the winter feeding of the stock. In this country a good proportion of the

farms are owned by their occupiers, but the recent rise in the prices of land has been tempting many owners to sell; and men who had bought their farms twenty or thirty years earlier during the depression were then realizing the enhanced values and going out of farming altogether. As a rule these small farms were worked entirely by the owner and his family, and were rather undermanned in consequence.

Labour was very scarce in the district, because it lies on the edge of the great Glamorganshire coalfield, which for many years had been extremely prosperous and able to pay high wages for comparatively unskilled labour. As it was, single men who live in get £30 to £35 a year with board and lodging free, out of which, if they are keen on farming, they can save enough to be able to take one of the small farms and make a start for themselves. The prospects in the colliery districts were, however, so much more attractive that very few of the younger native-born men could be hired for agricultural work; and it was here that we first came into contact with what has almost become a characteristic feature of Welsh farming—the dependence for hired labour upon boys drawn from the industrial schools and reformatories in England. Indeed, so much is this the case that the three B's which the Welsh farmers owe to England have almost become proverbial—reformatory boys, basic slag, and barbed wire. This apprenticeship of boys to the Welsh farmers would seem to be a very good outlet for some of the surplus population of the towns and a means of obtaining a new set of recruits for country life. We did not gather, however, that it was effecting any considerable permanent enlistment of men for agriculture, for the great majority of the boys fail to settle on the land and drift back into other occupations.

Indeed, one could hardly hope for any other result; it is too much to expect that a boy can become assimilated to a population of small farmers, speaking a different language and possessing habits and traditions entirely alien both from the town from which he had been drafted and the discipline to which he had been subjected more lately.

We visited one farm on the banks of the Towy where the lighter alluvial soil had enabled its energetic proprietor to carry on a more advanced style of farming than generally prevailed in the district. Seventeen acres out of the seventy were under the plough, the custom being to take two corn crops and a root crop after breaking up the ley, and sow down again for a period of from four to seven years until the time came for arable cultivation again. In the humid climate, seeds take well and rapidly form a turf; it is found also that better yields are obtained from temporary than from permanent grasslands, which tend to become thin and impoverished as the soil sets together after the influence of the cultivation is removed.

The best soil in the valley is that situated upon a belt of limestone which forms one of the Silurian formations, but nearly all of the other land in the valley is greatly lacking in lime. Very little liming has been done for many years—indeed, the practice is almost unknown in the district because of the distance from limestone and the cost of the carriage. The general lack of lime is also demonstrated by the extraordinary effectiveness of basic slag as a manure, supplying as it does not only the missing base, but also the phosphoric acid in which Welsh soils are so largely deficient. One cannot but correlate the acknowledged deficiency of the Welsh soils in phos-

phoric acid with the system of farming that has so long prevailed. The staple products that leave the land are young stock that go to England to be fattened, and, on the other hand, milk. Both these products draw to an unusual extent on the phosphoric acid of the soil; and in both cases the material leaves the land and never comes back again; so that one may say that for centuries there has been a continuous export of phosphoric acid from the soil of Wales without any replacement, until within very recent years the practice of using basic slag has become more general. Just as fertility has been travelling from Wales, so Norfolk and the other arable counties in England where stock are fattened have been gaining in fertility from the linseed and the maize that are consumed upon them, fertility really drawn from the soil of the new countries in which they are chiefly grown. The Welsh farmer, being, as a rule, a comparatively small man, with but little superfluous capital, has never been a great buyer of artificial fertilizers, so that his soil in the majority of cases remains in much the same condition as it was half a century ago, and has not experienced the increased fertility due to a more intensive cultivation by the aid of imported manures and feeding stuffs which has characterized the soils farther east. On this farm, however, bone meal has been largely used, as well as basic slag, and has proved as good or even a better manure. Most of the best returns for bone meal seem to be obtained upon comparatively light soils in the West of England; in the East, probably because of the lower rainfall, it often proves so slowly acting as to be an expensive fertilizer.

The chief corn crops grown upon the farm which we were visiting were wheat and oats—wheat to

a surprising extent; indeed, it was very unexpected to see the old Golden Drop wheat flourishing in such a comparatively humid climate. However, our host found wheat a valuable food for milch cows; in his opinion it maintained the milk yield better than any other cereal. All the corn grown upon the farm was consumed; indeed, there was no sale of corn throughout this district. Potatoes formed the only crop to be sold and were highly farmed, because the good prices to be obtained in the colliery districts close at hand made it a very profitable crop if well done. Potatoes were everywhere one of the best crops of the year, but the field we saw on this farm would be considered very fine even in the most favourable districts for potato growing. Scotch or Irish seed was used, and our host had proved for himself the advantages that are to be derived from boxing the seed, even of maincrop potatoes. The hay crop seemed likely to be a light one, though the torrents of rain which were falling at the time of our visit were not too late to thicken up the bottom, were it not perhaps in a grazing district more profitable to take an early, even if a small, hay crop and utilize the rains to get an abundant aftermath. It was in this district that we first made the acquaintance of a method of obtaining winter food for stock, which is known as "winter fogging." It is the custom to take the cattle off the grazing fields as soon as the meadows have been hayed and some aftermath is available. The pastures are then allowed to grow tall and rank until in November, when grass begins to run short again on the meadows, the cows are turned into the tall and partially withered herbage, which seems to provide food that the cattle appreciate and thrive on all through the winter. Of course, the climate in Car-

marthen is very open and mild, and the cattle are out, through the day at least, all the winter through. The chief industry of the valley, as also of our host, is the production of milk, most of which is sold as whole milk to the colliery districts at an excellent price. Some men convert a portion of their milk into butter or cheese, using the separated milk or the whey for feeding calves raised on the farm with others bought from the men who sell the whole of their milk. At the present time all the dairy farmers depend upon Shorthorns, which, as the only really dual purpose cow, seem to be extending their range yearly, even into the strongholds of the other breeds. Thirty years ago our host told us the valley was full of the black South Welsh cattle, but they have almost entirely disappeared at the present time, and the Shorthorn holds the field. The butter and cheese are all sold locally, the usual cheese being Caerphilly, though a certain amount of what is called locally "Welsh cheese" is made from separated milk. An effort is being made to establish a central cheese factory at Llandilo, in order to find an outlet for the surplus milk at times when the farms are producing more than the supply for which they have contracts running with milk sellers in the colliery districts. Even though the returns for the cheese may not in themselves be very profitable, it is thought that the factory would still be valuable by keeping the surplus milk off the market and maintaining a reasonable price.

In this district co-operation generally has made very considerable strides; and though the efforts of the society are still in the main confined to purchasing in bulk for its members and saving them the excessive profits that the middleman generally takes from the

small buyer, the movement is gaining ground rapidly; the farmers are learning to work together, and are likely to make a start with the co-operative sale of produce now they have learnt the advantages of co-operation in purchase. Manures, seeds, agricultural implements are the chief articles supplied; but the educational value of a co-operative society may be seen from the way it has taught the farmers in this district the virtues of Scotch and Irish grown seed potatoes simply by importing them and pressing them upon their customers. But, once the co-operative principle gets hold, it is impossible to limit its application in any direction; and the Carmarthen Society, though started to deal in agricultural requirements only, has inevitably extended its operations to tea, sugar, and other household requisites. The society is only ten years old, but in that period it has multiplied its members by ten and its turnover by twenty; and the fact that the turnover per member has increased as well as the number of members is the best evidence of the increasing prosperity of the district, a prosperity in which co-operative trading has been a distinct factor.

III

LITTLE ENGLAND BEYOND WALES

FROM Carmarthen we took the westward road into Pembrokeshire, running at first through a grass country differing in no respect from the valley of the Towy, a country of small farms each with but one or two fields under arable cultivation. The hay crops were light enough, and the grass had shot so far that the recent rains could have little effect upon the yield.

Haverfordwest is the centre of that special country known as "Little England beyond Wales," which has retained its English speech and traditions from the twelfth century, when it was conquered and colonized by Strongbow. Nor do the English represent the only foreign element in Pembrokeshire, for about Milford Haven there are several fishing colonies of Flemish origin, descendants of the Flemings also brought over by the Earl of Clare, who still possess many characteristic customs and a whole vocabulary of technical terms. The little village of Llangwm is perhaps the most purely Flemish; the inhabitants have a dress of their own, and show their Flemish origin in the architecture and the spotless cleanliness of their cottages, though perhaps the most distinctively foreign feature is the custom by which the women manage the boats and market the fish while the men stay at home and look after the gardens.

Pembrokeshire, with its difficult communications, has

been so little touched by the cosmopolitan tendencies of the age, which submerge all differences of class and origin, that English, Welsh, and Flemish have remained almost distinct nations, not speaking one another's language, rarely intermarrying, and possessing a profound mutual distrust.

The farming of Little England is quite unlike that of the rest of Wales; there are many extensive estates, and the farms are comparatively large, from 150 to 250 acres, the usual small holdings only prevailing in the north and east of the county. Among the large estates, however, there are a good many freeholds, and everywhere landlords are beginning to sell and the tenants to acquire their farms. There has also been a considerable migration of the Welsh farmers from the north of the county into this district; and we were told that though the immigrants flourish extremely well on the large holdings at first, the third generation generally goes under through drink and loses the farm. Such generalizations are rarely to be trusted, especially when one nation is speaking of another; but our informant was ready enough with instances. We visited one of the larger farms not far from the river to the south of Haverfordwest. It was of an exceptional size, running to 400 acres, and the soils were generally light but very varied, because in this part of the peninsula many formations succeed one another within very small compass, narrow out-crops of Carboniferous rocks and limestone being rapidly exchanged for Old Red Sandstone, Silurian, and patches of igneous origin. In the main, however, the soils were of a sandy type derived from the Coal Measures, which here give rise to a good arable soil, though one that demands a constant and heavy manuring. A large proportion of the farm was under

the plough, and no strict rotation was followed, two or more corn crops being often grown in succession. The general custom appears to be to keep about half the land in temporary grass and to take three crops of corn and one of roots before laying it down again.

Oats form the chief cereal, but one feature of Pembrokeshire is its comparatively large acreage of barley, of which there are as much as 17,000 acres in the county; in fact, the proportion of barley to the arable land in Pembrokeshire, about two-elevenths, is exceeded only in four counties in England—Norfolk, Suffolk, Shropshire, and Yorkshire. Nearly all the corn grown is consumed either on the farm or locally, but there is a certain amount of export of barley from this part of Wales. One unexpected feature on this farm was the presence of two fields of flax, rather stunted owing to the drought earlier in the season, but still a good even plant then coming into full flower. The occupier had been growing flax for a year or two, not for the fibre but for the seed, which he used as a supplement to separated milk for calf rearing and had found cheaper to grow than to buy. He assured us that he had harvested a crop last year that gave him linseed to the value of £20 per acre, without reckoning anything for the straw, which was simply carted into the yard and trampled down as litter. With the present advanced prices of linseed and the enormous demand that exists both for the oil and for the pressed cake, it is highly probable that linseed will be a paying crop on all good arable land, even though no attempt is made to utilize the fibre. It is usually considered in Ireland that good flax fibre is incompatible with the saving of ripe seed; but it should be remembered that for the Courtrai flax, perhaps the finest fibre in the world, the crop is not harvested till the seed has

formed, and the plant is rippled to save the seed before the beginning of the retting process to liberate the fibre.

The most important root crop of the farm was potatoes, of which heavy crops were to be seen, growing from Scotch seed. Our host was diminishing his acreage of swedes because he found them expensive, especially as the land is a little too wet to allow him to fold the sheep upon the turnips. There was a small breadth of sugar beet grown as an experiment, though even the Pembrokeshire end of Wales would seem to be one of the least promising districts for the establishment of the beet sugar industry, which demands above all to be situated in a dominantly arable district, with cheap and easy means of communication to bring the roots to the factory.

The farm was heavily stocked, its main business being rearing cattle for sale as forward stores; the grassland was not good enough for fattening, and only a few of the more advanced animals were tied up for the winter. In addition to the calves of his own raising, our host bought calves from the milk-producing districts and grew them on, selling the best of the heifers back to the dairy districts when in calf. The cattle were all Shorthorns, though we were not far away from Castle Martin on the other side of Milford Haven, whence the black cattle of South Wales take their name. Even in their own country, however, the black cattle are disappearing, as they have the reputation of being too slow in coming to maturity, even more so than the closely related black cattle of North Wales. The farm also carried a heavy stock of sheep —Shropshires—together with a certain number of crosses with the hill breeds. In this open, mild climate, with little frost or snow in the winter, lambing

is very early, and the lambs are put to the ram the same year. This Pembrokeshire farm was a good example of straightforward businesslike farming—not perhaps so polished as one would find in the typical arable districts of England, but still very much better than most of the management we had hitherto seen in Wales. Land and climate are good: but for its remoteness from the market this part of Pembrokeshire might well become a really famous farming country. Rents averaged about 25s. an acre for the better land; and labour, though by no means plentiful, had for a time been a little easier to obtain, because both the Pembrokeshire and Glamorgan colleries had been taking fewer men. Still the industrial schoolboy, as in Carmarthen, was a considerable factor in carrying on the work of the smaller farms.

East of Haverfordwest in the peninsula is the chief arable district of Pembrokeshire—the Rhos; but we had such bad accounts of the roads that we contented ourselves with the farm we had just seen, and drove north-west to St. David's. All the way we passed through a reasonably farmed undulating arable country, with perhaps one field in seven in barley. Even when, at Newgale Sands, we crossed the little stream which forms the boundary of Little England and passed once more into Wales, we continued in a country mainly arable to St. David's, and then along the road which runs parallel to the coast north-east to Fishguard.

From Fishguard to Newport and Cardigan the aspect changes; the hills come closer to the sea, and the farming is like that which prevails in the interior of the county on the lower slopes and the valleys of the Prescelly range, which rose steeply to long barren moorlands on our right. In this district the farms run small and are wholly in grass. Towards the upper limit of culti-

vation both holdings and occupiers are very poor; but all alike are engaged in the same type of business—the production of butter and store cattle. In general the butter is made by the most primitive methods and can only be described as bad; indeed, it would be hardly saleable were it not for the proximity of the colliery districts, a market which rather favours a highly salted and strongly tasted butter.

In the north of Pembrokeshire, even more than in the south, it was very evident that a material factor in the comparative infertility of the land was the deficiency of lime in the soil. Except the Mountain Limestone near Haverfordwest there is no material in the county out of which to make lime, and the difficulties of communication as well as the lack of knowledge have caused an entire neglect of this very necessary operation of liming. The lack of lime in the soil was also indicated by the abundance of gorse, which covers the broad banks dividing the fields of Pembrokeshire and even intrudes into the fields themselves. As in Brittany, the gorse is made some use of as a fodder, being bruised to destroy the thorns, and fed in the winter. We were informed, however, that the practice is getting less common, and that on the best farms the gorse itself is diminishing, owing to the use of basic slag. Gorse and bracken are good indicator plants, denoting a lack of lime in the soil; and lack of lime means a low level of fertility and the shutting down of some of the most valuable agencies preparing plant food in the soil.

IV

CENTRAL WALES: MIXED FARMING

A DRIPPING evening had brought us into Cardigan; but though a fair morning tempted us to take the road early, we delayed to see the Saturday produce market in full swing. It did not give us a very exalted opinion of the farming of the district: vegetables were few and poorly grown, the chickens looked as though they had been accustomed to more exercise than food, old potatoes were being brought in carts, but the few new ones on show did not indicate very efficient utilization of the warm seaside soils.

Butter was, however, the chief product brought in for sale, and a pair of wholesale buyers were doing a brisk trade. The butter came in lumps; indeed, thereabouts, it is still churned to a lump and packed into bowls and pails of all sorts: we saw one lump weighing little short of a hundred pounds turned out of a clothes-basket into which it had been closely moulded. Churning to a grain and making up into pound and half-pound pats is still rare, and confined to the few who have gone through a dairy-school course. The price that was being paid in the market that morning represented little more than 3d. a gallon to the farmer for his milk. For all that the people seemed cheerful and prosperous, the market was animated, and there was no sign of economic pressure to force on a higher

standard of farming. Indeed it is doubtful if low prices and bad times ever make for improvement: in such circumstances the farmer sits tight and reduces what may already be an insufficient expenditure on the land; only when there is already a margin of prosperity is he encouraged to risk a little outlay on innovations.

From Cardigan we took the long road which runs parallel to the coast, but a mile or two inland; the elevation is considerable and the country open, so that from time to time we had wide views over the great sweep of Cardigan Bay, blue and smiling, under a happier sky than hitherto. From Cardigan to Aberaeron the farms appeared of a fair size, one-sixth to one-eighth in crop, with an unexpected proportion of the corn land allotted to barley. The equable climate and the proximity to the sea enables the barley to grow well even at considerable elevations; but considering that all the corn is grown for consumption it was not evident why barley was preferred to oats, which may generally be expected to yield a greater weight of food per acre as well as more valuable straw. Several men whom we asked claimed, however, to get a better yield of barley than of oats, but the chief reason alleged was that a more certain take of seeds could be obtained in barley. At Aberaeron the road drops down to the sea level and runs for some miles close to the coast; hereabouts the soils are kindly and the farming rather better; indeed most of the land looked capable of growing anything, even though a rainfall of over 40 in. adds to the difficulties of arable farming. Many of the pastures were excellent, and in the warm sun the air was full of the scent of white clover. A little farther north, however, the country becomes poorer with a smaller proportion under the

plough, and as far as Aberystwith we saw little of agricultural interest.

Beyond Aberystwith we visited an interesting farm, situated on undulating land in one of the wide valleys that here lie between the great sheep walks of the Phinlimmon range and the sea. The soil was derived from a stony drift of glacial origin, and was light and easy to work, with the result that about one quarter of the farm was in corn—a much higher proportion than usually prevails in the district. The farm extended to nearly 300 acres, an exceptional size, for as a rule the farms thereabouts are only a hundred acres or less. In addition, our host occupied some 500 acres of mountain sheep walk at a distance, where his sheep lived during the summer.

In his cropping he followed the usual plan of leaving down the seeds for from three to eight years, after which time the grass gets thin and must be ploughed up. Even for his short-period leys he sowed chiefly alsike and white clover, as standing grazing better than red. After the ley followed a rotation of wheat, roots, and barley, in which the seeds were again sown, though recently, because his land had improved, he was beginning to take an oat crop after the wheat. All the corn was consumed upon the farm, and some of the wheat was sent to the local mill to be made into flour for home consumption. There was again rather an unexpected amount of barley on this and on the neighbouring farms, but it was all consumed locally and none exported; indeed, we heard of rather higher prices than prevailed in English markets, where farmers so often sell the corn they have grown and buy the cheaper foreign grinding barleys wherewith to feed their stock. Here, as generally throughout Wales, the barley grown belonged to a variety known as "old

Welsh," a stock somewhat mixed, but consisting mainly of a type resembling Archer in appearance, though early where that variety is late. Under various names similar strains have been found in all parts of the United Kingdom; they probably represent the "rathe ripe" barley of the early writers; but though some attempts have been made to select pure lines from these varying aggregates, they have not met with success as yet. Probably where the conditions are not very favourable and uniformity of quality in the produce is not a matter of importance, a rather indefinite mixture of this kind may answer better than a single strain, just as dredge corn may yield more than either oats or barley separately, especially in a season adverse to one or other of the constituent crops.

We saw some very good breadths of turnips, the best we had come across in our tour. Half the area of turnips received farmyard manure, and there the turnips were drawn off; the other half were farmed with artificials, and there the roots were consumed on the land, thus leaving matters pretty level for the succeeding barley. Mangolds and potatoes were also grown, the latter good even for the good season and promising to be a very profitable crop, for they generally find an excellent market in Aberystwith, with its large resident population.

Our host kept a very good class of Welsh cattle of the true North Welsh strain, all black except for a touch or two of white below. A few herds are to be found in North Wales sheeted with white round the body like some of the Holsteins, but this is a fancy point for which no working justification can be found. The North Welsh cattle can be in some respects distinguished from the South Welsh or Castle Martin breed, and are reputed to be more rapid feeders and

better milkers, but the differences are insignificant, as has been recognized by the union of herds originating from both sources in a common herd-book. The Welsh cattle form one of the most valuable and distinctive of British breeds; at home they are esteemed for their milk, but they are chiefly known in the Midlands of England as most profitable grazers of the summer pastures. They cannot be forced like the Shorthorns, and do not, as a rule, possess quite the symmetry of frame of some of the more improved breeds, but as big-framed stores of two to two and a half years—the Welsh Runts—they grow rapidly upon grass and begin to put on weight early in the season, when other less hardy breeds would be standing still. Butchers approve of them, as they die fat with a high proportion of carcase to live weight, and with meat of good marbled quality. Considering to what extent the breed is in the hands of small men, the general quality and uniformity of the stock is remarkable; but there is evidently a considerable opening for the extension of the co-operative principle, which already seems congenial to the temperament of the Welsh farmer, to the purchase of bulls of high quality for the use of groups of neighbouring farmers. Of course, there is the danger of the spread of contagious abortion by the bull, but we could hear little of the disease among the herds of the Principality, and with due watchfulness in the organization its dissemination need hardly be apprehended. Our host was chiefly a rearer, selling out steers and heifers at two years old; but he milked his cows, made butter, and raised the calves on the separated milk.

He also kept sheep of the true Welsh mountain breed, which with certain local variations is found all over the great stretches of featureless moorland occupy-

ing the whole of the heart of Wales. In the main the Welsh hills are grass rather than heather clad, and are enclosed by wire fences into sheepwalks of from 400 to 2000 acres, even upon the most craggy and barren summits of North Wales. The Welsh sheep are small and slow growing, and at four years old should yield legs of mutton weighing not more than 6 lb., whose excellence lies in quality and not in size. The sheep are supposed to be "acclimatized" to their own farms, and should change hands with them, but no custom of excessive valuation for the acclimatization of the flock has grown up in Wales as it has in the Highlands. As a rule the flock is moved off the hills in October, going back in April to lamb, though where the sheep-walk is not too elevated the wethers may be left up for the winter. At three years old the wether lambs are fattened out, the best practice being to give them a season of grazing on the richer grass of the lowlands before putting them on the turnips. The older custom, which still yields the finest mutton, was to fatten them in their fourth year only on grass, for the true Welsh sheep should not be fat: "The valley sheep were fatter, but the mountain sheep were sweeter." Men who do not occupy hill land for breeding buy in mountain ewes and cross them with a Kerry Hill or Wiltshire ram to get earlier and larger lambs for fattening; or, again, they may buy in early summer wethers from some of the more elevated districts where there is no grass that will bring stock into a state for market.

In that district most of the land was rented, rents running from 20s. an acre to a little higher. A few men owned their own holdings, but our host had a strong opinion that the worst farmers were the small men who owned their own land, because as owner a

man gets careless and neglectful about matters for which he would be taken to task if a tenant. Labour was in fair supply but dear, men getting £32 a year with their board and lodging, and on the usual farm of a hundred acres or so there would be one or two of such hired men. Where the custom of the country is to have only single labourers living in there must be a provision of small holdings to give a man a chance of getting married and sticking to the land, but our host disapproved of the way most of the recently created small holdings had gone to tradesmen and not to agricultural labourers. In his opinion the younger generation were not taking so keenly to farming, though he admitted the extension of the milk business round Aberystwith had provided new openings, while the increased sale of manures and feeding stuffs in the district showed that the industry was prospering. After taking leave of this good farm and good farmer, for so he would be regarded out of Wales as well as in it, we took a day or two off from agriculture, because we had arrived at the verge of the mountains, where the sheep become only a minor incident in the scenery.

V

NORTH WALES: SLATE QUARRIES AND WATERING-PLACES

WELSH mountains under the tropical rains of July 1912 soon lost their attraction, and we set out once again to see something of the farming of North Wales. North of the estuary of the Dovey what one may call the mainland is chiefly occupied by mountains; the industrial features are the slate quarries in the inland valleys, and the watering-places, large and small, which form a continuous fringe along the coast from Aberdovey round to Rhyl. In these districts farming takes a secondary place, and it only becomes again the staple industry in the Lleyn peninsula which juts out from the top of the Principality, and in the island of Anglesey over against it. Each of these districts also possesses its fringe of watering-places, which are thickly populated during the summer from Lancashire, Birmingham, and the Potteries; but the towns are small and the inland population is solely dependent upon agriculture. It is this part of the Principality, even more than South Wales, that gives one the impression of a Celtic country. Just as in Brittany or in Ireland, the inhabitants are gathered into small villages; the cottages are long and low, built of rough stone and whitewashed over; the farming is chiefly concerned with milk and milk production; and various little traits, such as a long-shafted spade or shovel

without any cross handle, betray the common origin of the peoples.

The Lleyn peninsula mainly consists of gently undulating uplands, which here and there run up into shapely but not very lofty hills. The soils are mostly light and suited to arable cultivation, and the land is cut up into small enclosures by big grassy banks, though here and there are to be found wide expanses of heath and rough grazing, none of which, however, appear to be grazed in common, but are in the occupation of single farmers. The farms generally run very small; in the peninsula itself it is estimated that only about 17 per cent. of the holdings are above 50 acres. Despite this extreme subdivision of the land the demand for small holdings still increases, and the County Council have recently acquired a large estate near the point of the peninsula in order to satisfy this demand. Rents are comparatively high, averaging about 20s. an acre, and much higher prices are paid for the small farms on the lower land near the sea. Though the holdings are so small, with quite a fair proportion of the land under the plough, the farming almost entirely depends upon the live stock. Practically the whole of the produce of the farm is consumed, and the chief items of sale are milk, butter, two-year-old store cattle, and sheep. Out of the local markets the dealers gather the store beasts, which find their way eastward and are eventually sold to the Midland graziers for fattening, while on the northern side of Carnarvon the markets are well worked by buyers of mutton from Liverpool and Manchester.

But a small holder can never make much of a living out of live stock alone; the turnover is too slow and his own labour contributes too slight a share

to the value of the product. Of course he may do well enough by producing and selling milk, because he adds the routine of a milk round to the work of feeding and milking his stock, and obtains the profit of the retailer as well as that of the producer. Again, payments come in week by week, which is a great help to the economy of a farm that is generally short of capital. Butter-making and calf-raising also bring in regular returns, but do not require so much labour; hence the profits to the small holder are less, though this may be compensated for by keeping a large proportion of the land under tillage and so producing an extra quantity of food upon the farm, or by heavy purchases of feeding stuffs, the object in either case being to carry an exceptional head of stock per acre. The slowest return, because the minimum amount of labour is expended on the product, comes from rearing stock on grass until they are fit to sell as stores; in itself the operation is profitable enough, but the profit is small per acre, though it can be made large per man when plenty of land is to be had cheaply. Grassland farming is undoubtedly an easy business, and the corn grower of East Anglia often envies the men in the West who can make a living "by looking over the gate." However, the Welsh farmer in the Lleyn peninsula and in Anglesey does cultivate a considerable proportion of his farm, though by his exclusive attention to live stock he misses the great opportunities his soil and situation offer. In the first place, the summer visitors provide an exceptional if temporary market; during their stay there is a dearth of milk and cream in the district, and the local supply of butter is quite inadequate to the demand. But, as a farmer cannot increase his milk production to meet a special call, he would be well advised to drop

making butter at this season and sell only milk and cream, both of which are more profitable than butter at any time and can rise in price with the demand, whereas butter prices are checked by the foreign supply, which extends into the smallest watering-places round the coast. Sheep and especially lambs sell well during a summer season, and we are acquainted with more than one farmer near a watering-place who lays himself out to get rid of all his lambs fat in and about August.

But the profitable opening before the Welsh farmer lies in the production of vegetables and fruit; we saw no market gardening and very few large gardens near the watering-places, and we were informed that the whole of the vegetables and fruit consumed by the immense visiting population was imported from Liverpool and Manchester. Even potatoes are imported, though we saw some excellent breadths of main crop potatoes and one or two of earlies, the latter sufficient to show that with proper management a valuable business in early potatoes could be established in Wales, as in so many other districts on the western seaboard. But not a single field of cabbages, cauliflowers, marrows, or peas did we see, all crops which might yield from a single acre pretty nearly the whole rental of the usual North Wales farm. It is not merely a question of supplying the summer visitors for a two months' season; the light, easily worked soils, the absence of frosts, and the mild growing climate induced by the proximity of the western sea, might make Carnarvon and Anglesey the market garden of the thickly-populated slate-mining areas close at hand, and also of Lancashire, the Potteries, and the Black Country, with which there is direct and easy communication. At present Lanca-

shire gets its early potatoes first from Penzance, then from St. Malo and Ayrshire. North Wales possesses far superior transit facilities and a climate that is intermediate between Cornwall and Ayrshire. Even Cheshire and West Lancashire grow early potatoes, and broccoli and cabbage succeed the potatoes. But we were informed that the Welsh farmer would scorn to grow a cabbage lest he should derogate from his social status as a farmer.

Some efforts are being made to introduce more intensive crops; at one or two places we saw trial patches of tobacco, which, however, were looking a little backward because of the rainy and sunless weather that had prevailed almost continuously since the May drought, itself a hindrance to planting. Again, in Anglesey we saw a new enterprise in the shape of a bulb farm chiefly devoted to daffodils, on which the bulbs were then being lifted and put away in potato boxes to dry in a long airy shed. In a few weeks they would be cleaned up, the marketable bulbs packed off, and the small offsets replanted to provide the stock for another year. The whole farm is about 25 acres in extent, but only five acres have been as yet planted with bulbs; it is not intended ever to crop all the area with bulbs, but to take potatoes and run beans over a fourth of the land every year, thus avoiding some of the dangers which have overtaken the bulb land in Holland, which gets little or no rest. The soil was a reddish stony loam, easy to work but fairly retentive, and it was found to produce somewhat smaller but denser bulbs than come from Holland, where the soil is almost pure seasand modified by cow dung. The whole production of the farm was taken by a well-known firm of bulb sellers who have a reputation for the quality of their

produce; and as this small area already provided occupation for seven men, it was an excellent example of the kind of rural industry that should be developed in this country. In the United Kingdom, farming should be a business that produces large returns per acre by the employment of foresight in the management and skill in the labour, instead of one that depends on skimming the small profit which a large area of land will return unaided.

We have been coupling Anglesey with the Lleyn peninsula, and the character of its surface and its farming is very similar, though there is, as the traveller to Holyhead knows, perhaps a greater proportion of uncultivated land in Anglesey. The island is constituted of a series of parallel folds of the older rocks from the Coal Measures downwards, giving rise to a variety of soils and a number of badly drained valleys that are often swampy at their bottoms. The farms are small, but rents run high and labour is cheap—indeed, in the remoter parts of the island the rate falls to the Irish level of 10s. a week. And much of the land is excellent; we saw splendid fields of oats and roots where no very great care had been lavished on the farming. The fields are generally divided by wasteful grass banks with gorse atop, and the grassland which largely predominates is occupied by the usual black Welsh cattle and mountain sheep, which are generally crossed with a foreign ram to produce larger and earlier lambs. A curious survival for this purpose is the old Wiltshire horned sheep, now extinct in its original county, but still bred in North Wales for crossing purposes. And a remarkable creature does an old Wiltshire ram look; high on the legs and with a long fleece that is pulled off instead of being shorn, it is therefore a thing of patches in the

summer, until the casual observer often finds a difficulty in separating the sheep from the goats.

With Anglesey our inspection of Welsh agriculture ended. There is some excellent farming in the Vale of Clwyd and in the counties bordering on Cheshire and Shropshire, but it possesses no features to distinguish it from the farming across the border and has no specially Welsh character. In Wales proper we could but conclude that the agriculture generally is undeveloped and below the opportunities offered by the soil and climate. In part this may be set down to the barriers of distance and language which in the past cut the Welsh farmers off from their improving brethren in the Eastern Counties, and perhaps to some want of sympathy between the landowning and the farming class, but probably it is chiefly due to the smallness of the farms. Small holding farmers, however stable as social elements and excellent as rent-payers, rarely originate, rarely even improve their land or their methods; they have no margin for experiments, and must hold fast to what has been proved to yield the living to which they are accustomed. There are exceptions; but if a small holding community in Wales or elsewhere is in the future to rival the large farmer in adaptability, in seizing opportunities for business, in making the most of the land, it will only be after enlightenment by education and under the direction of a co-operative movement.

VI

CORNISH MARKET GARDENING

CORNWALL used to be known as West Wales, so one may allege some sort of sequence in resuming in the far south-west the farming pilgrimage that had been interrupted in Anglesey. Both counties are strongholds of the Celtic folk, and one might well expect that in so primitive an art as agriculture much would survive to indicate the common origin of the peoples. Indeed, if such survivals were common there should be a good deal of the old Celtic farming customs left throughout England, because it is impossible to believe that the invading Saxon races killed off the native British in charge of the land, however much they may have exterminated the warriors. But few such traces remain; it is true that the shepherds of the South Downs and even in East Anglia still count their sheep with Celtic numerals that run up to fifteen (bumpit = Welsh pymthaeg) and then continue one-and-fifteen, two-and-fifteen, etc., but in the main the farming of Great Britain is of comparatively late birth, and we must seek its origins on the Continent rather than among the primitive customs of our own constituent peoples. It was the intercourse with Flanders and the Low Countries from the time of Henry VII. down to the Commonwealth that taught the English how to farm and gave us such crops as turnips, clover, and hops; from this starting-point the landlords and larger

farmers of the East of England worked out systems of management which have been very little modified since. From the East of England the improved farming spread all over the country, through the example and precept of reforming landowners, the enterprise of the larger farmers which was stimulated by the growth of population round them, and the missionary zeal of writers like Jethro Tull and Arthur Young, who diffused the information they had derived from the best practitioners. And if under very similar conditions of soil, climate, and inaccessibility Welsh farming has dropped very much behind Cornish, the result must be largely set down to the barrier of language that Wales retained and the difficulties of mental rather than of physical intercourse between the west and east of the country.

The contrast is certainly great—enormous when we contrast the market gardening round Penzance with the unintensive stockraising and milk production on the southward shores of Carnarvon and Anglesey, where soil and situation can be but little inferior. The Cornish market gardening is, however, a very special business, and in its most concentrated form is found only in a very limited area round Mounts Bay, the little village of Gulval, about half a mile east of Penzance, being the centre. The land most esteemed lies about half a mile back from the water's edge on the gently rising southern slope; the soils are mostly light, derived from the decomposed "killas," or clay slate, though here and there are other soils arising from the intrusive volcanic rocks. The determining factors are, however, the warm, growing temperatures that prevail all through the winter, and the freedom from frost or snow, three or four degrees of frost at any time being a very rare occurrence—disastrous when it

comes. On this favoured land two crops can be grown in the year, the first of early potatoes harvested in May, followed by broccoli harvested between Christmas aud the latter part of February, and some of the fields have carried these two crops year after year without break for the past forty years. Few of the men engaged in this business occupy very much land; from five to fifteen acres is the usual holding, but even such an area requires considerable capital, for the rents are from £8 to £10 an acre, and the expenditure on manures and labour is enormous.

As the broccoli crop is cleared the preparation of the land for potatoes begins; the land is dressed with seasand, which contains a good deal of broken shell, and seaweed, of which as much as a hundred loads to the acre may be applied. Sand and weed are carted up from the beach whenever convenient. There is no such allocation of particular stretches of foreshore to particular farms as prevails in Guernsey, but a certain number of men on the beach live by drawing up the seaweed at low tide ready for the gardeners' carts. The seasand is ploughed in, the seaweed put in the drills with 10 cwt. or 12 cwt. per acre of rich guano, and then towards the end of February or early March the potatoes are planted. Imported seed is always used, Scotch seed that has grown one year in Lincolnshire being preferred, and the seed is obtained in the autumn and sprouted on boards that are stacked up in tiers in the adjacent barns. The convenient boxes used elsewhere for sprouting and carrying out the potatoes for planting are not here employed. As the seed sprouts the tubers are cut to a single eye, however small may be the piece planted, for the growers prefer a single haulm, though it is not worth while to set about rubbing out all the

extra shoots. When the potatoes are up they are dressed with nitrate of soda, and as much as 10 cwt. to 15 cwt. per acre of that fertilizer are applied. Pace is everything, and any outlay that will bring the crop to hand two or three days earlier is justified by the higher prices which prevail just when the market opens. Something like £25 an acre having thus been spent on rent and manure, without taking the seaweed into account, no trifling returns are needed to redeem the grower's position. His crop should be ready to draw early in May, and he hopes to begin with a yield approximating to 1 cwt. per lace (a lace is about six-fifths of a rod, 160 laces going to the Cornish acre), at a price approaching 15s. per cwt., from which it declines to 8s. or even 5s. as the season advances. Of course, packing, freight, and commission have to be deducted, and, when the labour has been paid for, little profit remains from the potato crop alone, often none at all, as had generally been the case in the season of 1912, when the crop was actually cut off by blight, an unprecedented occurrence. As soon as potatoes are off and the land cleaned up, the broccoli, which have been raised in a seed bed and then transplanted once, are set out and receive no further manuring, except occasionally a little dressing of nitrate. They are ready to cut from December to March, and may be sold on the ground at £20 an acre, but good crops when marketed by the grower may realize as much as £60 an acre.

The standard variety is a local "Cornish Early" broccoli, of which the growers save their own seed, but the stock is said to be deteriorating and to have become coarser and later, with a tendency to throw woolly heads. This is scarcely to be wondered at,

for several other varieties are now grown and also saved for seed; bees will effect cross pollination from considerable distances, and deterioration inevitably follows indiscriminate crossing. One of the growers also averred that sufficient discrimination was not exercised in the selection of the plants allowed to seed; the occupants of some convenient corner were left without considering whether they were specially early or late, of good habit, or otherwise. One or two seedsmen's varieties are now extensively grown for succession, but none of them come so early as the true native stock.

On some of the land nothing but potatoes and broccoli are ever grown, but most of the market gardeners make an occasional change; a small area will be sown with wheat or rye, because the straw is wanted for packing, and in the corn clover will be sown and allowed to stand for a single crop of hay. Spring cabbage or savoys sometimes take the place of the broccoli, and they had been a very profitable crop in the spring of 1912. Onions and carrots were other crops that paid well on occasion, and a little farther afield several men were engaged in a more general market gardening business with a considerable variety of crops, one advantage of which is an equalization of the work throughout the season, so that labourers can be permanently employed instead of taken on for the job. One such holding that we visited, in addition to the usual potatoes and broccoli, produced cabbages, onions, and carrots, also strawberries on a large scale, though Penzance has no longer the monopoly of the early outdoor trade in strawberries, Southampton being practically as early. Some of the land was under fruit—apples and gooseberries, though in the Cornish climate fungoid diseases

are rife, and there were breadths of asparagus, runner beans, violets, daffodils, and, as in other districts, wallflowers under the standard trees. All the land showed evidence of strenuous and enterprising farming, such as, indeed, is necessary in order to pay such rentals.

But a little distance back from the sea early potatoes cannot be grown with success, and the rent of the land falls sharply to something in the neighbourhood of £4 an acre. The cartage of sea-weed and sand from the shore becomes more expensive, and the week or so by which the potatoes are later causes the loss of the best of the market and forces the crop to be sold in competition with the potatoes that are then coming in quantity from St. Malo. We visited an excellent example of such a farm where a five or six years' rotation was followed; on the broken up ley broccoli were planted to be followed by cabbage and mangolds, with breadths of onions and carrots; this was succeeded by one or two years' corn—wheat, or oats, in which the seeds were sown and left down for three or four years. In the soft, warm climate a good take of seeds and an abundant pasture were always assured, and this was pastured by cows, the main source of income on the farm being the sale of milk. There was a considerable orchard, and raspberries were found to grow exceptionally well in the equable, moist climate. The land was highly farmed, the manure bill almost represented a second rental, and feeding stuffs had also to be purchased to keep the large head of stock going. Considering that only one crop making big money could be grown in a five or six years' rotation, and that the rest of the revenue had to be earned by ordinary farming, £4 an acre seemed a great rent

for this land, but even at that price farms are in demand, and a small holding of some 20 acres without any buildings upon it that was up for sale was expected to command about £100 an acre.

Indeed, much of this Penzance market gardening looked like one of those industries which would be regarded as impossible did they not exist. To grow broccoli and potatoes alternately on the same land for forty years would itself be declared impossible, yet there can be no very pronounced deterioration of crop, nor has any special disease manifested itself. There were great complaints of finger-and-toe or club-root, and some men did roundly assert that the land is getting sick and ought to go down to grass for a few years, though that was not possible unless the rents were abated. Certainly the area under the very special farming is shrinking, and though great profits have been made we were told that very few of the old gardening families still remained in the business. Such facts were more significant than opinions about the deterioration of the crops, for who could be otherwise than pessimistic in a season of such continuous rains and lack of sunshine, when the broccoli did not grow but were turning blue day by day. Another fact to be taken into account is that the standard of quality is rising; St. Malo presses close on Penzance for early potatoes, and it was agreed that second-rate broccoli have become unsaleable because of the uniform excellence to which the Roscoff growers have accustomed the market. Labour also has been getting dearer, though the standard wage was still no more than 18s. or 20s. a week, or 3s. 6d. a day when men are only engaged for the spell of work. As regards the early potato crop, competition is likely to increase rather than

slacken, as countries much farther south improve their methods, and with that the farming must take a more normal and less expensive form.

Something may, perhaps, be saved on the present extravagant and one-sided manuring, though *a priori* it is unwise to pronounce that men with so much experience must be wrong. Even so it is difficult to believe that the Penzance farmers can continue to retain their very specially profitable market. They may still continue to grow early potatoes, but they will not be early enough to justify either manures or rents on their present scale. On the whole, the landlords are getting the special profit attaching to the situation of this land; the growers, as far as we could learn, were not on the average earning much more than other small farmers. But for all that the Cornish market gardening is a notable industry, and presents a fine object-lesson to the farmers on the seaboard of Wales, who as yet have not attempted to take advantage of a very similar climate and situation and a closer proximity to the great markets.

Over but a limited area do rents of £10 or even £4 an acre prevail; still, land in West Cornwall is in great demand, and about £2 an acre seemed to be the ordinary rental. We were told that some of the recent demand had arisen from Cornish miners, returned from South Africa with a little money and anxious to settle on the land in their native country. They were said to offer too much for the land, and landlords were blamed for taking them to the detriment of the old nants. But the grumbling was chiefly directed at all landlords, men who possessed perhaps only a rm or two bought as a speculation in the time of e depression: and we met one man looking for a esh holding who declared he would only take a farm

on a large estate, where he would not be subject to the caprice of an owner trying to screw a quick profit out of his bargain.

The farmers were all uneasy at the sales of estates that were going on, as tending still further to increase the insecurity of their position. In this district leaseholds of 14 to 21 years are a common form of tenure, but with the rising values landlords are beginning to hold out for yearly agreements. Considering the demand for land it was surprising to see so much waste, even in the immediate neighbourhood of Penzance and at low elevations — gorse-covered banks and tracts of marsh, wet enough in that dripping summer, but surely capable of reclamation when the result would be so valuable. There were orchards, too, which only cumbered the ground, so old, distorted, and diseased were the trees.

West Cornwall is a bare, open country of small fields divided by banks and stone walls; as a rule, the only trees grow round the homesteads or in the deeply cut valleys, where they can find shelter from the incessant wind. The holdings run small, about 40 acres being a typical size; and though almost entirely under the plough the mainstay of the business is dairying. The seeds stay down for from three to five years, then come three years of corn and roots, and on the better land as far east as St. Ives there will always be a breadth of broccoli as part of the root break. Otherwise, all the produce is consumed on the holding, and the Cornish farmers are great buyers of artificial manure so as to get as much food as possible out of the land. All the farmers sow dredge corn, and spring wheat is often mixed with the barley and oats to get as all round a feed as possible out of the grain. The farms are heavily stocked—one man

we saw milked 26 cows on 50 acres—and to carry so many cattle feeding stuffs as well as manures must be purchased, though we were informed that too large a proportion of the business was done in proprietary articles, "special manures" and "oilcakes," of which the composition was imperfectly apprehended by the buyer.

Some of the farms sold milk, especially in the summer, when the demand from visitors is very great; but milk selling was still regarded as impoverishing to the farm, despite the ease with which such losses can be repaired now that artificial feeding stuffs and manures have become available. We were told of one landlord who gave a tenant notice because he sold milk instead of butter, and thus had no separated milk on which to rear pigs in order to make dung. The milk, then, is chiefly converted into butter and clotted cream; and there are creameries in the district which purchase the separated cream from the farmers, though none of these enterprises are on a co-operative basis. Except for the subsidiary profit derived from pig-keeping on the separated milk, it was difficult to see why men should stick to butter-making; the local price was only 1s. a pound, whereas the milk would fetch 9d. a gallon wholesale. On most of the farms the work was done by the farmer and his family with a single hired man if there were no grown sons; where the herds were large the women of the labourers were hired to do the milking.

The stock we saw were disappointing; indeed, considering how purely a cattle country Cornwall is, we were surprised at the indifferent quality of the animals grazing in the fields. The Cornish farmer seems to ask for no more than a dairy cow, and the prevailing type is a mongrel with a Devon or South Ham, or

occasionally a Shorthorn, foundation, but with a strong infusion of Guernsey blood. Pure bred Guernseys are highly thought of; fresh-born calves will fetch as much as £4 apiece. Generally, however, we were told the dairy farmer is quite careless about the bull he uses, and the only grading up that even the better ones practise is to retain for the herd the heifer calves from the best milkers. We were told that contagious abortion was rife; our informant never bought a cow nor borrowed nor lent a bull, lest he should introduce the disease; he even feared its malicious communication by some envious neighbour letting his bull break through. With this point of view he had no use for any scheme of improving the live stock of the district by the purchase of high-class bulls to be let out at a small fee for the use of groups of farmers. Improvement is certainly needed, for one good farmer told us that his cows did not yield on the average 400 gallons of milk a year, but he paid little attention to their milk yield provided they produced 8 lb. of butter apiece per week. Of course, with the prevalence of Guernsey blood, the milk is rich in cream; the analyses of the milk brought into Penzance show an average of well over 4 per cent. of butter fat. Milk can be produced cheaply in Cornwall with the abundant grass and the warm winters, though the cows must be housed in the winter and only the young stock can be left afield. A feature of the farming of this part of Cornwall is the general habit of turning the pigs out to grass; always the large black drooping-eared pig was in evidence, Devon and Cornwall, with Sussex and Essex, being its strongholds. It makes a fine bacon pig, long-sided with a good proportion of lean, and it is a very prolific breeder. On many of the farms a colt or two was to be seen; but

light horse-breeding we were told was declining because of the uncertainty of the returns, though a good many farmers with working mares of the right stamp, not too heavy, would still put them to a thoroughbred stallion.

Though the stock farmer suffers least from a rainy season, the outlook in West Cornwall was poor enough in 1912; in mid-August a great deal of hay was still in the fields, some of the corn had been cut for a fortnight and rained upon every day since, the uncut corn was going down under the wild winds, the second cut clover had shot to such a height that it would be difficult and wasteful to graze, and the roots were all thick with weeds, which hoeing had done little more than transplant. Fortunately Cornish farmers do not sell their corn, so that if they could harvest it at all, discolouration and even sprouting would be of little consequence; but, accustomed as they were to rather more rain and wind than the ordinary arable farmer, 1912 was proving a heartbreaking experience.

From Penzance we moved east to Padstow, the market town of a rather special district of arable farming, distinguished by its considerable acreage of barley. The country was not unlike Cornwall farther west, consisting of the same treeless uplands divided by immense stone-faced banks with scrub atop, valued for the protection they afford against the winds that sweep from one sea to the other over the peninsula.

Though the fields were still small, farms were larger than in West Cornwall, from 130 to 250 acres, and rents ranged from 20s. to 30s., having risen by 25 per cent. or so within the last few years. Labour was described as scarce, the standing wage being 15s. a week, with a cottage and a breadth of potatoes and sundry other perquisites, which would make up the

equivalent of £1 a week. One farmer who showed us round argued strongly against the custom of a standing wage for all men alike, and insisted on the necessity of paying higher rates to the better men, if only to encourage them to improve their work. He told us that there were a fair number of small holdings in the district, on which a labourer who had saved money might make a start and earn a reasonable living by dairying, raising chickens, etc., the summer visitors providing a very good market for small holders' produce. For all that, very few boys were taking to farming; he had not a single one on his farm; most of them went into the Navy or drifted into some form of seafaring.

Though the small men grew milk, the normal industry was mixed farming, in which the chief revenue was derived from stock rearing. A usual rotation was wheat, barley, roots, barley, and seeds, which were allowed to stand from three to five years; but every farm had also a fair proportion of permanent grass, though little of it was up to fatting quality. Dredge corn was common in place of barley, which was the only corn to be sold, and even of that the greater part, with the wheat and oats, was consumed on the farm. As in other western counties, we found wheat held in high esteem for feeding purposes when mixed with other grain.

Throughout the district we found a local Cornish barley being grown; in many cases the seed had not been changed on a particular farm for a couple of generations, and such occasional introductions as had been made had only served to add another variety to the already mixed stock of seed. As far as a Cornish type can be distinguished it is stiff-strawed, narrow-eared barley yielding thin and coarse-skinned grain; but it represents an aggregate of varieties that has

acclimatized itself, and it crops better than the seedsmen's sorts that have been set against it. We did, however, see a small field of a new variety which promises to yield both bigger crops and a uniform sample of higher quality.

Another local speciality was a form of perennial red clover, known as "Cornish marl clover," said to be more persistent and to stand grazing better than the usual cow grass.

The chief item in the revenue came from the sales of Devon cattle, which leave the farm as forward two-year-olds in the spring; many go to the Midland pastures, others to Southampton and Chichester, whence the Pevensey Levels are largely stocked, as we had seen in an earlier stage in our pilgrimage. Some men were also able to fatten stock with the aid of corn upon their grass, Southampton being also the market for fat beasts; but Devons do not tie up well, and there is little winter feeding. Store cattle can stay out all the winter, and as they thus retain their coats they are eagerly sought for by the Midland graziers who want to make an early start. Sheep were general on the farms, chiefly Devon Long Wools, though a few men like our host kept Oxford Downs for their earlier maturity. He made a point of fattening all his lambs for sale during the summer visitor season, and had at that time succeeded in disposing of nearly all his crop at prices ranging from 30s. to 40s. apiece.

With all this grazing we were told that little cake was bought, the Cornish farmer preferring to spend money on manures and grow as much of the food as possible. Basic slag was not in favour, superphosphate was the standard manure, and large quantities were used even on the grass, where its value was said to be very manifest. Most of the land appeared to be short

of lime, and an old custom that had largely fallen into disuse had been to spread shell sand from the beach. We were told, however, that it always had a bad effect upon oats, though it benefited other crops, and where the sand had stood in heaps the injury was said to be manifest in the oat crop for many years. We found the same opinion in other parts of Cornwall; even liming, a practice which is reviving under the stimulus of the agricultural teachers, is thought to be injurious to the oat crop.

At present the shell sand is chiefly being used on the upland heather, of which there is much common land only now being enclosed and brought under the plough. As grazing, these heathy commons are said to be good for cattle and young horses, but bad for sheep. Altogether farming in that part of Cornwall struck one as brisk and prosperous, though, as elsewhere, the prospects of the season were deplorable, hay still being out in the field at a time when the corn harvest ought to have been in full swing or nearly over.

VII

DEVON GREENERY

WE parted with the Cornish farmers with regret. Not only is their style of farming good, exceptionally good for the size of their holdings, but they themselves are exceedingly interesting and pleasant men to talk with, quick and intelligent and with a charming habit of speech, with a curious suggestion of American in some of their intonations. We have other reason to suppose that in the geographical distribution of intellect Cornwall takes a high place, for the county has always been honourably distinguished by the number of evening classes it has been able to maintain among young farmers, and the quality of their work. Oddly enough it was among the gardeners of Gulval that we did hear some of those denunciations of technical education that were common enough among farmers twenty years ago, but which have become rare and even unpopular of late. And yet it was of one of these very West Cornish farmers that an anecdote was told us which illustrated how much even a limited technical instruction might save their pockets. The farmer in question, as a concession to new ideas, applied 10 cwt. per acre of superphosphate to one of his fields, with excellent results. Encouraged by this, he increased the application to 16 cwt. in the following year on the same field, and not unnaturally got little or no

crop. He then reverted to dung and obtained a magnificent return, because with the nitrogen of the dung the hitherto unused superphosphate came into action; but the conclusion he drew was that superphosphate and such like manures were foolishness, and that dung alone was good.

From the Padstow country we made our way Londonwards by the main road, and found the eastern part of the county more given up to grazing and less to corn than the western; indeed along the Great Western line about Liskeard the production of milk to be put on rail becomes a general industry, and the farming mainly depends on dairying and the raising of store cattle. The farming of South-West Devon has many features in common with that of the east of Cornwall; indeed the valleys of the Tamar, Tavy, Lynher, and other streams that flow down to Plymouth Harbour form a natural agricultural unit, in which we paused to see one farm in the neighbourhood of Tavistock. Perhaps the most characteristic feature of the region, and one that was accentuated during that rainy season, was the greenness and the rankness of the vegetation. Every field carried a growth of grass that seemed superabundant to one accustomed to the pastures of the east or midlands, the grazing was rough, and there was little attempt to keep the herbage bitten down close.

Trees are also very much in evidence, for the small fields are divided by huge banks faced with stones, which generally carry on the top a line of hedgerow timber twenty or thirty feet high. There must be an enormous amount of waste from these banks; not only is the area they actually occupy considerable, but for many yards they exercise an evil influence upon the corn, rendering it weak and blighted during growth,

and slow to dry during harvest. A big hedge to a small field is quite enough to cause the repeated loss of the rare opportunities of getting home a crop that do occur even during such a rainy time as the August of 1912, when only the farmers who seized upon bare possibilities of harvest saved their crops before the deluges that marked the latter part of the month. Hedges, again, are always harbours of weeds and of those growing plagues, rats and sparrows, and the only good that can be said of them is that they provide shelter for stock. As to the waste of land by our big wandering hedges, Prout calculated that by straightening up his Sawbridgeworth farm he gained 16 acres in 450. Again, the prevalence of small and irregularly shaped fields forms one of the great obstacles to really economic farming in England. It is not merely that time is wasted over the constant turnings, but a man gets thereby into a retail way of looking at things, and puts out of his consideration all schemes for handling crops on a large scale with the help of machinery. In most parts of England the necessary preliminary to any capitalist exploitation of the land, such as would be extremely profitable on the thousand or two thousand acre scale, would necessarily begin with a complete reconstruction of the existing divisions of the land. When the old landlords drained and marled to improve their estates, it is a pity they did not also remap them; many of our fields have remained unchanged in shape or name from as far back as their history is recorded, for the changes wrought by Enclosure Acts only affected a portion of the country.

The farm we went to visit was fairly typical of the conditions that prevail near Tavistock, where the soft Devonian shales weather down to a deep red soil, rather heavy to work in the moist climate but intrinsic-

ally hardly to be called a clay. The farm extended to some 250 acres, of which about 30 acres were under crop, the usual custom being to leave the seeds down for three years or more, and then to take a crop of corn, one of roots, and another corn crop, in which the seeds were again sown. It was not, however, necessary on this farm to let the cropping move over the whole area, for the best of the grassland was permanent pasture that would have been damaged by ploughing up. Wheat had almost disappeared from the district, and barley alone was little grown, the staple corn crops being oats and dredge corn, both of which were consumed upon the farm. As usual on a heavy-stocked farm worked on a rotation that keeps the land down for three years in grass, the difficulty with the corn crops was to keep them standing. The soil gets in too high a condition, because some extra food, often a great deal, is sure to be given to the stock grazing the seeds, and the intervening root crop receives all the dung made on a farm that is large compared to the extent under the plough. When one considers the possibilities of intensive farming and the raising of the level of production, it is well to remember that over a large part of Great Britain the factor which to-day chiefly limits the yield of grain per acre is the lack of sufficiently stiff-strawed varieties. Manure is in excess, with good cultivation and in average seasons the rainfall is sufficient for crops of double the usual size, yet no existing variety of wheat, barley, or oats can live up to its opportunities except in most favourable seasons. That farmers recognize this limitation is seen in the prevalence of names like "stiff straw," "stand up," etc., among cereals, and generally the first question a farmer asks about a new wheat concerns the straw rather than the grain.

The high condition of the arable land on this farm could be seen in the heavy crops of mangold and cabbage; the swedes having been sown later had suffered from the cold and rainy weather, and were on the small side, with the blue leaves that tell of arrested development. The season had suited the cabbage, which were immense, and we have often wondered why stock farmers do not grow this magnificent fodder crop more freely. Of course, in severe climates it will not keep like swedes (though with care the solid varieties may be stored), and the transplanting requires a little extra labour, but the return is great on many soils that are not first-rate for swedes. The root land showed how difficult weeds had been to deal with during 1912; the preceding hot summer had ripened an extra crop of seed, and when they 'germinated hoeing did little more than check and transplant the weeds. Spurrey was a good deal in evidence here and in other places in Devonshire, showing that with the lack of lime and the moist climate the soils had passed the safe limit and were becoming acid. Yet liming, formerly one of the most regular operations in Devonshire farming, had not been forgotten on this farm, though as elsewhere the practice had become greatly neglected. Men will fix their attention on the harm that may be done by liming; as in Cornwall a tradition prevailed that lime is bad for the oat crop even after several years, and our host could recall several instances where liming a field already poor had still further impoverished it. Of course, lime in itself is not a plant food; it is a means of maintaining a neutral reaction in the soil, without which manure is not effective nor plants healthy. The old rhyme, "Lime and lime without manure will make both farm and farmer poor," sums up exactly the practical aspect of

the question. As might be expected, basic slag had proved a most valuable manure on this land, and its effects were visible in the condition of the permanent pastures; but again basic slag gave its best results where the grassland also received good dressings of farmyard manure.

Our host, as usual in this part of the country, was chiefly a stock farmer; he kept 20 cows in profit, selling the milk into Plymouth, and he bought in his dairy cows, mostly South Hams and Shorthorn crosses of no particular breeding as long as they showed a promise of milk. But he reared Devons and could fatten them out on the grass with a little assistance. In the valleys about Tavistock are some real fattening pastures that will finish stock; but it is only a limited area on which this can be done, and the hill farmers live by selling stores. The Devon breed of pure red cattle are well known in the show-ring, but have not established themselves to any great extent outside their native district. Belonging to the same fundamental red stock as the Herefords and Sussex cattle, the race that is not improbably supposed to have come with the Saxons, they are essentially graziers' beasts, to be fattened on the rich pastures in the summer rather than on cake and turnips in the yards. Hardy and active, they differ but little from the Sussex, except in their lighter frames; indeed the older type of Devon was the smallest of the true beef breeds. Locally they have some reputation as milkers, but they have never been really bred for this purpose. Sheep were important, the flock consisting of South Ham or South Devon ewes, while Dartmoor sheep were often bought off the hills to be crossed with a Hampshire Down ram for the production of early lambs. An outsider finds some difficulty in sorting

out these West Country sheep; both the Devon long wool and the South Hams belong to the big long-woolled white-faced hornless race that probably came to England from Flanders. When the improvement of sheep set in, Lincoln and Leicester blood was introduced, and the characteristics that now separate the breeds are of no great antiquity nor importance. The Dartmoors, again, are a rougher sheep, nowadays with a grey rather than a white face, but betraying their common origin, modified by selection and hardened by exposure on that wind-swept upland. The usual cider orchard and some newer orchards planted with table fruit completed the farm; the cider, however, was only made for the men, who could have what they wanted during the day and also take some home. In Devonshire there are a good many of these customary allowances to be added to the standing wage of 15s. or 16s. a week—for example, a breadth of potatoes on the root land and a cottage at 15d. a week. It is a question though, whether cottage rents will not soon get raised to a level more nearly representing an economic interest on their capital value.

We were informed that the Duke of Bedford had recently been selling part of his Tavistock property, and the tenants who wanted to hold on to farms which were yielding them a good living found themselves, to their alarm and disgust, compelled to pay in the open market a good deal more than the capitalized value of their old easy rentals. It was still worse when the rates were raised to correspond to the scale of values not only upon the farms that had been sold, but upon others alongside, until in some cases the rateable value has been fixed higher than the rent actually paid. The change was even more manifest in

regard to cottages; cottages let (and rated) at 1s. 6d. a week were relet at 4s. 6d. after their sale and rated to correspond; obviously other similar cottages still let at 1s. 6d. could not be allowed to escape their fair share of the rating, and were brought up to the same level without reference to the actual rent charged. Rating on a basis of value may force on a general custom of charging an economic rent for cottages with a corresponding rise of wages; a desirable change, because it will render cottage building again possible as an ordinary business proposition. Meantime there was, naturally enough, much indignation and soreness among the farmers of this part of Devon; the old régime was more than good enough for them, and neither the magic of ownership nor the independence conferred by the feeling that they are paying for their holdings the true market price afforded any compensation for depleted pockets. The process of getting the great patriarchal estates on to a business footing may be inevitable, may even be for the ultimate good of the industry, but one cannot expect the old tenants to like it.

From the Tavistock country we made our way into the Devon of one's traditions and imaginations, the land of bright red marls cut into cleeves and combes and deep lanes from Tor Bay up the Exe Valley into Somerset, the land of apple orchards, which "hardly bear the red fruit up that shall be next year's cider cup." It was not farming, however, that took us over Dartmoor, but the mere joy of the moor on a day when the fierce wind occasionally rent the piled clouds and let flying gleams of sunshine traverse the long slopes of heather and grass. We saw only the hardy Dartmoor sheep, the forest ponies, and the red Devons cropping the scant pasturage, with now and then a

farmer on his nag, for the Devonshire farmer rides to market instead of driving the usual gig. From the moor we dropped down to Exeter and the warm valleys lying on the red Permian marls and sandstones, that give rise to easy working soils of extraordinary vividness of colour, as cheerful to the eye as they are grateful to farm.

We visited one of these favoured farms in the Exe Valley, rather larger than usual, being upwards of 270 acres, half of which was under the plough. The day was fine, and cutting was in full swing; some of the wheat had, however, been standing in shock for a fortnight, and showed signs of growing in the ear wherever it had been kept damp by the neighbourhood of a hedge. The fields were of fair size, the fences good, and the whole country had a comfortable, prosperous aspect. The arable land was worked on a five-course rotation of barley, wheat, roots, spring corn, and seeds, our host preferring the unusual course of taking barley before wheat because it enabled him to graze his seeds for a few months longer. We should expect this plan will only answer on lightish land into which the roots work freely and deeply, otherwise we have seen the shallow-rooted barley so deplete the surface soil as to give the wheat a very poor start. Good barley is grown in this district and in the valleys farther south; indeed, Devon does a small export trade in barley. Wheat also survives, Exeter being a considerable milling centre, buying local grain and grading it up with the stronger foreign sorts—though in this district there is still grown one of the finest English wheats, Rough Chaff, locally known as Taunton Buff, which is almost strong enough to mill alone. Black Tartar oats are commonly grown, though white oats are also general. As in Cornwall, it is a usual practice

to grow dredge corn. Our host had one field in which peas were also included in the mixture; and as the peas had gone on growing long past their usual time, the result was a dreadful tangle of twisted vegetation, which would, however, cut up into excellent fodder after the bulk of the corn had been threshed out of it.

We were in the thick of the apple country; and, though West country orchards are apt to be rough and neglected as compared with the carefully-managed Kentish plantations, the thirty acres or so on this farm were well kept and in good bearing order. They were, as usual in the West, entirely grass orchards of standard trees; and the same effort was not made to keep them closely grazed as in Kent, where it is said one ought to be able to walk in slippers across an orchard in any weather. Still, our host's trees were young and in vigorous bearing, not the straggling lichen-covered ancients that are all too common in the cider districts. It is a common opinion that many of these old cider apples, with their cheerful names—Sops in Wine, Jock o' Sot, Sheep's Nose, Fox Whelp—are worn out through continuous asexual propagation by grafts. The evidence seems, however, very doubtful; for when one can secure some scions from even the most decrepit-looking of the old trees and regraft them on fresh stocks they grow as vigorously and crop as freely as ever they can be supposed to have done in their early prime. It is but a hypothesis that age overtakes the variety, regarding a variety as an individual of which the multitudinous trees that may have been propagated are only parts; if the variety has only a sound constitution to begin with there seems no limit to the number of times it can be rejuvenated by grafting on to fresh stocks. The Ribston Pippin, so

often quoted to the contrary as having deteriorated and become liable to canker from age, was ever, as we learn from the old records, a bad doer, only healthy on the choicest soils even in the early years after its introduction. It is true that old varieties disappear, whether of potatoes or apples; but they disappear because they are displaced by better ones. Competition is the determining factor, as we may argue from the short vogue of some new varieties and the marked endurance of some of the older ones.

Our host made a special feature of his cider, and we tried to estimate the relative return from land planted with cider or edible fruit. It is, however, almost impossible to arrive at any general conclusion, so variable is the crop and so entirely dependent are the returns upon both the skill and the scale of expenditure of the grower. But our host expected to make in an average year five hogshead of cider per acre, or 270 gallons for sale at about 7d. a gallon. Not a big return, but the trees get no cultivation, and the labour of the vintage comes after harvest, when there is not much other work; moreover, something must be added for the grazing under the trees, which do not greatly reduce the value of the grass. In an ordinary season the fruit is only good enough to produce draught cider to be drunk up during the following summer; from time to time come the vintage years, when the best liquor may be put in bottles in the following spring and will fine and improve for several years. In the previous year we ventured to predict that the heat and sunshine would result in a memorable vintage; but the cider of 1911 has turned out curiously disappointing, thin and without quality, quite unworthy of a long life in bottle. It is generally a slow continuous growth that makes for fineness, either in man or in

fruit; but in 1911 maturity came with a rush. The hops also of 1911 were to be the hops of the century, so rich and ripe, so full of rub and fragrance, yet we gather from several sources that they proved rather disappointing in the brewery. Eminent brewers have declared that they must use sugar and other alien products in order to get into their beer that sunshine in which English malt and hops are deficient, a plausible theory which does not, however, square with results in 1911.

But cider and beer are not the whole of agriculture; and after testing an old vintage that had long lain in our host's cellar we sallied out again to look at his live stock. He milked ten cows, Devons of a good class, because the tenants on the estate could obtain the use of a first-class bull at a trifling fee, and he was quite satisfied with the milk-yielding powers of the Devon. Some of the milk he sold locally, the rest was put through the separator. But, despite the separator, the cream was still turned into butter by his wife in the old-fashioned Devonshire way, by beating with the hand instead of by churning. Such a practice does not exactly square with modern ideas about never touching the butter with the hand during any stage in its making; but the results seemed good enough; and when the dairymaid possesses the necessary cool hand by which she was selected for her job in the old days, the human dasher need be no less cleanly than the wooden one. However, most people would want to know the dairymaid before they would have much confidence in the butter. The calves were reared on the separated milk, and extra calves were also bought in to utilize it fully. The young stock thus raised, except for the heifers that were drafted into the herd, were grown on and

eventually fattened out on the grass with such artificial foods as were necessary. We are convinced that where a farm possesses grassland of decent quality by far the cheapest way of producing fat stock is to breed and make the cows in milk also rear extra calves, especially if these can be bought from a dairy where a good bull is kept. The animals should then grow on the grass without any forcing, and at or about two years old should be fattened out still on the grass, but with the help of cake and corn.

But the grass should do the bulk of the work, and it is more profitable to help the grass with artificial manures than to enlarge the cake bill above a certain amount. Of late it has become cheaper to grow food than to buy it, while another advantage attending such a system is that home-bred cattle do not get the check which attends every store during its period of wandering from market to market between leaving the breeding farm and arrival on the fattening farm. A bunch of bought stores generally contains one or two wasters which sadly take off the profit; and, though one cannot breed and rear everything of good quality, the general level can be kept more uniformly high by breeding than by buying.

On the lighter arable soils of the Exe Valley, sheep play an important part in the farming, for the land is light enough to permit of folding in the winter. Our host kept a breeding flock of over one hundred ewes of the Devon long wool breed, half of which were kept pure, the other half crossed with a Hampshire Down ram. A few of the lambs were fattened out, but he mostly expected to keep them round and fatten them off as hoggs on the turnips in their second winter. He usually had to buy in more to make use of all his fodder.

More beautiful land to farm than those soft slopes of the lower Exe Valley we do not hope to see, and if the rents, about 35s. an acre, seemed pretty high as compared with other parts of the country, good land is rarely dear; it is the cheap stuff that usually proves so expensive. Leases had ceased to be general; only about one farm in five in the district was then let on lease. Labourers, we were told, received 14s. or 15s. a week in money, their cottages free, a breadth of potatoes in the root field, and their wood was drawn for them. They also had two quarts of cider a day, though on some farms this was commuted for an extra fifteenpence a week. With harvest money a man's earnings would be equivalent to about 18s. or 20s. a week, with a cheap house—a sum on which an agricultural labourer has hitherto been able to manage very comfortably, though he is now beginning to feel the pinch of rising prices. But for all that we were told that emigration was considerable among the younger men; the Colonial agents were indefatigable, and there is still enough of the old spirit of adventure left in the Devon blood to determine men to have a flutter with fortune across the seas. As we have seen him, the agricultural labourer is not disposed to quarrel with his work, only with its lack of opportunity to make an independency.

VIII

NORTHERN CORN-GROWING: THE MORAY FIRTH

As several notable types of farming still remained unvisited we determined on another traverse of the country, this time from north to south, and convenience dictated a start with that far northern arable area which lies by the shores of the Moray Firth. This favoured district may be said to extend round the Firth from about Banff through Elgin and Forres, across the Beauly Firth to the Black Isle, then across the Cromarty Firth for some miles farther up the coast—the Easter Ross country—in a strip of low land between the foothills of the Highlands and the sea, not more than 12 miles broad at its widest point. The good land is all below the 500 ft. contour line, the best of it practically at sea level; and it is distinguished by possessing an average rainfall of little more than 25 inches, some of the area receiving even less, a condition which is only elsewhere paralleled round the Wash and in Essex. The mean temperatures are also high, comparable with those of South Yorkshire; and though the summers are much cooler than those prevailing in the Midlands and south-east of England the winters are no colder, while the crops are also favoured by the long duration of the summer days. The result is that at 58 deg. N.—the

latitude of Northern Labrador and Kamschatka—we find an almost purely arable country, growing barley as one of its staple crops, and even linseed and mangolds.

In many respects the district resembles the Lothians, though potatoes are not such a feature of the farming and harvest is somewhat earlier; but both areas are distinguished by the same equable and prolonged late summer or early autumn, so favourable to good quality in the crops. The soils are also very similar to those of the Lothians; the underlying formation is the Old Red Sandstone, and though drifts obscure the rock they are largely derived from the Old Red and give rise to light reddish soils passing into grey alluvials and black moss soils, in places near the coast being rendered even lighter by the admixture of sea-sand. Sometimes the farmers speak of clay soils on particular farms; but they are little more than easy-working loams comparable with the brick-earths and other alluvials of England, and never containing more than a small percentage of what the scientific man calls true clay. As far as our experience goes, real clays, like the London or the Weald clay, do not occur in Scotland, or at any rate are not in cultivation. Presumably the drift origin of all the Scottish arable soils, coupled with the generally greater rainfall, has removed most of the finest particles, and the generally crystalline nature of the rocks from which the soils have been denuded contributes to their lightness.

Taking Elgin as a centre we visited several farms within reach of that town, and also crossed the low watershed into Strathspey, where the farming is of a very similar nature. Elgin itself is prettily situated on a ridge of undulating ground by the Lossie, almost an island in the flat country, and has long been known

for its agriculturists, its Farmers' Club being one of the oldest that has preserved a continuous existence. Seaward of Elgin lies an extensive plain known as the Laigh of Moray, much of it only 20 ft. or so above sea level, where the prevalence of names in Muir tell of the conditions that prevailed at no distant date, while the ditches and the drainage canals show the means by which it has been reclaimed. Indeed the reclamation has been a process well within living memory; the greater part of it was accomplished about two generations ago, mainly by tenant-farmers who took a 19 years' improving lease, within which period they had to win back the money and labour expended in bringing the greater part of their farms into cultivation, and in many cases erecting the very substantial buildings that are now found. On some estates the tenants had a claim for improvements, which was allowed for in fixing the new rent. Generally the farms are of a fair size, the average being about 200 acres, though a few are larger. In the flat maritime district crofts are few, those small holdings are generally situated on the foothills above the plain; as far as we could gather, there are as many if not more than are wanted, and but few applications for small holdings have come in to the new Scotch Board of Agriculture. They are mostly devoted to stock raising, and as such are valuahle to the farmers of the plain, who fatten but do not breed cattle; but the raising of stores is not a very intensive form of farming, and the general opinion was that there was more call for the improvement of existing small holdings than for the creation of new ones. Among these hill farms something might be done to improve the quality of the live stock they produce, by introducing good-class bulls to stand at a small fee, as at present the strain of cattle

is poor, and, with the absence of any co-operative action, no one has capital enough for the purchase of a sire of better class.

The farming of the Laigh of Moray may be taken as typical of that prevailing on all the low-lying land round the Firth. It is almost wholly arable, and though the former strictness in holding the tenant to a particular rotation no longer prevails, there is little departure from the accepted course of cropping. The standard rotation is the five shift, defined as white corn, green crop, white corn, grass of which the first cut only may be hayed, and grass; but this system was found to bring the turnip crop round too frequently. The light soils of Morayshire are deficient in lime, and liming has almost entirely fallen into disuse, so that finger-and-toe has become a serious obstacle to the successful growth of turnips. The attack may be mitigated by lengthening the rotation, so that seven and eight year shifts have become more general, in which the seeds stay down for three instead of two years, or a second corn crop, known as a yaval crop, is taken after the ley. One farmer told us that he began his farming on the five shift, and lengthened it by the inclusion of the yaval crop in order to keep off finger-and-toe with success for some time, but had now also been compelled to add a third year of grass, by which means he had become quite free from disease. Even this remedy may only be temporary, though the three years' grass, by excluding charlock and other cruciferous weeds which carry on the fungus, does much to suppress it; but liming would undoubtedly be more effective, and would also add to the fertility of the soil. The three years' grass cheapens the labour bill, but the land is apt to become over-rich for the first corn crop after the ley. Typical rotations were

oats, oats, turnips, barley, seeds; or oats, potatoes, barley, turnips, barley, seeds, in which the farmyard manure was applied to three successive crops—the potatoes, barley, and turnips.

Little wheat is now found in the district, oats form about two-thirds of the cereals, and almost as much rye is grown as wheat. Until quite recently Sandy was the standard oat, but, thanks to the experiments carried out by the College at Aberdeen, it is being generally replaced by some of the newer and more heavily cropping varieties. Indeed, these experiments have aroused a general interest in improved varieties; the Scotch common barley, still the kind generally grown, is now recognized as a very mixed stock, and trials are being made of the selected Archer varieties introduced by the Irish experiments, and of Plumage —a wide-eared variety originally selected at Svalof. One farmer, we found, had begun to pick out pure lines for himself, though it is doubtful whether a farmer can profitably carry through the long and tedious testings that are necessary to establish the superiority of any one of such selections. Morayshire is a notable barley district, and as most of the great Scotch whisky distilleries are close at hand, a good and regular market is assured. The vexed question of change of seed was also discussed, for in Moray it is impossible to obtain what the farmer generally desires—a stock of seed from a later and more northern district. However, Mr. Beaven's suggestion ought to answer—that the farmer should grow his own seed barley on a small area of specially enriched land. The virtue of northern-grown barley lies in the size of the grain; it is large and bold even if coarse and off colour for malting purposes; the farmer can attain this character on his own land by manuring, though for

sale to the maltster he needs to grow his general stock more finely.

Harvest was just getting into full swing at the beginning of September; the start had been delayed by the rains, but at that time no harm had been done. The corn crops were heavy, and very generally were badly laid and twisted, worse than we had seen them in any part of Britain; but the mischief was more the result of a heavy storm when the crops were just earing than of the rains towards the end of August. In many cases the binder could not travel even by cutting only in one direction, and there was a shortage of the extra labour necessary to deal with the crop; scythe-men, we were told, could command as much as 35s. a week. On many farms, especially on the crofts, a little patch of lint—*i.e.* flax—was to be seen, grown for the linseed, which is much esteemed for feeding. The root crops were excellent, though the potatoes had begun to show disease and the turnips had rather shut down their growth during the cold weather of August. Moray is, of course, a famous turnip district, the yellow-fleshed hybrids being perhaps more general than swedes. In this district turnips are left in the field until they are wanted, and not pitted. Mangolds are little grown, though they are quite successful; turnips are preferred for cattle feeding, and even the milk producers find they can feed turnips up to 80 lb. daily per cow without imparting any taste to the milk.

Nothing strikes the south country farmer more than the fine buildings that prevail even on small farms in the north; in Morayshire the steadings were surprisingly ample and well built, many of them modern, showing that the large estates thereabouts had not been afraid to expend capital in order to keep up the rent

roll. Covered courts were almost universal instead of the byres that are usual further south, and generally there were several small courts instead of the large yard one meets with in England.

Most of the Morayshire farmers fatten cattle in the winter on their turnips and oat straw, which in the north is highly nutritive and entirely takes the place of hay. They do not breed, but depend upon bought stores, mainly Irish Shorthorns. It is true there are in the district a number of famous Shorthorn herds, and the hill country again is almost the native home of the black polled Aberdeen Angus; still the supply of stores from the smaller farmers, who do not attempt pedigree stock and have no land good enough for fattening, is quite insufficient for the local demand. Generally the stock begin their feeding upon mashlum the mixture of oats, beans, peas, and sometimes vetches, of which a few acres are grown on each farm to provide fodder for the weeks that intervene between the grass and the turnips. Draff from the distilleries is largely bought for feeding. Dairying is extending in the district, not only on the crofts, but on some of the larger holdings; one farm, for example, which we visited, had 40 cows in milk, the milk being all sent away by rail. So many losses had been experienced on this farm from contagious abortion, despite various forms of antiseptic treatment, that the occupier had given up all attempts to breed and depended upon buying newly-calved cows, which were fattened out as they dried off. Sheep are not of much account in the farming; there are few breeding flocks in the low country, where cross-breds are chiefly brought in to fatten on the grass and the turnips. Some of the farmers breed heavy horses—we saw some very fine Clydesdales on one farm and again deplored the

unfortunate separation, now in all probability permanent, of the Clydesdale and Shire breeds, but the farmers will have nothing to do with light horse breeding. Poultry are becoming more numerous on the farms, but local prices for fully-fattened birds are not high enough to tempt men into that business.

The Laigh of Moray is certainly an impressive farming country; it lies well between the low pine-clad hills and the border of lofty sand-hills by the sea; the farms are easy working and well laid out, the farmers themselves come of an energetic and thoughtful race, having no affinities either in descent or habits with their Highland neighbours. Rents were high—from 25s. to 40s. an acre, and tending to rise, so that landlords were holding out for yearly tenancies instead of the 19-year leases which have long been the custom of the country. Labour was cheaper than in Aberdeenshire, but it is becoming scarcer because of the strong tide of emigration that sets as much from the crofts as from the larger farms. Every year sees a great movement to Canada, and this movement is not likely to be checked by the provision of more small holdings —only by higher wages and the increased use of machinery to justify them. Much the same type of farming prevails all round the Firth; inland on the hills the farms become smaller and the arable land dwindles; then at the back of the first range of hills comes beautiful Speyside, well cultivated on the alluvial flats and on the lower slopes, but more of a stock country than the coast; finally, beyond the Spey one rises into the Highlands proper, where the blackfaced sheep range up to the grouse moors and the deer forests.

IX

ABERDEENSHIRE STOCK BREEDING AND FEEDING

AGRICULTURALLY, Aberdeen is by far the largest county of Scotland; it possesses 628,000 acres under cultivation, of which about 95 per cent. come under the plough and only 5 per cent. lie in permanent grass. Nor is quality lacking in the farming; every one has heard of the Aberdeen-Angus black cattle, but it is perhaps not so generally known that the most famous Shorthorn herds of recent years have also their home in Aberdeen. Aberdeenshire farmers are further renowned as graziers, for some of the finest examples of what the Londoner knows as "Scotch beef" come from this county. The agricultural area forms a broad fringe between the coast and the mountains, which in the north of the county lie 30 miles or so back from the sea. A line drawn north by a little west from Aberdeen takes one into the thick of the farming, and there one finds an open rolling country, rounded by glaciation and divided into large fields by stone walls. In the bright air of an early September morning the smooth wide sweeps of the land, the absence of hedges, and the black belts of trees which sharply outlined every rise above a certain elevation, gave the landscape a characteristic note of its own, more akin to Northern Germany than to any other part of the United

Kingdom. The soils are all of glacial origin and deeply overlie the rock basis, in fact, most of the minor features of the landscape are due to moraine mounds and other detritus brought down by the ice from the Highlands. As in Moray, all the soils are light and contain but little true clay; black moss soils are very common, having accumulated in the little undrained hollows left on the surface of the drift. The climate is harder, both colder and with more rain, than in the country farther north; bitter winters prevail, and spring comes slowly up that way.

Most of the farming land has been reclaimed within the last 60 or 70 years; the old farms had a little land round the homestead known as the "Infield," which alone was cultivated; beyond that lay a rough tract of poor grass, heather, fern, and bog, known as the "Outfield," where the young cattle and sheep scratched a living during the summer months. The tenant obtained a 19-years' improving lease, and piece by piece took the outfield in hand, drawing out the stones and building them into dykes, draining—in the early days with broken stone, later with tiles—and then liming the newly broken up land. Limestone is to be found in the county, and old limekilns are not uncommon; but they are all out of use now, for the practice of liming has almost become extinct since the hard times 30 years ago. Not only are the kilns out of order, but imports of lime into Aberdeen have continuously declined in spite of the increased demand for lime for building and industrial purposes. For a generation at least the farmers have been living upon the stock of lime with which their forbears endowed the soil. But that stock has pretty well run out on the sandy as well as on the black moss soils, and finger-and-toe among the turnips has become a most

serious trouble, and has disturbed the system of cropping upon almost all the farms.

We visited the farm of one of the famous Shorthorn breeders, about 400 acres in extent, rather an exceptional size for the district, where a hundred-acre farm is a common type, but otherwise showing no essential difference in management. The land was farmed on a typical Scotch seven-year rotation—oats, oats, turnips, barley, and seeds for three years, the duration of the grass having been increased in order to keep off finger-and-toe. The oats grown were chiefly Sandy and other Scotch varieties, with some black Tartars; the modern varieties have not succeeded so well in Aberdeenshire as they have farther north, the general opinion being that they degenerate after a year or two in that severe climate. The barley in the district was nearly all "Scotch common," and wheat had disappeared entirely.

Harvest had not begun, indeed many of the late-sown oat fields were still quite green; very often harvest lasts on into October, and it is no unusual thing to see the stooks whitened over by a fall of snow before they are finally housed. For this reason several men were making trial of drying racks for their corn: long wooden penthouses about 7 feet high, the shelves formed of stout wire and just wide enough to take two sheaves. The rack is set up on the crest of some eminence to get all the wind, and packed with the butts of the sheaves to the outside, so that the air can circulate freely while the corn itself is almost wholly protected from rain. Opinions varied as to their value; the capital cost is considerable, though one farmer declared he had recovered his outlay in a single season. Extra labour is required, though perhaps no more than is spent on taking down and setting up again the

stooks in a rainy season, and there is some loss of shed corn in putting in and taking out the sheaves. Another plan is to build large loose stooks in the field on the wooden tripods which are commonly used in Scotland for hay. Some such artificial aid to harvesting is certainly needed in this late district, for the days grow rapidly short, and after the equinox there is no longer the prolonged twilight that characterises the northern summer. All the same, the farmer makes the afternoon as long as possible, and sets the clocks back, for harvest work cannot begin until the morning is well advanced and the dews have dried off. Fortunately cold anti-cyclone weather often sets in with September, as it did in 1912, and then all goes well. The corn crops were heavy, and throughout the district were standing up well, having escaped the storm which had done so much damage in Morayshire. Every farm has a few acres of mashlum; potatoes are usually grown for home consumption only; but the chief attention of the farmer is centred upon his turnip crop. That year it had made an excellent start, but with the later rainy and cold weather the bulbs had not swollen as they should, and the land was full of weeds, which like the turnips that had been singled out had only grown again after the hoeings. The temporary pastures all carried an excellent growth and were full of clover; to a southern eye they were long and rough, and some of the aftermaths had shot so much that it seemed wasteful to think of grazing them. However, a pedigree herd must never be stinted of food, and even at the cost of some waste must always have a full fresh bite.

In this district the rye-grass controversy is still alive in a different form, whether the temporary mixtures used for sowing down the two or three year pastures should be based on rye grass, perennial as well as

annual, or should chiefly consist of "natural" grasses like cocksfoot and Timothy. While the seedsmen's prescriptions and general practice incline to rye grass, the college experiments showed a notable advantage from the use of the natural grasses.

We are hardly competent to discuss in detail our host's famous herd, one that had been in his family on this and neighbouring farms for three generations; we were perhaps most impressed by the bull calves getting ready for the annual sale and by the noble cows who formed the foundation of the herd. Heavy coats of full red and deep roan predominated—the fashionable colours; light reds are disliked, and light roans are regarded as more appropriate to a milking herd. Pure whites are also in favour, bulls of that class being wanted farther south to cross with the Galloways and produce the well-known "blue greys" for the feeders. Central Aberdeen is the home of the Scotch Shorthorn; close by, at Sittyton, Amos Cruickshank about 1840 began to build up his herd, buying somewhat indiscriminately but with a preponderance of Booth blood. He paid little attention to the feud that raged between the supporters of Booth and Bates strains—a feud that resulted in the decline of both strains through too close inbreeding and attention to fancy points; but success did not come to Cruickshank until the birth, about 1860, of one of those outstanding animals, "Champion of England," an example of what might nowadays be described as a mutation, which stamp their own character on all their descendants. In the next twenty years the fame of Cruickshank's herd was firmly established, especially among the American and Argentine buyers; indeed, the whole herd was purchased in 1889 for export, though the bargain was not completed and

most of the stock remained in this country. About that time the Scotch Shorthorn became fashionable in England, and has been largely introduced into all the best herds, but the Cruickshank blood and tradition was worthily continued in its own country by Mr. William Duthie and the Marrs. At the present time there is perhaps a reaction from the Cruickshank cattle in favour of more milking strains, though their supporters will not admit that with proper management the Scotch type is inferior in this respect. Aberdeen is also the home of the pre-eminent beef-producing breed—the black polled Aberdeen-Angus; but they live more in the hill country, and, despite their fame in the show-ring and at Smithfield, the Shorthorns possess a great numerical superiority.

Notwithstanding the presence of these classic herds, the Aberdeenshire farmer is, in the main, a feeder and not a breeder: in the substantial steadings which are found on all the farms he ties up cattle for the winter and feeds them mainly on oat straw and turnips, of which enormous quantities are consumed daily. In the south nothing appears to be gained by giving more than 40 lb. to 60 lb. of roots per diem, but the Aberdeenshire turnips possess a special feeding value, and can be fed with success up to a hundredweight or more. They are drawn straight from the fields, where the yellow-fleshed hybrid will keep perfectly sound through the winter until it is succeeded by swedes in March or April. With this great consumption of roots a very watery dung is produced, and on the best farms the liquid is run off at once to a tank and carted out for distribution on the grass. We saw one or two examples of the enormous growth that follows such an application of liquid manure. The greater part of the stock thus fattened are Irish

stores, the home-bred cattle are quite insufficient in number, and it is precisely in this part of Scotland, so famous for its breeding, that we have found the strongest opinions in favour of the admission of live stores from Canada. The producer of beef looks upon store cattle as raw material, and his argument is that ordinances obtained under the pretence of keeping off disease are used as measures of "protection" in its economic sense, in this case for the protection of the Irish cattle-breeders. Of course both sides play the same game. Canada has declined, on the score of possible infection with "canker," to admit any more Scotch potatoes, which were being imported in spite of the tariff wall, though these potatoes were for consumption and not for seed.

Sheep are not much seen in the arable part of Aberdeenshire, though we were told of some farms where one or two pairs of horses had been put down and the land laid down to permanent pasture for sheep.

Labour is becoming a serious problem in Aberdeen; men are paid £30 to £36 a year and get customary allowances in the shape of oatmeal, milk, potatoes, etc. The married men have cottages; the single men live in the house or in bothies, where they take their allowances and do for themselves. But the bothy system, rough even to barbarism, is dying out; it has been a demoralizing and brutalizing mode of life, and one large factor in the great emigration to Canada that still takes place. The district is well provided with small holdings or crofts, some as small as ten acres, so that a hard-working labourer can work his way up from a croft to a considerable farm. But though many such cases can be cited, few men care to face the toil and self-denial involved; the crofts are

far from profitable because they are managed on the same plan as the neighbouring large farms, and there are few openings for the intensively grown special products which should be the mainstay of the small holder. Milk production is increasing; some of the large farms also have recently taken to the business, and one of the wholesale purchasers has facilitated matters for the small farmer by establishing depots along the roadside where the full churns are left to be collected by a single wagon working between the farthest farm and railhead. The sale of fresh milk is, however, not general, and the crofters depend mainly upon raising store cattle for their larger neighbours to fatten. The admission of Canadian stores would probably finish off the Aberdeen crofters; their numbers are shrinking already through emigration, and we were informed that there are no applicants from this district for small holdings under the new Land Act. Most of the crofters who hold their own are engaged in some other business also—the carpenter, the mason, the postman were instanced: in many cases they do not keep a team, but get their ploughing, etc., done by contract. It is the small holder entirely dependent on his farming who tends to disappear, and the cause is really the rising standard of living and the opportunities emigration offers. For this reason the loss is not entirely to be deplored. Away in the hills, not only in the Highlands, but south of the Forth also, may be seen traces of old crofts where only the sheep and the grouse now abide; the men who tilled them worked as no slaves ever work for a bare subsistence, always hovering on the brink of starvation. The history of these deserted holdings is to some extent being repeated now; the old men persist in the old homes, but their sons will not face the life, and it is

not to the interest either of agriculture or the State to try and hold men to such ill-remunerated toil. But where small holding methods and special industries can be devised that will give the occupier both a living wage and an opening for advancement, there a certain proportion of crofts to large farms will fulfil a most necessary function—that of giving the agricultural labourer his chance of rising in life.

X

CARSE FARMING IN FORFAR

IN our earlier visit to Scotland we had heard of Carse farming as something out of the common, so we took an opportunity after leaving Aberdeen of looking over one of the large farms of this kind not far from Dundee.

The Carse of Gowrie—and the Carse of Stirling is very similar—is a low alluvial flat which stretches along the north side of the estuary of the Tay between Perth and Dundee. It is all about 40ft. above tide level and at its widest about three miles broad between the Sidlaw Hills and the water's edge. For the district it is heavy land, and as so often is the case with alluvial flats heavier inland than by the water; but though described locally as a heavy clay the texture is really that of a free-working loam, resembling very closely on a cursory examination the brick earth one finds on the maritime flat of Sussex. We could walk about comfortably on the arable land within twenty-four hours of a rainfall of over half an inch, and that would never be possible on real clay land such as one gets in Essex. The Carse farms are fairly large; most of them are described as four-pair farms, meaning thereby that four pairs of horses are needed to work them, and a pair of horses accounts for about 70 acres. As a rule they are rented, but a few are owned by

their occupiers, and some of these, we are told, were wholly left down in grass because the owner had been rendered short of working capital by his purchase. Rents stood at about 30s. an acre for the land under cultivation, but to the farm we were visiting was attached rent-free a considerable area of salt marsh at a lower elevation, awash at every tide, but still carrying a dense vegetation of reeds and salt grass. The usual rotation followed is an eight-year shift of oats, beans and potatoes, wheat, turnips, barley, seeds which are hayed in their first year, and then grazed for two years longer. The main difficulty is to get a satisfactory turnip crop, and the Carse farmer is often compelled to take a bare fallow over a considerable proportion of the turnip land. Finger-and-toe is fortunately absent; the difficulty lies in getting a proper seed-bed on the comparatively stiff and wet land. Lime is valuable on this land, as it greatly improves the tilth. On the farm we were visiting the rotation was extended to ten years by taking a bare fallow after the wheat and following it with a second wheat crop before sowing the turnips. The farmyard manure is applied to the turnips and potatoes, both of which also receive 4 cwt. to 5 cwt. of artificial manure; but no other fertilizer is employed, except occasionally some nitrate of soda on the grass.

All the Carse farms we saw were carrying very heavy grain crops, and cutting was just beginning in the first week of September; as very little of the corn was laid or damaged in any way, and a month of almost uniformly fine weather succeeded, the farmers in this district had every reason to be pleased with their year's working. Good as 1911 was, 1912 turned out even a better year; prices were higher all round, and turnips and grass were just as abundant as they

had been scanty in the previous season. Whether it might be attributed to the bare fallows or not, the Carse farms were exceptionally clean, more free from weeds than any other land we have seen in that exceptionally weedy year. The wheat grown was usually Standard Red, so common on similar land in the south; we also saw a single field of Red Fife, that wheat of superb quality though poor cropping power which came to this country from Canada, where it forms the bulk of what the miller knows as No. 1 Hard Northern. The barleys were all wide-eared, and the grain from the Carse is more of distillers' than maltsters' quality. Sandy was the prevailing oat, though some of the newer varieties are being introduced with success. Heavy as the cereals were, the most surprising crop to be seen in the Carse was the beans; they are spring sown, sometimes pure, sometimes mixed with oats and peas, but they had grown to a height of 6 ft. or more, and were still in full vigour. At that time they were being cut green for the bullocks; later on they would be harvested and threshed in the usual way, but the haulm and the unripe pods would always provide an immense bulk of rough fodder possessing considerable feeding value.

When the grass comes round in the rotation pure Timothy is sometimes sown, and the pasture thus obtained may be left down for longer than the usual three years. Pure Timothy meadows are common enough in the United States, especially in the Middle West, where they constitute one of the very few departures from alternate cropping with wheat and maize, and they yield a great weight of rather coarse stemmy hay, the kind of hay that is more esteemed by the horsekeeper in the cities, who chaffs all his hay, than by the farmer. In Scotland on moderately

strong land Timothy certainly makes a most profitable temporary ley, which has been known to yield as much as four tons of hay to the acre in the first cut, but we are not aware that any considerable trial has been given to it in England. However, on the Carse the seeds mixture usually consisted of clovers and rye grass, and after the rainy weather during August we saw some tremendous aftermaths.

The Carse farms carry both bullocks and sheep, though neither are bred on the land, but are bought in to be fattened. The bullocks are generally Irish stores; some are fattened out on the grass during the summer with the help of cake, only a little of the land —heavy permanent pasture at the foot of the hills— being good enough to fatten a bullock without aid. As the season advances more bullocks are bought, started on the grass, and gradually drafted into the yards to be finished; one lot we saw were being fed on the green beans given whole just as they were cut, together with about 10 lb. of cake per diem. Heavy cake feeding is usual, so heavy that it is difficult to see where the profit comes in, even with the fine markets for beef close at hand. Sheep, usually cross-breds. are only bought in to eat off the aftermath; the land is too heavy to allow them to go on to the turnips. The fold is made with coarse netting instead of the south country hurdles, and yarn nets are giving place to wire. But though fattening is a considerable item in the programme of a Carse farm, the greater part of the produce is sold right away, because the tenants have almost complete freedom of cropping and sale. The hay is sold except what is wanted for the horses, for the Scotch farmer very rarely feeds hay to his bullocks; and even a good deal of the straw is sold, because for bedding purposes it can be replaced by

reeds cut from the salt marsh. Close in to Dundee turnips and green meat are sold to the town dairymen.

The fringe of salt marsh also added to the saleable products of the farm: first of all comes a belt of the usual tall feathery-headed reeds, the haunt of wildfowl in the winter and frequented at the time of our visit by enormous flocks of starlings feeding on the seed in the waving purple tops. This is cut over once a year for bedding in the byres and stables, and some of it is put up into bundles for sale into the towns. Beyond the reeds down to the edge of the pure mud there is another belt of "salt grass," a kind of tall carex, very tough and possessing a dangerous cutting edge; this material, though not so tall as the reeds, forms a better and more lasting thatch, and is sold for that purpose as well as used on all the stacks on the farm.

The farms we saw in the Carse of Gowrie showed close business-like management, and the system has been well devised to suit the soil and the local markets; it looked very profitable farming, so much of the produce being sold away. Naturally such a course of cropping and sale involves a considerable labour bill, and with Dundee at hand to compete for men wages are high—up to 20s. a week with allowances, though the 20s. a week labourer generally earns his money much better than the man at 15s. Here also we were told that emigration had reduced the supply of rural labour far more than the attractions of the towns. Just across the Firth in the county of Fife one of our informants estimated the average wage of a good man as 24s. a week, made up as follows: £40 a year, a pint of sweet milk daily, half a boll of meal per month, two tons of potatoes, and a free house, with some extras in harvest; and

as the women also work in the fields in this part of Scotland, the earnings of a household may be considerable. These men, however, represent the aristocracy of farm labour, and are highly skilled; and as they carry far greater personal responsibilities than, say, a miner or a riveter, they cannot be regarded as overpaid.

To the east of Dundee near the shore the soils are far lighter than on the Carse, but the farming systems are dominated by the opportunity the city presents for the sale of all kinds of farm produce. A six-year rotation is common—oats, potatoes, wheat, turnips, barley, hay—and in some cases nearly everything is sold off the farm, the tenant drawing manure back from the town dairies to which he sells his turnips, straw, etc. Dairying is increasing, and where that becomes a leading feature of the farming the rotation is generally lengthened by leaving the seeds down for two or three years.

Across the Tay, in Fifeshire, the farming is very similar, except that the increased difficulties of transport put an end to the sale of the turnips and green crops, which are consumed by fattening bullocks or dairy stock. East Fife forms rather a good example of the skill and energy of Scottish agriculture; most of the country is very steeply undulating, without rising to any great elevation, the only flat land being near the sea or in the Howe of Fife. The soils are not particularly good, except, perhaps, in a few places where a warm, reddish soil is found, derived from the old volcanic rocks that have brought about the generally disturbed and rugged aspect of the country. The climate also is hard and bleak, though fairly dry, especially in the autumn. Yet with all these drawbacks Fifeshire is highly

farmed; in the eastern part of the county one passed for mile after mile through big cultivated fields, often open, sometimes divided by stone walls or low, well-kept quick hedges that cause no waste of land. Little or no stock were to be seen in the fields, sometimes sheep eating off the aftermath, sometimes cows where a farmer had taken up dairying, but in the main the country was being farmed for crops on the six-course rotation described above, though, of course, Irish stores were bought for winter fattening in the byres. The buildings were ample, the stacks well made, and, without taking into account the excellent crops that were to be seen in process of cutting during the first week in September, there was a general air of prosperous briskness and attention to detail that gave us a very favourable impression of the local agriculture. In most parts of England you may find first-class farmers and land managed in a fashion that is beyond criticism, but these men and farms stand apart, and their neighbours on the estate may show all degrees of careless and slipshod management. In Scotland the general average of the farming is certainly higher, and wherever the land is really suitable the whole district looks well managed and possesses an aspect of hard business which is rare over any considerable area in England. The farms gave one the impression that considerable capital had been put into them of recent years; buildings are extensive and in good repair, drainage is still going on, hedges had been straightened up and are kept close, the bad farmer is not allowed to drag on at an easy rent because he makes no calls on the estate. Agriculture, after all, depends on the men who direct it; and the farming of the east of Scotland very much reflects the dour, hard-bitten character of its men.

XI

AYRSHIRE: EARLY POTATOES

WE had often been told of the early potato growing in Ayrshire as a form of highly specialized farming so admirably carried out as to rival even the agriculture of the Lothians; from Fifeshire, therefore, we found our way to Glasgow and down the West Coast. Close to Glasgow and in northern Ayrshire the land is generally poor, for the Coal Measures rarely yield anything better than cold, stiffish, unfertile soils; but, thanks to the markets provided by the huge industrial population close at hand, the land there is intensively farmed for milk. To maintain the production at a high pitch the land has to be under the plough, but the Ayrshire farmer has devised a rotation which gives him the food he wants and does away with turnips, the most difficult and least remunerative crop on such wet soils, where also the drainage is much impaired owing to the constant subsidences brought about by coal mining. Oats are followed by oats, and many of the Ayrshire farms are celebrated for the quality of the meal from these oats; in the second oat crop seeds are sown which are hayed for the next two years and then pastured for three, whereupon the oat crop comes round again. The farms are not large—120 acres is a not unusual size—and on them will be employed a ploughman, an "orra" or odd man,

women to milk, and a harvester or two in the season. Often the cows are let to a "bower," *i.e.*, a dairyman and milk seller who has no farm. The farmer finds the cow and certain rations of meal, hay, straw, green meat, and pasturage, for all of which he receives £14 a year. The bower not infrequently supplements the food himself in order to keep up the flow of milk, and as the farmer also gets back the dung made in the byres he profits by this extra feeding.

The very special Ayrshire farming is, however, strictly localized on a narrow strip near the coast, beginning about Irvine and extending to a mile or two south of Girvan, perhaps 30 miles in all. The actual shore is fringed with sand hills and given over to golf; Troon with its six courses, Prestwick of championship fame, Turnberry, and others of lesser note form a pretty continuous strip that is never, perhaps, more than two miles broad. Inland of the blown sand comes another strip of light land, the best of which is reddish and stony, drift derived from the Old Red, just as in the Lothians on the other shore. This stretch of low land, never very broad, and narrowing in places to the width of a single field, is backed by the hills, up the sides of which the plough creeps but a little distance before sheep walk, bracken, and heather set in. Even on the cultivated area a further division is made between the land that is farmed on a rotation and the choice fields that carry potatoes every year, and it is only towards the south about Girvan—locally known as the land of Goshen—that the whole or the greater part of any farm can be given up to potatoes. The distinguishing feature of the Ayrshire potato-growing is its restriction to earlies, with perhaps an acre or two of main crop potatoes for the use of the house and the farm hands.

The warm soils, the sheltered situation, and the freedom from spring frosts conferred by the proximity of the Western sea afford the Ayrshire farmers the opportunity of which they have taken so great an advantage; their crop succeeds the very early potatoes coming from the Channel Islands and Penzance, and is in the main later than the St. Malo imports, being harvested from the first week of June on to the middle or even end of July.

The potato land is heavily manured, beginning with about 15 tons per acre of farmyard manure ploughed in in autumn, followed up by 12–13 cwt. per acre of a very concentrated artificial manure, applied immediately before planting by means of a well-devised machine peculiar to the district, which strikes out a couple of drills and sows the manure in them. Before planting, which takes place in February, the seed is always carefully sprouted in boxes, and it is generally obtained from a slightly more northern district, still on the West Coast. The prevailing variety was "Epicure." A few other well-known earlies were grown, but Epicure greatly predominated, the choice of the others being generally determined by the fact that the small ones command a good price for seed. In 1912, for example, with the wholesale destruction that had been wrought by disease and flood in the English potato area, the price of seed was exceptionally high.

After the first manuring no other fertilizer is employed: nitrate of soda is only given when one of the rare frosts has cut down the young shaw. Though most of the farmers fatten bullocks or keep dairy cows in order to make farmyard manure for the potato land, the supply is necessarily insufficient, and immense quantities are brought by rail from

Glasgow, a considerable proportion coming off the Transatlantic cattle-boats. But, as in London, town manure is becoming more difficult to obtain, dearer and of inferior quality, and the Ayrshire potato-growers will have before long to face the question of a substitute. Seaweed is also largely employed, most easily, of course, on the farms south of Turnberry, where no intervening strip of links separates the farming land from the sea.

By almost universal custom the crops are sold standing by auction; the merchant lifts them at his convenience, being under obligation to clear the land by a certain date, and the farmer has no further responsibility except to cart the full barrels to the station. Long before the crop is ready the merchants pervade the district, taking stock of each field and watching the growth with critical eyes in order to estimate the price they can afford to give; and as these prices had ranged up to £45 an acre during that season, some knowledge both of the land and the men working it is necessary to avoid losses.

Once the land is clear the farmer resumes possession and sets about a catch crop; most generally rape is sown to be eaten off by sheep brought down from the hills in October and onwards. Italian rye grass is another favourite catch crop; it stands feeding more than once, and can be left down until the turn of the year and still be ploughed up in time for the succeeding potato crop. We saw one field of a new kind of rye grass called locally "Western Wolds" grass, sown after potatoes and yet cut in the second week in October. It was to be threshed for seed, and if the weather held up for a few days longer it promised not only hay, but a passable yield of mature if somewhat green and light seed. Another

astonishing catch crop was barley, common four and six rowed varieties; some of it was being grazed by sheep, but as a rule it was cut and was being harvested and threshed in the usual way. The grain in many cases was very green and was being crushed and fed straightway to the stock, but much of it was ripe and was even on occasion sold for malting. In that wonderful year 1911 as much as 6 qrs. per acre was obtained on one field, and all sold for malting at over 30s. per qr., this after an exceptionally valuable crop of potatoes. The immature barley straw was also greatly valued for feeding. Another catch crop seen in the Girvan district was curled kale, to be cut and sold to Glasgow as winter greens; but the bulky nature of the produce only permits of this crop when a station is near at hand.

This Ayrshire potato growing is certainly an astonishing industry, almost more interesting to see in the late autumn, when the catch crops are prominent, than in the heyday of the potato sales. The land possesses no great intrinsic fertility, its virtue lies in its ease of working and its warmth, combined with its favoured situation. As is so generally the case in Scotland, the soil is short of lime, finger-and-toe prevails in the turnips and rape, and spurry and corn-marigold are typical weeds, showing the acidity following on the lack of lime.

Off the particular strip of red sandy soil consecrated to potatoes year after year the usual five or six shift rotation is followed, wheat and oats being the cereals, while a portion of the root land is generally given up to cabbage because of the milch cows.

In this district we found pure Timothy meadows very general; they can be readily established, and will yield up to four tons of hay per acre. Moreover, the hay

is threshed for seed, and will yield up to 3 cwt. per acre of seed, which may sell as high as 80s. per cwt. The threshed hay, very coarse and stemmy, also very green to an English eye, is always chaffed before feeding, but is locally esteemed as highly as rye grass hay. For his temporary leys for grazing our host preferred a mixture containing a large proportion of both Timothy and cocksfoot; he maintained that cocksfoot obtains its bad name because too little is sown, thus introducing in the pasture isolated plants, which are allowed to run up and become hard. Where the cocksfoot forms a considerable element in the sward it can be kept eaten down and remains tender, whereupon it becomes a most valuable grass.

On these Ayrshire farms, Irish-bred stores, Galloways, and blue-grey crosses from the country farther south, also Ayrshire-Shorthorn crosses, are tied up and fattened during the winter as much for their dung as for any profit attaching to the beef. A good proportion of the beef, as of the cross-bred sheep fattened on the catch crops, are sent off to London for sale rather than into the local markets. Milch cows are kept on many of the farms near the towns or with good railway facilities; always the native Ayrshires are found, in many cases also the farmer lets them to a bower. There is a fair amount of breeding of the favourite Clydesdales, but the raising of light horses appears to have died out within the last few years. In this delightful country, easy to farm as it is charming to the eye, with the shapely hills of Arran and Ailsa Craig out across the curving bay, the rents could not be considered excessive, ranging from 30s. to 50s. an acre, the choicest land a little higher still. Labour was dear and getting scarcer; the regular men got 20s. a week, with potatoes, milk, and a house free. They were nearly all married

men, and the bothy system did not prevail; still, emigration had been extensive. Women do a good deal of work and supplement the family earnings. In the potato harvest, Irishmen come over, but the supply has been much restricted of late years, a sure sign of increasing prosperity at home. There appeared to be few or no small holdings in the district, the farms run large—300 to 400 acres—and the tenants, with such an exceptional system of farming to practise, are flourishing men, who well deserve their prosperity by the skill and energy with which they have developed the opportunity afforded by their soil and climate.

XII

MILK PRODUCTION IN SOUTH-WEST SCOTLAND

ONCE away from the intensive arable country of the Ayrshire coast most of the rest of the south-west of Scotland is given up to stock farming and milk production. The district is the home of two very distinct races of cattle, the Galloways and the Ayrshires, each holding a leading position in the live-stock world, the one for milk, the other for beef, but with no points in common. The Ayrshire breed appears to have originated in the uplands of Ayr and Renfrew, always on thin, poor soils and in a wet inclement climate, so that it has become an exceedingly hardy race, capable of maintaining a flow of milk under difficult conditions of weather and pasturage. The same causes have operated to produce a small breed; the ordinary Ayrshire cows of to-day weigh no more than 9 or 10 cwt., though regularly giving as much milk as Shorthorns weighing half as much again. Ayrshires are characteristic dairy cows in their fine heads and angular wedge-shaped frames that seem to carry little flesh because all the food has gone to make milk; as far as the records go they appear to have undergone little change in character for the last century or so. Originating in a country of hill pastures they are active, quick-moving cattle, and this characteristic is accentuated by the upward-pointing horns; all the experts insist that an Ayrshire

cow should look "gay." The colour is very distinct, a white ground splashed with a dark red, or chestnut with a blackish shade in it; light reds or yellow browns are not esteemed, nor are the brindled or black patches which used to be common enough in the earlier years of the breed. Every year, however, we were told, the colour tends to be less prominent; in a fashionable herd nowadays the general impression is of white. A black nose is typical, as in the dairy races of Celtic origin, but it is not considered as essential by fanciers, though regarded by many as an indication of a hardy constitution.

The history of the Ayrshire provides a curious illustration of the tendency of breeders to become obsessed by fancy points, which have no practical value in themselves and indeed when cultivated to excess may prove detrimental. As belonging to a dairy breed great attention was naturally paid in judging the cow to the shape and disposition of the udder—the vessel, as it is always called in Scotland. The Ayrshire breeder demanded that it should extend well forward under the body with the teats spaced out and symmetrically placed. Then with neatness and symmetry in his mind the fancier began to insist upon small teats, until smallness grew to be regarded as an excellence in itself, so much so that it became actually difficult to milk the highly-bred show Ayrshire of a dozen years or so back. Milk records have, however, changed the point of view, and the old breeders are now lamenting that the value of external points and a good type of frame are being forgotten because milk performances alone are being studied in breeding. There is little danger, however, of the neglect of external features; if one may take an analogy from plants, the sugar beet of to-day is just as symmetrical and true to

its type as the mangel. Yet the sugar beet has been selected only by analysis from the richest roots, whereby its sugar content has been raised by 50 per cent. within a generation, whereas the mangel, selected by appearance alone, has grown no richer during the whole of its history.

It is among the Ayrshires that the system of regular milk testing has been organized, thanks to the advocacy of the late Mr. John Speir. Of course individuals in many places had kept records of the daily yield of their cows; it was Mr. Speir's idea to appoint official testers so that the records of the cows in the herds submitted to the test would rank with their pedigrees and give to those pedigrees a new significance. The society appoints a tester for each 12 or 18 farmers subscribing; he spends a day with each in turn, seeing the milk of each cow weighed both morning and evening, and taking a sample for determination of the butter fat. Thus each herd gets tested once in two or three weeks, and it is found that these intervals permit of a reasonably accurate average being struck that will give the total milk yield of each cow during its lactation period and the quality of the milk. Although the scheme had not been widely in operation for many years its effect was already manifest; herds that only averaged 500 gallons of milk per cow were then yielding 600 to 700 through the elimination of the wasters and breeding only from the best. Cows yielding 1000 gallons a year were not uncommon, an enormous production when one considers their small live-weight. The milk records are of the utmost value in the international market. Canada, for example, is a great buyer of Ayrshires, and it is now the milk pedigree that draws the purchaser. With all its excellences the Ayrshire has never obtained much foothold in England.

Scottish farmers coming south have often introduced them, but only for a time. Sometimes the type is said to deteriorate under the warmer and drier conditions; what has been perhaps more the determining factor is the very low value attached in English markets to the Ayrshire cow that has been fattened off. In Canada and North America, however, the breed is in great favour.

The black-polled Galloway belongs to the country a little farther south along the shores of the Solway. Galloway is, in fact, the old name of Wigtown, "The Shire," and Kirkcudbright, "The Stewartry." Among the hills of that rugged country and across the Border into Cumberland this very marked race of polled beef cattle has long existed. Its origin is unknown, but the type has not changed greatly since any records tell of the local cattle, except that the dun and brindled colours have given place to an entire black. Even in the seventeenth century the district was noted for its cattle, which travelled on foot to Norfolk and Suffolk to be fattened out; indeed, the Norfolk red-polls are said to derive their hornless character from crossing with the "Carrick" cattle, as the Galloways were often called. The trade flourished all through the eighteenth century, but nowadays the Norfolk grazier fills his yards almost entirely with Irish beasts. Though not of its former importance, the Galloway is one of the most marked of our pure breeds, distinguished especially by its hardiness, for the young stock have always been wintered out, even far up on the hills. Like other very pure races, it stamps itself very markedly upon the offspring from a cross, and the bullocks arising from one Galloway cross possess a special reputation for their rapid growth and superb value as beef—the famous "blue-greys," which most properly are the produce of a white Shorthorn bull upon a

Galloway cow. They are polled, and the blue-grey coat represents a pretty equal admixture of black and white hairs. Repeatedly animals of this parentage have carried off the championship at Smithfield, and they are in great repute among north-country graziers. They are mostly raised in Galloway or about the Border, and sold in Carlisle market. But even in the Stewartry we were informed that the black-polls were being displaced by the Ayrshires. Milk-selling is more profitable than stock-raising if the farmer is within half a dozen miles of a railway, and even at greater distances milk can still be made profitable by converting it into cheese. More particularly intensive arable farming can find its outlet in milk, whereas the raising of store cattle cannot readily be speeded up and is most appropriate to comparatively cheap grassland. Hence, as the farming in Scotland has improved, the arable farmer in the better lands along the valleys has sought some business that would turn over his capital more rapidly than cattle-raising, which tends to become confined to the strip of grassland lying just below the pure sheep walks of the uplands. In the neighbourhood of Kirkcudbright, for example, one sees a sharply undulating country, where the rock is deeply clothed with glacial deposits, often marked by great banks of gravel and sand—the kames or eskers that represent ancient moraines. Where the slopes are gentle a light, stony soil prevails well suited to arable cultivation; and this is divided into good-sized farms of 300 acres or so, mainly under the plough. The land is not rich, nor is it very highly farmed, but the common Scotch six-course rotation is followed, in which two straw crops and a turnip crop are followed by three years of grass, the first being laid up for hay. Very little barley and no wheat are grown, oats being the

universal cereal. Potatoes are not general beyond a small acreage for the use of the farm, and in a general way the farming depends upon milk and sheep. As a rule the sheep are bought off the hills to fatten; sometimes a Down ram will be used, and both the ewes and lambs will be fattened together.

The sheep are either cross-breds, which in local parlance signifies the progeny of Blackfaced ewes and a Border Leicester ram, or half-breds—*i.e.* Cheviots crossed with the Border Leicester ram. The half-breds can be treated almost as a pure breed and crossed again with the Border Leicester ram with success, this being practically the only case in Great Britain where a second cross attains any commercial success. As a rule a first cross between two distinct breeds results in offspring possessing a general conformity to a particular type, with superior vigour and a quicker growth than either of the parents, but further crosses result in segregation into a motley group of mongrels, many of which show distinct degeneration from the butcher's point of view. For milk, Ayrshires are universally employed; a few only of the farmers raise cattle and fatten them out for beef. Away from the railway the milk is converted into cheese, and the south-west of Scotland has mainly given itself up to the production of Cheddar cheese. So thoroughly has the art been learned that great rivalry prevails with Somerset for the leadership of the market, and many were the rejoicings we heard at the news just come to hand that the Scottish cheese makers had carried off the bulk of the prizes at the Dairy Show at the Agricultural Hall. Nearly every farm breeds a few heavy horses, this being the true Clydesdale country.

The farming of Kirkcudbright struck us as fair without being in any way exceptional; the rainfall is

always heavy, so 1912 had not been a very propitious year; the turnip crops were below the average; the oats, we were told, had run too much to straw; and even in the first week of October some of the hay was still out in the fields or just being led home. Considering the land and the markets, rents were pretty high, at an average of 23s. an acre, but the farms were all taken up and any vacancy produced a number of applicants. As elsewhere in Scotland, labour was becoming scarce; every district had the same tale of emigration to tell.

Before we crossed the Border we spent a little time in the favoured valley of the Nith, where in the neighbourhood of Dumfries there is a small arable district worthy to be compared to the Lothians or the choice Ayrshire coastland. Again one found the light red soils, always workable with two horses and not harmed by the folding of sheep, even with the heavy rainfall of the west coast. Rents ran from 30s. to 50s. an acre; all the land is under the plough, and milk, sheep, and potatoes earn most of the profits of the farm. There is, however, a fair acreage of barley, and some wheat is still grown in the district. Potatoes form a valuable crop, and one or two farmers in favourable situations near Dumfries go in for early potatoes as intensively and as skilfully as on the Ayrshire coast. The milk is mostly sent by rail to Glasgow or Newcastle; when too far from the station it is converted into cheese. Sheep are not bred, but cross-breds are bought from the hills and set to produce another lamb, lamb and ewe being fattened off together, though some farmers make a speciality of early lamb. It would be hard to picture a more delightful or more fertile country than the valley of the Nith, which showed again the general high level of farming that we had noted before as a characteristic of Scotland.

XIII

THE MIDLANDS

ON neither of our previous journeys had we touched the Midland Counties of England, so from Dumfries we came south into Derbyshire without halting until we reached our next farm on the high limestone plateau that lies between Buxton and Ashbourne. There are few districts in England that have undergone less change during this last century of unrest; the farms have descended from father to son—in many cases the line can be traced for two hundred years—and we cannot suppose that the farming methods have undergone much alteration for a long period.

The countryside has a character all its own, one that stamps itself on the secret affections of those who are brought up in its lonely farmhouses. A bare, green country, generally above the 1000 feet contour line, cut up into vivid patterns by a profusion of white stone walls, here and there a little eminence—a bank—swells up and may be broken by an equally white terrace of the prevailing limestone. The only trees are a few sycamores round the farmhouses or the villages; and though the rainfall is considerable, nearly all the water flows underground, the young Dove being the only visible stream, crystal clear, as all limestone waters are. A little farther south it enters the narrow gorge it has cut for itself—Beresford Dale, with the little fishing

hut which Charles Cotton built to mark his friendship with Izaak Walton, and flows by the white scars and luxuriant vegetation of Dovedale, until beyond Ashbourne it reaches the softer valleys and more fertile meadows that lie on the New Red Sandstone.

In the stone-wall country the farms run small, most of them about 50 acres, and only one field on each farm is under the plough for oats. So high and bleak is the country that the bulk of these oats does not ripen; that year in the first days of October many of the fields were grass green, and others were being cut to feed in the straw without threshing. The best of the oats only are threshed and ground locally for home consumption. But the farmers were in no hurry about their oats; haymaking was still going on, and here and there was a field still uncut. It is the custom to carry the hay very green; and as it is thrown up into a loft to lie loose, there is less danger of its heating than when made into a stack. In these northern counties everything is built under one roof, the house at one end, the shippon for the cows next, with the hay loft over, and the stable beyond. Most of the farms have a small Dutch barn alongside for the straw and the rest of the hay.

The whole of the farming in this countryside depends on milk; the cows are pastured on the grass during the summer and live on the hay and oat straw through the winter. Little imported food is bought, just as artificial manures are rarely applied to the grassland; no effort is made to produce winter milk, for which, indeed, there is small outlet except where a farmer is near a station; even then it is regarded as unprofitable. The milking is done in the open, the cows are entirely out of doors until the winter sets in. When they are indoors they get no litter, the small stock of straw is

all wanted for food, and, indeed, in its green state is too valuable a fodder to be wasted underfoot. The cows are all Shorthorns, but of no great quality, decidedly inferior in type to those found in the similar limestone country in the West Riding of Yorkshire, Ribblesdale, and Lunesdale. Good blood is evidently wanted in the district, and, as all the farmers are small men unable to buy expensive bulls solely for their own use, there should be an opening for co-operative schemes for the purchase of bulls capable of improving the country stock, especially as we were informed that contagious abortion is practically unknown. Of course, bulls of milking strains would be wanted, because all the farmers make their living out of milk. We only heard of one who depended upon stock-raising, fattening out the steers, and selling the heifers when in milk with their first calves; he, however, was an educated man with a comparatively large farm, the grass of which he had immensely improved by judicious manuring.

A large proportion of the milk produced in the uplands of Derbyshire is sold to cheese makers; at one time cheese was made on most of the farms, but specialization has gradually set in until one man may deal with the milk from 50 or 60 farms besides his own. There is a true Derbyshire cheese, a large flat cheese of the hard curd type with a texture approximating to that of Cheddar or Gruyère, which has the advantage of being ready for sale very quickly after making; but the really important cheese in this district is the Stilton. Now that the methods of manufacture have been standardized one can almost say that any cheese can be made anywhere; but South Derbyshire and Leicestershire form the original home of the Stilton, which only acquired that particular name

through an accident. The cheese first attracted general notice on the table of the Bell Inn at Stilton on the Great North Road in the coaching days about the middle of the eighteenth century, but it was made by one Mrs. Paulet, of Melton, and had nothing to do with Huntingdon, in which Stilton is situate. We visited one cheese factory in Hartington, which made it very evident why the making of Stilton cheese should have become concentrated into the hands of specialists. Not only is the actual manufacture a somewhat nice process, requiring exactitude in such matters as the proportion of rennet to add and the degree of acidity to which the milk should have attained, and judgment in deciding upon the consistency of the curd before it is packed into the mould, but only a reasonably large output can justify the necessary arrangements for heating or cooling, ventilating, etc., the cheese room.

Stilton is only manufactured during the summer, and then requires from three to six months' ripening before it is ready for market; this ripening must take place in a room maintained at nearly a constant temperature, yet supplied with fresh air and kept moist. The ripening is watched with anxiety, as upon its character depends the price the cheese will fetch. The maker is constantly inspecting his cheeses, boring out samples with a little semi-circular auger, and scrutinizing them for colour and texture—the desiderata being bright green mould on a white ground without any trace of yellow or brown stain, a short crummy structure, neither soapy nor greasy, and a sharp characteristic smell. Defects will creep in, and it is a difficult matter to track their causes; sometimes intrusive bacteria enter with the water, sometimes an excess of one of the necessary materials, rennet or salt, for example, disturbs the due equilibrium existing

between the normal organisms of the milk. Our host would only make Stilton cheese from grass-fed cows, and the open-air milking which in Derbyshire accompanies the natural feeding aids the production of a trustworthy cheese, because the milk is much freer from dirt contamination than when it is drawn in a dirty shippon. Our English cheeses have as yet been little investigated, and it is unknown whether there are any special organisms concerned in the ripening which give rise to the difference in flavour between, say, a Stilton and a Wensleydale. Cheddar cheese has indeed been investigated, the process of manufacture has been standardized and a good deal has been learnt about the mechanism of the ripening process, nearly all by the labours of American and Swiss savants. The other English cheeses offer almost a virgin field to the investigator, both as regards the standardization of the processes and the source of the difficulties that are regularly met with. Many of the makers of Stilton, for example, are much troubled by a yellow stain which comes in the cheese, and may, if widespread, reduce the price from something like 13d. or 14d. a lb. to less than 8d.

This high Derbyshire country affords a very instructive example of stable conservative small holdings, held by real yeoman farmers, if we may use yeoman in its original sense to include tenants as well as owners. Considering the class of land, its elevation and remoteness, rents are comparatively high, from 25s. up to £2 an acre for the farming land, the banks, of course, standing at a much lower rate; but the rents are paid regularly and there is not so much fluctuation in the prosperity of the occupiers with the seasons as in an arable country. The farms change hands very little, and the farmers work hard and live

simply, "in the kitchen," as one of our hosts put it. But they have a character of their own, a robust independence, and the countryside still yields them its simple primitive pleasures. Little extra labour is employed, most of the farms keep one hired man who lives in the house, and in most cases is as independent as his master. These men form a valuable society; on the other hand, one could not but conclude that their farming is unprogressive and unenlightened; without changing the system, but with more capital and knowledge, the grassland might be made far more productive, and with a better class of stock, the output of milk could be greatly increased.

South and west of Ashbourne much the same kind of limestone country prevails on the hills, gradually dropping to rich pastures in the valleys. The elevation is not so great and the soils a little better; the farms still run small, 50 to 80 acres, and they have rather more land under the plough, two fields instead of one, with a breadth of roots as well as of oats. All the farmers depend on milk production; but though they grow a little winter food from the arable land and buy grains from Burton to eke out the grass, they confine themselves as much as possible to summer dairying and consider that the production of milk in the winter does not pay, in spite of its higher price. Rents run from 20s. to 30s. an acre, hired labour is scarce and dear, and in consequence some of the larger farms—and there are a few that run to two or three hundred acres—are inadequately worked. It was, in fact, in this district that we began to hear, as we did not infrequently through the Midlands, of good-sized farms worked prairie fashion by a farmer either single-handed or with the one man customary on the small farms, everything neglected, land and fences

going downhill, the farmer skimming little more than a bare living though he obtains an excessive return on the nominal capital he has put into the business. These men got their farms at a trifling rent during the depression, when tenants were scarce and the landlord in despair accepted and in many cases almost bribed some of the little men to undertake a larger venture. The tenants would be better off now if the landlord would resume the greater part of the holding and make a second farm of it, additional tenants would not be lacking if the owner would risk more capital in erecting a further set of buildings.

We finished up the day in Ashbourne itself, looking at a milk factory that is just being erected by one of the great international firms producing condensed milk. The factory is meant to deal with twenty to thirty thousand gallons of milk a day during the season, all of which is to be bought from the farmers round about, who will deliver daily. It will form a valuable new outlet for the farmers of the district, competing as it will with the cheese makers and the wholesale milk dealers in Manchester, to whom much of the present production is consigned. Going over the factory, what struck us most forcibly was the contrast between the intensive use of science, the refined labour-saving machinery, and the minute yet broad-minded organization that was being put into the industry of condensing, while the production of the milk itself, upon which the whole business depended, still remains primitive and uncombined, deriving no help from modern knowledge or modern methods.

XIV

THE MIDLAND MILK BELT

SOUTH of Ashbourne the Dove valley becomes broad and tranquil and the country falls into the great Midland plain, arable land towards the north, where throughout Cheshire, parts of Stafford and Shropshire, South Derbyshire and Notts the soils are derived from the New Red Sandstone, but almost purely grassland further south, where the broad belt of Lias clay comes in. It is true that the rock is generally obscured by drifts often of considerable thickness, but the greater part of the overburden has not travelled far, and so partakes of the nature of the formation below. Near Leicester we visited a large farm of 400 acres or so, typical of the Midlands in its big Dutch barn and extensive range of comparatively modern brick buildings, well equipped with machinery and labour-saving contrivances for preparing and distributing fodder, winter fattening being one of the considerable items in the economy of the farm.

The land was set out in large fields of 40 acres or so, divided by closely kept straight fences, the work of a good tenant under a landlord he could trust, for the farm was the property of a college; and though there is a heavy indictment against college bursars as business men, they are in good repute as landlords and seem to strike the happy mean between the munificent

proprietor who spoils his tenants by over-easy rents and the rack-renter who is always having new tenants. It is difficult to make a success of the British system of tenant-farming unless the landowner can afford to take a long view and follow a continuous policy. The farm was worked on what is now the usual English variant of the Norfolk rotation, a five-course shift of roots, barley, seeds, wheat, and oats or other spring corn; three saleable crops in the five years are justified in modern farming by the great fertility that has been imported in artificial manures and feeding stuffs. On most of the fields the texture of the soil changed down the slope from a light sandy loam to something much stiffer, approaching a clay, so the swedes were always sown on the lighter half with such potatoes as were grown, while mangels and cabbages occupied the heavier land. Our host was a great advocate of cabbages, using them both for his milch cows and his sheep; but, contrary to the usual opinion, he believed he got better results when they were drilled *in situ* than when transplanted. He was certainly a master of the technique of root-growing, usually the best test of skill in husbandry, and though 1912 has been a comparatively easy year in which to get a stand of roots, his swedes were a picture for size and regularity.

Though October had come, the last of the harvest was just being carted in—some spring wheat in which the clover had grown so rankly that it had been extremely difficult to get the sheaves into a fit state to carry. Some of the land being on the early side, the corn had suffered severely from the weather; a whole field of oats, for instance, was not to be threshed, but was being cut up for food, corn and straw together. Our host, however, spent a great deal of trouble over his corn, sorting it when it was carted, and grading the

sheaves a second time as they were passed to the threshing machine, with the result that he had already been able to sell the pick of his barley for malting at a very good price.

The farm was heavily stocked: there was a milking herd of Shorthorns of very good quality, the milk being all sold wholesale, though our host for a long time had retailed it in Leicester, but had found himself hardly repaid for the trouble of managing a very detailed business at some distance. He had experienced great difficulties a few years ago with contagious abortion, almost to the extent of driving him out of the milk business, but the disease had run its course and he was then free. He reared and fattened the young stock that were not drafted into the herd, and also bought in stores for winter feeding. An extensive flock of sheep was also kept for the turnips, the lighter land being fit for folding. Leicesters are now but little seen in the county from which they derive their name; they have been almost entirely displaced by Lincolns and Oxford Downs; indeed, there is not much sheep-raising in the county, where the farmers mostly depend upon flying flocks. In this district rents ran high,—our host paid 35s. an acre,—but all farms were taken up and were in increasing demand.

As might be expected from the proximity of so many large towns, labour was well paid; our host's men received 16s. to 18s. a week, a free cottage (which was reckoned at 2s. a week, though from what we saw of them their economic rent must have been at least 5s.), a breadth of potatoes, and whatever milk they wished to buy at 2d. a quart. Our host declared that he would have no objection to the establishment of a minimum wage, for it would justify him in the dismissal of several men whom he now retained on

the farm, though he did not think they earned their wages. But he considered that the flat rates of wages that prevail act most prejudicially on the quality of agricultural labour. Few of the labourers, we were told, showed any disposition to take up small holdings, which were mostly being sought by men from the towns or small tradesmen with some other occupation that could be worked in with their farming. In the past purely agricultural small holdings had proved a failure; one of our host's big fields had once been given up to that purpose, and had been passed on to him rent free for a year because of the bad condition into which it had been reduced.

We next moved a little farther south into the purely grassland of high Leicestershire, the extensive, undulating pastures which form the cream of the English hunting country. The soil is heavy, largely derived from the Lias clays even when that formation is covered by deep glacial drifts, and it grows sound grass of excellent feeding quality, and vigorous thorn hedges, by no means so well cared for as they were a generation ago. We saw one or two farms in the neighbourhood of Melton; as a rule they do not run large, from 130 to 200 acres, rented at 20s. to 30s. an acre, and they are nearly all in permanent grass, only from 10 to 20 acres on each farm being given up to roots and oats for winter feeding. Milk is the chief source of income; some of it is put on rail for the large towns, the rest is sold to the cheese makers, this being a centre of the Stilton industry. Shorthorns only are to be seen; on one farm of 150 acres we visited we found the tenant keeping a valuable bull and selling his bull calves for stock purposes. He also had been greatly troubled by abortion, which was rife in the district and took away much of the

profit of the milk business. He was then free, but only after exercising the greatest care in buying his bulls, in reserving them exclusively for his own herd, and in never bringing in bought cows until he had kept them under observation for one calving on another small farm he worked. He had also dressed all his pastures with gas lime, but was not prepared to conclude whether that had caused the cessation of the disease or had only coincided with it. On this farm we saw some very fine grassland, full of clover, though much of it had only tumbled down from poor arable fields during the depression and had been brought to its present condition by careful management and the use of basic slag, to which the heavy soil responded admirably. Our host held however, that all the grassland thereabouts would be the better for an occasional ploughing and resowing, if only to get rid of the patches of "hassock"—*Aira cæspitosa*—which establish themselves and gradually extend where the drainage is imperfect.

He declared that under much of the land in the district the drainage was faulty; often the drains had been set 4 ft. deep at wide intervals, under one of the mistaken theories advocated in the early days of tile drainage, when it was not clearly realized that drains ought to be set deep or shallow, according to whether the water rises from below or is only the rain soaking down. On the heavy clays of the Midlands the function of the drains is to get the rain away from the land, so they should not be set more than 30 in. deep. Landlords were nowadays, our host declared, indisposed to spend money on draining; he had, however, mole-drained one of his own fields with excellent results under an agreement with his landlord to share the expense. Much of the grass-

land in the district was of high antiquity, as could be seen from the way it is thrown up in high ridge and furrow, the long curves the furrows made at the ends of the fields telling of the old ox-teams that took so much room to turn. Doubtless some of this land went back to grass in the early years of the 19th century, consequent on the great fall of prices at the close of the Napoleonic wars, but there is evidence of a still earlier conversion of plough land to grass.

The ridges and furrows form a serious handicap to modern mowing machines, but it is disastrous to throw them down, because it takes years to bring into condition the raw subsoil that gets bared on the crown of the old furrows. October as it was, we found our host still carrying hay. As part of his business he cut and carried for his neighbours and also worked a carting business; in consequence his own hay had been pushed in the background during the uncertain summer, and he had only just got his horses free to bring it home. But he had adopted the northern custom of getting the hay up early into big pikes, when it can remain for a long time in the field without taking much harm. The fact that he should do so much horse work for his neighbours spoke of a somewhat restricted farming equipment in the district, and we were informed that most of the farms were worked with very insufficient labour, a man per 100 acres, whereas at least a man per 50 acres was needed to do justice to the land.

A 400-acre farm was pointed out to us that was worked by a man and a boy in addition to the tenant, though there were 30 to 40 acres under the plough; it was a miserable example of neglect, land and fences equally going to ruin, and the farm paying but a

starvation rent. These were the cases, according to our host, which justified the outcry of the small holders against the farmers for engrossing the land; in his own opinion 150 acres was about as much as a working farmer needed or could handle to the best advantage. He equally inveighed against the capitalist farmer, of whom one meets with many examples throughout England, who holds half a dozen or more scattered farms, aggregating 2000 to 3000 acres, each managed with a cheap bailiff no better than a promoted labourer. We have often marvelled at the methods of such men; they have no business organization, often keeping no accounts beyond their cheque-book, but they are shrewd buyers and sellers, and they risk little in the way of expenditure upon the land. We have never met one of them who would pay for skilled assistance and organize his business as a manufacturer would do; they are content to take the small profits which the land itself will bring in under cheap farming, and are not too greatly concerned at being robbed by their bailiffs, provided the robber is cunning enough to leave them a profit. As a rule, such men found their opportunity and got their many farms during the depression twenty years ago: they were the men who learnt the art of working cheaply to meet the fall in prices; farms were thrust upon them and no questions asked about the management, provided they could pay the rents. But rising prices and rising rents must compel them into better methods.

We were interested to find a farmer in the very heart of Leicestershire, with the Quorn kennels almost within view, breeding heavy horses; light horses he had abandoned as too speculative a business for a farmer, and no assistance in the way of nominations

to superior stallions would induce him to take them up again. Young hunters are not only a risk but a nuisance upon a farm; the farmer can make no use of them before they are sold or if an accident renders them unfit for market. Though a bit of a hunting man himself, he declared the feeling against hunting was growing, especially among the smaller farmers, who were increasing their stock of poultry in the fields and were careless about shutting them up properly at night.

We found most of the farmers in the district produced little except summer milk; farming cheaply and growing their milk upon the natural pastures, they were averse to spending money upon the feeding stuffs and facing all the troubles of management that attend winter dairying. They contended that the higher price of winter milk was not sufficient to pay for the feeding, especially as they had to compete with more favoured districts where the winter is not so severe and cows can graze longer than on the bleak Midland plateau. Moreover, one great milk market, that of the Stilton cheese makers, is confined to the summer. In this district, as in Derbyshire, the cheese maker has become a specialist, taking the milk of many farms, whereas thirty years ago cheese was made in almost every farmhouse.

Farther south and east the country falls away a little, and along the river valleys in particular in South Leicestershire and Northampton come the famous bullock pastures of the Midlands, where during the summer heavy cattle—Herefords, Devons, Welsh, and Irish—can be fattened out upon the grass without any artificial aid. It was once all corn land; in 1639, Gabriel Plattes describes the Vale of Belvoir as the best corn land in Europe, but for many years grass

has been supreme, and it is not until one gets south to the light soils of the Oolites and the Lower Greensand in Buckingham, Bedford, and Hunts that any considerable proportion of arable land sets in again.

XV

MIDLAND MARKET GARDENING

THE fame of the market gardening of the Evesham country or of North Kent is widespread, but one hears curiously little about the strip of light land which is cultivated with equal intensity in Bedfordshire in the neighbourhood of Sandy and Biggleswade. We entered it from the north on one of those brilliant mornings in early October, the St. Luke's little summer, with which 1912 made amends for its dripping August. The market gardening begins by St. Neot's in the broad valley of the Ouse, a dull country without hills or any large shapely outlines in the contour of the land. The villages straggle untidily along the roadside, but are alive and fully occupied, indeed, in many parts there is a great dearth of cottages; the only beautiful features in the landscape were the well-grown elms just exchanging their green for gold. Half-way to Sandy we called upon one of the larger farmers of the district, dealing with 400 acres on the same system of cropping as his neighbours with from three to 30 acres, but farming higher and getting more out of the land. He was not a native of the district, but the son of a salesman in the Manchester vegetable market, who had invested some of his money in land and then had set his son to grow the produce he could continue to sell. If not bred a farmer, he had made a

shrewd business instinct serve his purpose, and his farming had been governed by two north country maxims—"If tha never puts nowt on tha'll get nowt off"; "If tha does owt for nowt do it for thyself."

The land under ordinary farming conditions would have been deemed of little value, a thin hungry loam underlain by gravel, and so stony that a plough requires three shares a day for the first ploughing, quickly parching in the summer, and liable to lose much of its manure by washing out in the winter. But it is all on the flat, is easy to work in any weather, warm and early, and London is not far away, whence the Great Northern Railway brings the stable manure which alone can make such a soil productive. London dung and the railway facilities for sale northward and southward have made the district.

Large as the farm was, our host followed no rotation, taking in fields as they came convenient and regulating the cropping according to his expectations of the market. In this district Brussels sprouts form the most important crop, until it seems inconceivable that the country can consume so many Brussels sprouts in one short winter. The sprouts are either drilled and then singled out, or raised in a seedbed and then transplanted, which latter method gives better results, more thickly set stalks and firmer sprouts. We did hear of fields marked out in squares and seed dibbled at the intersections, so as to simulate a transplanted field, but doubtless the buyers too are fully acquainted with such tricks of the trade. The sprouts are sold on the field, and the merchant has to pick them. The price ranges from £9 to £19 an acre, according to quality, and the field must be cleared by March in order to enable spring corn to be sown. Three pickings are made, beginning, as a rule, early in

October. The stalks are rather a trouble to deal with; they have to be cut off, then forked up, and laid afterwards in the furrow behind the plough. A certain acreage of savoys and other cabbage is seen, but Brussels sprouts hold an enormous pre-eminence. As a rule they are followed by oats, barley being rarely grown in the district; latterly the French spring wheats have proved a very useful introduction, as they can be sown after the green crop and the produce is more valuable than oats. Thin as the soil is, and it must be manured for every crop, eating up even farmyard manure in a single season, two corn crops are often taken in succession, the only rest the land gets being a clover ley once every five or six years. Turnips are not much grown, there are few live stock in the district, and the roots are also subject to finger-and-toe. The land lacks lime, as could be seen by the abundance of corn marigold, sheep's sorrel, and spurrey among the weeds. Many of the stubbles also were white with stinking mayweed, a weed which was exceptionally prevalent in 1912 on all classes of land.

Though Brussels sprouts form the staple crop of the district, many other vegetables are grown; nowhere else have we seen so much parsley, of which there was a breadth, large or small, on nearly every holding, planted between onions, which are pulled before the parsley spreads much. Marrows and kidney beans are extensively grown and had just been cut off by the first October frost; we saw wagon-loads of marrows being drawn away to the dung-heap or to the pigs, for the numbers that had to be cleared made them no longer worth selling. Breadths of parsnips and carrots were common, and we saw one small plot of land which had grown carrots for seed for many years. Our host was just stacking a crop

of mangold seed, a speculative business, but the heads had filled well despite the rainy year; he was also about to transplant the young seedlings for the coming year's crop.

For all this intensive cultivation a good deal of labour is required, and everywhere we got a bad report of the quality of the men to be obtained in the district. Labourers received 2s. 6d. a day, but most of the work was done by the piece, and the average earnings were about £1 a week. The land under market garden cultivation, especially the smaller pieces, let at £2 to 50s. an acre, though the larger farms on the outskirts of the intensive cultivation still were rented at no more than 20s. an acre. We saw no stock in the fields, and many of the farms have little or no accommodation beyond storage for their baskets and very often an open shed in which the onions for seed can be spread out to dry. Our host, however, specialized in pigs—large White Yorkshires, which were kept under model conditions of cleanliness and had learnt to walk round before visitors with the docility of house pets.

Towards Sandy the farming becomes more intense and the land is very much cut up; we were told that a market gardener with an increasing business may often have to work eight or nine separate holdings to attain to 20 acres. The land is still the same thin gravel until at Sandy one comes upon the belt of Lower Greensand which runs across Bedfordshire and gives rise to even lighter soils. Just east of Sandy this formation rises into a ridge clothed with pine and chestnut; as we drove up the road in the brilliant October sunshine, jays flashed across the openings with their wild scolding cries, a sure indication that game is of no great importance in the neighbourhood, and red admirals fluttered above the sandy banks, making the

most of the few days that remained before their winter's sleep or death. On the crest of the ridge we found barren heath clad in broom and heather with here and there a slender birch, but to the depth of a field on either side of the road the land had been reclaimed and was being farmed high by small holders. The soil is of the lightest character, pure sand full of fragments of brown carstone, and the London manure it needs has to be laboriously carted up the hill from Sandy or Potten on either hand.

The holdings ran up to 50 acres, but one of the men with whom we talked considered that 20 acres was about the most convenient size for a single man. On the upland, rents were below 20s. an acre; but so great was the demand for land that much larger offers had recently been made for a holding that had fallen vacant, and the sitting tenants expected to have to pay more in future. Early potatoes are extensively grown, and followed by carrots or turnips; sprouts, onions, marrows, and runner beans are the other crops; of course the small men do not grow any corn. Asparagus is only grown on the heavier land lower down towards Biggleswade, where the rents run much higher, even up to £8 an acre. It was remarkable to find how well the small men seemed to be doing on this extremely poor land, which even a few years ago was as unpromising-looking a heath as could be found. Their takings were not large, perhaps, and they had to work and live hard, but they were independent, and a man of character could make headway. They had been hard hit during the drought of last year, but 1912 had made amends on land that likes at least two showers a week. Before we turned off the hill we were interested to see the remains of the old coprolite pits which used to supply the raw phosphate for the

original manufacture of superphosphate—Henslow's discovery which followed so timely on Lawes's invention of superphosphate. The band of phosphatic nodules is too thin and the mineral itself too poor to be worth working any longer in competition with the enormous supplies that are now available from Florida and Tunis; the discovery of basic slag finally put these Potton pits out of action.

From Sandy to Biggleswade and almost to Hitchin the belt of market gardening prevails, nearly all of it in the hands of small men, who, if the reports were to be believed, are mostly rack-rented on terms that leave them very little profit. It is not an attractive country, a farming East-end in fact, and the occupiers, small or large, work entirely by rule of thumb, looking over one another's hedges but possessing no basis of technical knowledge. They all depend upon town manure from London, and are likely soon to be in considerable difficulties, for the supplies are rapidly running short as motors displace horses with the omnibus and carrying companies. The price of manure on rail in London has risen from 1s. to 4s. 6d. a ton between 1905 and 1912, and the quality has become inferior; yet it is difficult to see how the market gardeners are going to replace it. Artificial manures alone will not suffice on these thin soils that need humus; green crops will have to be turned in, and the rents are too high to allow of the land remaining long unproductive for such a purpose. We were most of all impressed by the fierce individualism of these market gardeners; the larger men despise the small holders, and all look down on the labourers, who were described as a rough drinking lot, capable of earning by piece-work £2 a week and more, but can rarely be found on the land on Mondays. There was no co-operation in the district

for either purchase of manures or sale of produce; each man carted his own produce to the station, and there was no combination either in transit or marketing. The industry has been built up from below, and is still in the hands of uneducated men hardened by bitter competition.

In spite of our admiration of the way the poor land is being utilized, and the sterling, if rough, population it carries, it was somewhat of a relief to reach once more the chalk land with its broad fields and its sober, uneventful farming. Let us record in conclusion that on October 8 we saw a field of wheat, still grass green and being cut, a remarkable illustration of the abnormal weather that marked the year 1912.

XVI

GENERAL CONCLUSIONS

AFTER three years' wanderings from the Moray Firth to Cornwall, from Norfolk to Cork, one cannot help drawing some general conclusions about the state of British farming and some of the problems arising therefrom which have latterly been interesting a wider public. In this connexion it may be useful to state how little the questions that are most fiercely debated in other places seem to trouble the farming community. Amongst the farmers themselves there is no land question, no smouldering feeling nor general current of opinion that calls for a "policy"; in the main they would ask to be let alone. But we should like to enter a preliminary apology for the use we shall have to make of the term farmers. Half the difficulties of controversy arise from the fact that each party has a different group in view when it speaks of farmers. One is thinking of the tenants of from 200 acres to 500 acres; another of men with 30 acres to 80 acres working for their daily bread; a third, and perhaps the most vocal, of the men who dominate the Farmers' Clubs and Chambers of Agriculture, men who may be owners or tenants, but are primarily business men connected with land, dealers in pedigree stock, valuers and agents, making the main part of their income by other means than sheer cultivation of the soil.

In the first place we must recognize that the industry is at present sound and prosperous. The great depression touched its nadir about 1894; since that time prices have been moving upwards and methods improving. By degrees men learnt to cheapen production, in some cases by improved machinery and by savings in the actual husbandry, in others by a change of objective, as when grass and milk replaced wheat and beans. Rents were reduced, and before the century ended it began to be evident that a new race of farmers had grown up capable of making a living under the existing conditions. From that time all the advances in the price of corn and produce, of meat and milk and wool, have been so much clear gain, but it was not until about 1909 that there was any general recognition of returning prosperity. About that time it became difficult to obtain a farm which had not some patent disability attached to it; the advertisements of vacancies that prior to Michaelmas used to fill pages of the county newspapers in the nineties dwindled to a column or more, and agents found themselves able to pick and choose among would-be tenants. By 1912 the process has gone still farther, rents have definitely risen with the demand for land that cannot be satisfied, and in all parts of the country men are obtaining very large returns indeed on the capital they embarked in the business. Of course every farmer has not been making money; bad business habits and slipshod management are far too common, and nothing is more surprising than the way bad farming exists alongside good. We suppose that among grocers or gunmakers, solicitors or saddlers, the same inequality of performance exists, though the results are not set out so openly; but still other businesses can be standardized in a way that is not possible to agriculture. But to a man who takes

the trouble to learn and attends to his business, farming now offers every prospect of a good return on his capital; there are no fortunes to be made, but on the other hand the farmer obtains without expense much of open air and country life and sport for which the city man is prepared to pay heavily.

As to land tenure we need to recognize that the characteristic British system, to which our farming owes the pre-eminence it still enjoys, is one of tenancy of comparatively large farms, a system which, whatever may be its defects, draws men of capital to agriculture and leaves them with their capital free to put into their business. It is not a logical system, it admits of injustices, it often condones bad farming, but our people being what they are, it works; and judged by results it has got more out of the land and produced better crops and stock than any other existing system. The Agricultural Holdings Acts have cut off the possibilities of the worst injustices, and except in certain special cases have given the tenant a reasonable measure of security of tenure, so that to-day he very generally prefers to hold by yearly agreement rather than on a lease. There is little or no demand for a land court or any external rent-fixing agency, little call for any stiffening of the Acts either in the direction of longer notices or an enlarged definition of improvements. Some men would like to be paid for continued good farming, and such a claim would be sound enough if anyone could produce a definition of good farming or a method of compensation capable of expression in figures. Perhaps, if owners were more insistent on good farming the grievance would vanish; good farming should be its own reward, only as things are the man who has done well by the land feels a little sore at not being able to leave on better terms

than his slipshod neighbour. It is when one comes to specialist crops, to fruit, market produce, hops, even pedigree stock, that the existing law fails to satisfy the tenant. He has embarked his capital in a speciality, and has no claim to drag in his landlord as a co-partner; all the same he or his estate is liable to heavy loss if he is turned out or the tenancy is determined by death. A tenant who plants fruit may easily double the capital value of the land. It is equally unjust either to force an unconsenting landlord to take up the speculation, for speculation it is until a new tenant is found willing to pay rent on the outlay, or to allow the landlord to forfeit the improvement, legally at will, in practice on the death of the tenant. One solution would be the general adoption of the Evesham custom, by which the outgoing tenant finds a new tenant willing to take over the improvements at a price, and this tenant the landlord is bound to accept. But, speaking generally, owners are not willing to have tenants imposed upon them; freedom of choice, a power of selection on non-economic grounds, is a thing for which they are willing to pay in reduced rental, and do in fact so pay. We need to realize all the time that the ownership of land in this country is not entirely treated as a matter of business; there is a give and take, a rough partnership, between tenant and owner, which finds its working expression in the fact, vouched for by the recent Departmental Inquiry, that land is mostly let at rents below its competitive value.

For this reason the farmers stand by the landlord's party, notwithstanding their divergent interests; hence also they view with so much alarm the recent disturbance of the owner's confidence in landed property that has led to the partial break up of so many estates. The

owner of a large estate is indeed in a somewhat invidious position; his net return is only about 3 per cent. on the present sale price of the land, even though that price may be less than the original cost, or as may be demonstrated on various estates, less than has been expended in permanent improvements during the last sixty years. Furthermore, much is expected from the landowner: the locality considers it has claims on him, and is not shy of pressing them; yet he has no longer any power or political influence other than that which any man of means may win by his personality or his pocket. Hence, if the rural landlord is threatened with some of the odium attaching to the owner of improving urban land, and generally given to understand that he ought to be taxed out of existence, small wonder that he thinks of transferring his capital into more remunerative securities burdened neither with responsibilities nor reproaches. It is a delicate and unpopular task to raise rents to their economic level, and in consequence we must expect a continuance of the sales of all land that has not a sporting value round the demesne. There are three possible buyers: new owners who will in their turn let the land, the old tenants or corresponding men who want to farm it themselves, or the State in some form or another. Now by universal agreement small owners who look upon their land as an investment make the worst landlords; as a rule they are short both of knowledge of agriculture and of spare capital, and are the less likely to take that long view of their position which makes for the stability and prosperity of the farming community. Nor is experience more favourable to ownership occupation, even though the tenant has been assisted to purchase; the mortgage is generally higher than the old rent, and the farm is apt to be starved in

order to try to pay off the debt. Moreover, the experience of the past in this and other countries shows that each cycle of depression has crushed out a large proportion of small owners, for reasons that lie deep in human nature. There remains the last but distant alternative—ownership by the State or other permanent corporation, of which we will only record that we have always found the Crown, the colleges, and other similar bodies spoken of as good landlords; their estates are well cultivated and their people prosperous. The disintegration of the historic estates must come under economic pressure, but the process will be a slow one, and we doubt if there is any case for interference. However, from the point of view of good farming alone it will be better if the change moves in the direction of large permanent owners rather than small individual proprietors.

Closely associated with the question of ownership is that of large *versus* small holdings, whether owned or rented. It is difficult to put aside one's prepossessions; to one man small holding farming appears as uneconomic as handloom weaving. From another point of view capitalist farming has resulted in the degradation of the labourer and the depopulation of the countryside. Illustrations may be found to support either view, but the size of the holding is often an accident and not the causal factor in the cases quoted. For example, in many parts of the country, as round Evesham and Biggleswade, where intensive market gardening and fruit growing is pursued, men are making a living off as little as ten acres, and producing a much larger amount of food per acre than adjoining large farmers who are growing corn or milk on old-fashioned lines. Favourable as the comparison appears to the small holder, who

inveighs against his larger neighbour for holding up the land, the contrast is really between modern intensive tillage and the old unenlightened routine; amongst the intensive cultivators themselves the man with fifty nearly always beats the man with ten acres —*i.e.* produces more and earns a bigger profit per acre. Even with the minute and skilled operations of fruit growing the large farmer possessed of organizing ability is generally able to get his work done better than the small man will do it for himself. Knowledge and organization tell in farming as in every other business, and the small grower who possesses these qualities is soon utilizing them on a larger scale. We never yet met a small holder who saw any virtue in a small holding as such; he regarded it only as a stepping-stone to bigger things. Of course small holding communities are going to be taught to co-operate, instructors of various arts are being planted among them with a view of increasing their productive capacity; but all these aids cost money to the State as a whole if not to the small holdings and the larger occupier who is being asked to give up his land may well object that he at least is paying his way without any such crutches. In many parts of the country we found large farmers with more land than they could profitably utilize, through lack of skill and capital, but in these backward districts the small men were equally wanting in all the arts of husbandry. And when intensive culture of the market garden type is not possible the occupier of from twenty to sixty acres has a very hard fight—so hard that his sons are very generally giving it up and emigrating. Small holdings are needed as adjuncts to other employments—the smith, the postman, the wheelwright all can make use of a bit

of land—and especially as stepping-stones whereby the labourer can make a start at becoming a master himself. The struggle is intense and not always successful, but wherever we found farms of graduated sizes we heard of men who had worked their way up. The labourer is thinking of these things, and will tell you that he wants to put his boy on the railway because thereby he gets a chance of rising and some better prospect than the workhouse for the close of his life.

If we consider the men who are engaged in this business of agriculture, we must conclude that the owners, however kindly and helpful to their tenants, are yet deficient in leadership. There is nowadays no one to set beside Coke of Norfolk or the landowners who did pioneering work in the second quarter of the nineteenth century; almost the only working part they take in agriculture consists in the breeding of pedigree stock, and that rather as a form of social competition than for the improvement of farming. The great opportunities of leadership they might exercise in the way of drawing their tenants into co-operative marketing and purchase, or improved methods of farming, are rarely or never exercised; at their worst landlords become mere rent receivers and must inevitably become crowded out unless they take some higher view of their function. The model farms that were not uncommon a generation ago were justly discredited as only instructive in their expensiveness; what we do lack are examples of large-scale capitalist farming distinguished by its rigorous application of science and business to the real purpose of the industry—making money.

We doubt if there are many more profitable enterprises open at the present day than would be

provided by a 2000-acre farm on good land with an adequate backing of capital. But we are rather deficient at present in the kind of men to run a business of the kind—the highly educated expert that we find in charge of the great domains in Germany or the syndicate farms in France. Land agents, speaking generally, are better qualified as solicitors or accountants than as farmers; their education has been legal rather than scientific. The manager we have in view begins with a scientific education and learns his business as assistant on some other estate; despite his university training, he is a good deal more practical than the rule-of-thumb farmer, for he has put his science into bookkeeping and business organization, he has trained himself to face facts and act on them, instead of on sentiment and tradition. The difficulty in England is to get the right sort of start in life for the promising student from an agricultural college or university; farmers, however big their businesses, do not employ skilled assistants or managers; of the system and organization found in any other business of half the size there is none. Many of the big farms are excellently managed, but all depends on the one man's instinct and memory; for very often he keeps no books beyond a cash record, sometimes he lets his bank pass-book serve even for that, while his dealings are jotted down on the backs of envelopes and the like. He makes money because he is shrewd, spends little on his ventures, and because the land makes it for him, but often he is wasting great opportunities. This cheap and slipshod management is perhaps chiefly seen where men were allowed to put farm to farm when things were at their worst twenty years ago; in the arable counties cases are to be found of men

in occupation of several thousand acres often in scattered farms, and this vast acreage they cultivate almost as cheaply and as scantily as a colonial farmer would—real extensive farming that pays because the expenditure is low enough to leave a margin of profit even with the small returns. These men worked in the spirit of the late Sir John Lawes's dictum, that high farming is no remedy for low prices, and when things were at their worst they were useful in keeping the land going somehow; but with better prices and with the openings that have been found for specialized agriculture the need for such prairie farming is past.

However, the greater part of the land of the country is held by men occupying single farms of from 150 to 500 acres, the men who may most rightly be labelled farmers. Now, if we examine the methods of a good example of this class, engaged in growing corn, raising stock or milk, it would be very hard for the most enlightened and scientific expert to show him how to improve his business. His actual husbandry is generally above reproach: it might perhaps be cheapened by newer machines and a little courage in straightening boundaries and throwing fields together; his choice of seed and manures is sound, if somewhat traditional and conservative; and the feeding of his stock is not susceptible of any revolutionary reform. Again, his business methods, if simple, are cheap and fairly adequate; for the farm of the size we are considering forms a reasonable economic unit that purchases and sells on moderately wholesale lines. Undoubtedly by co-operation something might be knocked off the cost of materials bought, and in the end a more stable market might be found for the produce (the uneconomic nature of the present system may be gauged by the number of dealers,

auctioneers, agents, etc., even the smallest country market supports), more enlightenment could get better value at lower cost for both manures and feeding stuffs, just as a sound system of bookkeeping would open the farmer's eyes to wastages and mistakes of policy. But the effect of each of these improvements is in itself slight, sometimes in the order of five or ten per cent., and the whole of them would not materially alter the character of the industry. There is nothing revolutionary in sight: America and the Colonies, so often quoted as examples of modern farming, have nothing to teach us, and the lesson of the highly-farmed Continental countries—Holland, Belgium, Denmark—is not the transplantation of this or that industry, but that intelligence and foresight will be always finding openings for profit in various directions. Fruit, vegetables, hops, pedigree stock, the growing of seeds, bulbs, poultry, and a score of other special businesses can be made to pay handsomely, though many of them have been unduly neglected in Great Britain; but after all they are and must remain the fringes of the great industry, which is fundamentally concerned with corn and meat.

What the ordinary farmer needs above all things is better education; and by this we mean not so much additional knowledge of a technical sort, but the more flexible habit of mind that comes with reading, the susceptibility to ideas that is acquired from acquaintance with a different atmosphere than the one in which he ordinarily lives. The British farmer will be brought to co-operate with his neighbours not by the doubtful bait (and doubtful it must be to each individual) of better discounts through wholesale buying or higher returns from pooling his produce with that of his competitors, but by acquiring a mind open to the

large and generous idea of the power of collective action. After all, a co-operative society functions as a middleman by means of a paid officer, and the farmer with fifty tons of manure to buy can often by energetic inquiries get a price lower than the society is able to quote; the able farmer has to be induced to feel that in the long run it is better to help his inferior colleague to a living than to beat him at a bargain. It is, again, possible perhaps to teach farmers new industries and new methods, but it is a much surer procedure so to enlarge their perceptions that they find out the opportunities for themselves. Men mostly learn by example, by looking over the hedge; and the bad farming one sees so often in England alongside the best is not due to any lack of knowledge, but to the low mental calibre of many of the men occupying the land. Of course this lack of intelligence, of respect for the things of the mind and the bearing they have on practical life, is not a specially agricultural characteristic; it is far too much an English trait, common to all professions and classes; but it is answerable for most of the deficiencies that can be justly charged against our farming. Let us acknowledge, however, that things are changing, and more rapidly than might have been expected. It is little more than twenty years since any widespread attempt at agricultural education began in this country; and those who remember the hostility and scorn with which agriculturists viewed the establishment of colleges, of lectures and experiments, and contrast the attitude of the farmers of to-day, cannot but conclude that the first step which counts has already been taken. The country, too, is now in a fair way to obtain a system of agricultural education and investigation which will satisfy all the demands for specialist knowledge that the farmers of

the next generation are likely to make on it. It is the general rather than the technical training of the future farmer that we are fearful about.

The same argument applies to the consideration of what is probably the greatest source of loss to our farmers, their bad credit and general indebtedness to dealers. In all parts of the country, when one gets below the surface, one nearly always finds a large proportion, even a majority, of the farmers entirely tied to some trading intermediary who has advanced them money. In some districts it is the cattle salesman or auctioneer, in others the corn and cake dealer, but through one or other of these traders the farmer has to deal, and dares not grumble at either the quality of what he buys or the price of what he sells. The joint-stock banks are often accused of treating the farmer harshly and forcing him into illegitimate borrowings by the small accommodation they will allow him, but the bank manager knows too well the ramifications of country credit and the difficulty of checking the position of a business that is conducted without books to take again the risks that proved so disastrous a generation ago. As a remedy the creation of special credit banks has often been suggested, with some form of assistance or guarantee from the State; but if such banks are merely to give credit to farmers, *qua* farmers, without a commercial consideration of the security involved, they will be used just as long as money can be borrowed from them, but can only collapse and demoralize. On the other hand, real credit banks, consisting of a group of farmers raising money on the collective security of the whole body and lending it to the members on the knowledge they possess of their character, are still outside the range of ideas of our British farmers, and are not likely to be organized until our men have been further imbued

with the co-operative idea. But if the intelligence and mental activity of the farmer is stimulated he will realize for himself the intolerable position into which he must sink under the present system of credit, and as soon as he sees clearly that such methods are neither inevitable nor customary, he will find a way out for himself, either through ordinary channels or by the formation of a mutual credit society wherever the banks are unable to undertake his type of business. But the awakening of the farmer must go hand in hand with, if not precede, any action of the State in his favour.

The third estate of the farming community—the labourer—is perhaps in the worst case. He is by no means the serf that he is sometimes represented as being; his wages rose even during the depression, and now all over the country are equivalent or rather more than equivalent to a pound a week; but, considering the comparatively skilled character of his work, he is much worse paid than his fellows in any other industry. His hours are very long, his holidays few or none, and he has no trade union to protect him from the occasional tyranny of his employer. Not that the farmer is a bad master as a rule, but sometimes, from inability to appreciate the changed conditions under which labour has to be managed, he plays the bully and mishandles his men, to his own detriment. The farmer's general complaint is that the majority of his men are not worth their wages, and that is very probably true; they will have to be more highly paid still before they will earn their money. Men are paid far too much by customary scale, whether they are good or bad workers, and the farmer does not sufficiently consider how he can make them earn more both for themselves and for him. There is very general complaint that the knowledge of the old crafts is dying

out; draining, ditching, brushing, and laying a hedge, thatching, etc., are nowadays usually in the hands of quite old men, and no successors are in sight. In many counties attempts are being made to teach these arts by means of classes, but from all we have seen this seems to be a wrong method of going to work. The farmer ought to be the teacher, either with his own hands or by ensuring that some of the lads are set to work with the skilled leader. In many cases the master ought to be taught to dispense with the craft rather than the men to practise it. For example, sheep-shearers are scarce in many districts, but, instead of instructing men in the use of the shears, it would be wiser to show the master the advantages of a machine. Similarly Dutch barns are more economical than the best of thatchers. The technical education of the labourer can best be left to the farmer, and it is mostly nonsense to complain that it is our system of elementary education that is driving the men off the land. In a sense all kinds of formal education tend to unfit the pupil for practical life. The education monger regards education as a kind of marshal's baton to be put in the boy's brain, he wants to set him on the first step of the ladder that will lead him into Parliament, and to this end he does not mind wasting the general material that has no capacity for rising in this special way. So our boys cannot apply their brains to their fingers and our girls cannot cook or keep house, but we have an unlimited supply of clerks and typewriters for the service of the climber for whom the system is designed. But the town suffers equally with the country from the education which is based not on the work that lies round about, but on the off chance of making a career. Even a career generally turns out no great thing, the career of a minor functionary

only, for our millionaires seem to have been trained rather by their practical life than by their education. Men have left the land because fewer men have been needed per acre with every introduction of machinery; and indeed it is the better ideal to be able to manage a farm with two men per 100 acres minding machines and earning 30s. a week each than with ten men digging or its equivalent at 10s. a week each. Actually the contrast is not so bad as that, but still many farmers waste manual labour because it is comparatively cheap.

Nowadays two main factors are driving the best of the youngsters away from the farms: the lack of a chance to rise to any sort of a position and the deficiency of cottages. We need not labour the former point, but the provision of more cottages is in many parts of the country the most pressing and also most difficult of problems. By long custom country cottages, whether tied to the farms or not, are let at rents that will not pay a living interest on their cost, and the farmer takes it out by paying lower wages. If every landowner could be compelled to charge 4s. or 5s. a week for his cottages, and the farmers to raise their wages by a corresponding 2s. or 3s. a week, it would then be possible to build cottages as an ordinary business proposition; but any attempt on the part of an individual to raise rents and wages together only results in his men pocketing the higher rate and trying to live at a distance or to crowd in with some one else as lodgers. To build assisted cottages by means of loans or grants to the local authority would only perpetuate a vicious system and a false standard of wages which needlessly enhances the existing glamours of the town. But we see no way at present of forcing people to face facts and of ensuring that a cottage which costs 5s. a week to build

and maintain shall be let at that figure. Perhaps the raising of the assessment of cottages to their real and not their rental value would push people in the right direction; but rural rating is already such a wilderness of anomalies that one small reform might make very little difference. The farmer is fundamentally over-rated because, while practising a primitive industry, he is made to live up to an urban standard in such matters as roads, education, sanitation, etc.; and the rough and ready methods that have been adopted of giving him relief only take off some of the burden without removing the injustice. Still he lives, and is managing in the United Kingdom to-day to do justice to the land and to get a good deal of food out of it; for all his various disabilities and difficulties, we can see only one panacea—"More light." Whatever the future may have in store for our agriculture—and we look forward with a confidence founded on the changes of the last twenty years—we can still be proud of its state to-day, for it need fear no comparisons whether we regard it as a living art or as a mother of men.

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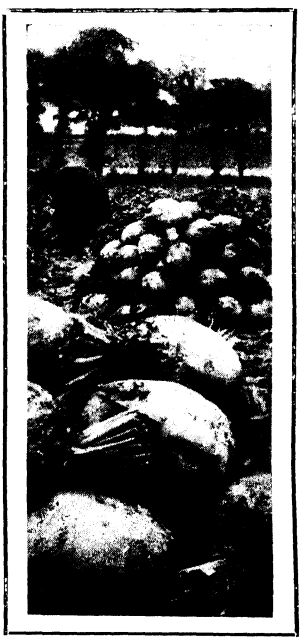

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