

strictly following the advice which experience has enabled me to give with confidence in the foregoing pages, he may look for a fair share of success in his certainly somewhat arduous undertaking. "It is not in mortals to *command* success." Let us, however, endeavour to deserve it.

Randal's Town.

IX. — *On Improvements in Agriculture in the County of Nottingham since the Year 1800.* By JOHN PARKINSON.

THE period of the last sixty years has been one of great and increasing outlay by owners and occupiers of land in the county of Nottingham. Most of the proprietors have expended large sums on buildings required either by the increase of feeding-stock consequent on improved cultivation, or in rebuilding farm-houses and cottages, of which the latter are generally in a better state than those of most parts of the United Kingdom. Much land has been effectually underdrained, the owners in some cases having paid the whole expense (excepting for team-work) and charged the occupiers a percentage on the outlay. In other instances tiles have been paid for by owners, and all other expenses by the tenant. But little effective and permanent underdraining was done in this county previous to the present century.

The first great improvement was the adoption of Elington's system of cutting deep drains to intercept the springs, and tapping the lower springs by boring with an auger, which in numerous instances has been very efficient. The former mode of using thorns and turf in making shallow drains has been gradually superseded, first by the use of elliptical tiles and flat tiles for soles on loose subsoil, and since by pipe-tiles and collars where the bottom of the drains is not quite firm; but in numerous instances the drains were made too shallow, and many tiles have been taken up and relaid at greater depth. The making of all under-drains of a uniform depth of 4 feet, and of the distance from each other of from 6 to 20 or more feet, according to the nature of the subsoil, and using pipe-tiles and collars, has been strongly recommended for the improvement of all lands which are injured by superfluity of moisture, and in numerous instances this system is found effective.

It may, however, be proved that such uniform system is not in many cases fully efficient; as if, by using an auger between the lines of drains so made, water can be raised to within 2 feet of the surface of the ground, and remain at the same height for a considerable time, the drainage of the land

cannot be deemed perfect, in which case the system of Elkington should be adopted to complete the improvement; but the most advisable and effective mode, where by using an auger deep water can be raised nearly to the surface, is in the first instance to have holes dug in several parts of the land so deep as to contain water, and then have deep drains made in the proper direction for intercepting upper springs, and likewise by boring to raise the water from lower springs. By such means, if the water be freely drawn from the various holes which have been dug, the drainage is complete; otherwise it is requisite that parallel drains of the depth of 3 or 4 feet should be made at such distances as will effectually draw the water from the holes: and where, by the foregoing test, drains of the depth of 3 feet are proved to be effectual, it would be a useless expense to have them made deeper. The theory of Elkington is imperfect; but he led the way to great improvements by the raising of water from deep springs and intercepting water from higher springs, and was well entitled to the reward he received.

Great improvement has been effected in the mode of making and keeping in repair the roads in this county, and most of the public and many of the occupation roads are now in a good state. Before the present century very rough materials were generally used, and they were frequently laid in a trough. It is now the practice to have materials, small or well broken, laid on a surface inclining about an inch in each yard from the centre, and the materials kept together by loose earth on each side; but wherever the surface of a road is tender, complete under-draining should be effected before the materials are laid thereon. Soft stone may be used with advantage if covered immediately with small broken hard stone or gravel; and in repairing roads small materials should always be spread over the surface after it is levelled, and not laid along ruts. It is important that the sides of the road should always be lower than the surface of the materials.

The open drains and gates are greatly improved, and upon numerous farms the fences of whitethorn quickset are kept in admirable order from being cut after harvest yearly, so as to be very narrow along the top.

The greatest improvements in the county within the present century were made by the late Duke of Portland, who brought into regular cultivation and farmed extensive tracts of land, some of which had been previously let at 2s. an acre, and a considerable part as rabbit-warren and sheep-walk at a nominal rent, which lands have been highly cultivated according to the most approved system of drill-husbandry. Much unproductive land has also been converted into excellent watered meadow by diverting the river Maun into carrier drains.

A great portion of the remaining part of the forest of Sherwood has been enclosed and now grows abundant crops, and many sheep of an improved breed are now reared and fed thereon.

A considerable quantity of oak timber has been grubbed up on clay-land in Epperstone, Ossington, Norwell, and Winkburn, which now produces abundant crops; and many plantations of larch in Blidworth and elsewhere have been converted into fertile arable land. The owners of the very poorest sandy and gravelly land, who planted larch thereon more than sixty years ago, derived great benefit from the produce; and where the ground has been cleared the land has become so fertilized by the vegetable matter derived from the larch as to be worth more than double its former value and to produce good corn and green crops, although formerly it would not repay the expenses of cultivation. The best and most profitable mode of treatment of such soils is to fallow, use artificial manure, and take a crop of turnips to be eaten off by sheep, and then trench, dig, or double-plough the land and plant it with larch, which, after such preparation, grow rapidly, and the thinnings soon repay part of the expense; the trees attain a good size in much less time than when they have been planted in holes without stirring the rest of the surface. Although such method is expensive at the commencement, it is more economical and profitable than the common mode of proceeding, by which considerably more plants and much more time are required before a plantation is in a thriving state.

A short time previous to the present century an act of parliament was obtained for the embankment and drainage of an extensive tract of land at the northern extremity of the county, which had been covered with water yearly in winter, and two subsequent acts have been found necessary to authorise the completion of the works. Two powerful steam-engines are erected, and the land has become valuable and productive.

The banks of the Trent and Devon have been made effective for the prevention of summer floods in many parishes. A considerable district adjoining the river Idle, between Retford and the Trent, might be very materially improved by drainage and embankment.

With reference to the cultivation of lands whereon turnips may be advantageously eaten by sheep: about the year 1800 there were several recent improvers of light sandy land, in the district between Retford, Worksop, and Bawtry, who had adopted a regular course of cultivation; but autumnal cultivation for fallow was not then practised, and corn and turnips were chiefly sown broadcast. Swede turnips were not then grown, and all spring corn was harvested in a loose state. In most other parts of the county, and especially on the best sandy and light loamy land,

cultivation was at the above period extremely defective; the land being not well cleaned, turnips were sown broadcast and too late, and the crops generally abounded with couch and annual weeds. There has, however, been gradual improvement, and occupiers of light lands in every part of the county now adopt autumn-cultivation and all other modern improvements to grow turnips, whilst the increased number of their sheep and cattle, fed to much earlier maturity than formerly, bespeak them a foremost place among the farmers of the United Kingdom.

In respect to the arable lands of strong loam and heavy soils, drainage has produced wonderful changes, and some of the fields which were deemed quite unfit to grow swede turnips now produce the heaviest crops, the land being previously well cleaned by autumnal and early spring cultivation. If care be taken that the land is in a dry state when ploughed for the succeeding crop, that and the subsequent crops of clover, grass-seeds, and corn are usually more abundant and profitable than after the naked fallow, which is gradually diminishing, except in exceptional wet seasons like the last: even if the land cannot be prepared for mangold or turnips, tares or mustard may be substituted with advantage.

A practice exists in this county which is productive of much good to the labourers. Upon many of the larger farms a large-sized cottage is provided for the head servant, who is a superior married farming-man, and receives the house and garden rent-free, undertaking to lodge and board the unmarried workmen. The wages of such a foreman are from 25*l.* to 30*l.* a year, and he is allowed 1*s.* a day for the board of each man, with stated quantities of milk and fuel and ten stones of well-fed large pork and two bushels of malt for himself and each servant yearly, and candles for the stables and cow and feeding houses. The yearly wages for men and strong youths boarded either in the farm-house or by the head man are from 13*l.* to 18*l.* for the former, and from 8*l.* to 12*l.* for the latter, and the men are generally as well satisfied in respect to their food and attention when boarded with the upper servant as those are in the farmer's house. The system of boarding men with a servant is most applicable where a farm is distant from a village, and they are neither so orderly nor so much under control in the evening in a large village as on a detached farm.

The writer occupied for many years four farms, two of strong land, one of good loam, and the other of light sand, in parishes widely distant in the county of Nottingham, and he boarded servants with the foreman on each farm, who were steady and regular in their conduct and work. He was the first in each parish who underdrained land extensively and, effectually, and drilled and horsehoed turnips, which were carted off strong land

and stored for cattle in feeding-houses and fold-yards, or for sheep on grass-land in wet weather; and he dispensed with naked fallows, which previously had been prevalent. In each case at the commencement of his tenancy the produce of the several parishes was very inferior to that at present realized: many more cattle and sheep are now well kept and fed in consequence of the draining of wet and retentive lands, autumnal cultivation, using linseed-cake and artificial manure, the drilling of corn and root crops, and carting the latter off heavy land, whilst naked fallows and crops sown broadcast have almost disappeared.

Upon one of the farms of strong land above adverted to, containing 400 acres, 270 acres thereof being arable, 40 acres meadow, and the remainder pasture, the number of beasts kept previously to the year 1825 did not on an average exceed 15, and they were usually very poor in spring, having been wintered partly upon hay grown on wet land, but chiefly upon straw; neither were any beasts fattened at that time. The number of beasts now reared yearly on the farm is about 25; many are bought for feeding in summer and winter, and the general stock of cattle on the farm at all times of the year is about 90. The number of sheep kept on the same farm prior to the year 1825 was less than 200: those sold off were chiefly in a lean state; not more than 150 were clipped, and their wool was inferior. At that time the loss of sheep by rot and other diseases was great. The number of sheep now kept on the farm is nearly 400: the whole are clipped, their fleeces, of superior wool, averaging not less than 8½ lbs. each, whilst those sold are all in a fat state. The loss of cattle or sheep by disease and casualty is now quite trivial. The grass land of the farm has become of greatly increased value in consequence of improvement by drainage and top-dressing; the pasture land formerly was only fit for a very limited number of store cattle, and the artificial grasses kept few sheep. More than 57 acres have been converted from arable land to permanent pasture, and the whole of the pasture land, including artificial grasses, will now fatten cattle and sheep, and the meadows produce more than one ton and a half of good hay and superior aftermath yearly. The great quantity of excellent manure made on the farm causes increased fertility. Although more than four times the number of labourers are now employed on the farm than was the case in and previous to 1825, it yields much greater profit to the occupier than it did at that time, although the rent is increased cent. per cent. with the occupier's approval; but subsequently all these practices have been generally adopted in these parishes, and, together with autumnal cultivation, with a liberal use of linseed-cake and of artificial manures, have led to a great increase in the number of cattle and sheep kept and fed.

The following is a statement of the wages paid to labourers on the said farm of 400 acres, in the year ending the 25th March, 1861, which do not exceed the average of wages paid to each man for agricultural labour in the North Midland counties, Yorkshire and Lincolnshire. The men were employed partly by the day and partly by piece-work. There is full and constant employment, and an industrious labourer having a small working family is enabled to save money.

Labourers employed.

No.	Days employed.	Wages received.			Average per Day.		Year's Receipt, including for Family.			Average per Week during the Year.			Remarks.
		£.	s.	d.	s.	d.	£.	s.	d.	£.	s.	d.	
1	313	28	12	0	1	10	43	1	0 $\frac{1}{2}$	0	16	11	Cowman, occupies a cottage and garden rent free, and has milk and fuel, &c., and is paid for the board of a servant.
2	293	38	13	0	2	7 $\frac{1}{2}$	52	19	11	1	0	4 $\frac{1}{2}$	
3	303	37	0	2	2	5 $\frac{1}{2}$	52	13	4	1	0	3	Regular labourers.
4	291 $\frac{1}{2}$	39	11	3	2	8 $\frac{1}{2}$	41	13	10	0	16	0 $\frac{1}{2}$	
5	304 $\frac{1}{2}$	37	6	5	2	5 $\frac{1}{2}$	..	..	..	0	14	4 $\frac{1}{2}$
6	298 $\frac{1}{2}$	37	5	7	2	6 $\frac{1}{2}$	..	..	..	0	14	4
7	304	35	11	8	2	4	..	..	..	0	13	8
8	301 $\frac{1}{2}$	32	16	8	2	2	..	..	..	0	12	7 $\frac{1}{2}$
9	246	29	2	8	2	4 $\frac{1}{2}$	..	..	..	0	13	6 $\frac{1}{2}$

A quart of table-beer is allowed to each man daily, and ale in hay time and harvest, and when employed in extra work. Two old men are also employed on the farm at the average wages of about 10s. each per week.

The wages of women are 10d. a day, and 1s. 6d. a day for harvest-work.

The yearly rent paid by a labourer for a cottage and good garden varies from 2l. 12s. to 4l., the lowest rents being paid to the owners of great estates. The cottages generally are kept in a cleanly state; and although some of them are too small for large families, they are not so over-crowded as in some parts of England.

Full and regular employment is now given to the labouring population in and near those parishes at good wages, and the actual relief paid to the poor has much decreased. In one of the said parishes, containing more than 1500 acres of strong land, more than half arable, the produce of which has been much increased by drainage, the amount paid for the relief of the poor in the year ending 1836 exceeded 2s. per acre; whilst on an average for the three years to Lady-day, 1860, the yearly amount paid for the relief and maintenance of the poor has not exceeded 5 $\frac{1}{2}$ d. an acre, in consequence of regular employment being given to the labourers. The present Poor Law has not benefited the occupiers in agricultural parishes where there was previously good and proper management in

respect to the labourers and paupers, as the expenses and charges, exclusive of relief, are in such cases additional payments; but in all populous parishes, and in agricultural parishes where employment was not given to the labouring population and where management in respect to the poor was defective, the new Poor Law has been very beneficial.

In one year (about 1821) the parochial rates for the county of Surrey increased to one-third more than they had been in the previous year; and at the same time the parochial rates for the county of Nottingham decreased one-third from the amount paid in the preceding year: which great difference was caused chiefly by the extremely low wages then paid in Surrey and consequent increase of pauperism, and the liberal wages paid in the county of Nottingham, and the general determination to find employment for labourers rather than leave them to become paupers, which is strict economy. A gentleman purchased an estate of about 700 acres in the county of Surrey in 1846, which was in a very inferior state of cultivation. The farms were held on leases, and the tenants employed labourers at wages not exceeding 9s. a week, when the wages of labourers in the North-Midland counties and Lincolnshire were from 12s. to 14s.: in the former case the men employed did not perform half a fair day's work in consequence of weakness and inefficiency, whilst in the latter case the men earned their wages and were profitable to their employers. The owner of the property alluded to began to improve a farm, of which the lease had expired, by draining the wet land, grubbing up hedgerows which were very wide, building, and planting fences, and by bringing the land into a good state of cultivation, which has caused it to produce abundant crops; and he so treated the remainder of the land, as the leases expired, with the like success. To enable him to accomplish the work in a proper manner he materially advanced the wages of the labourers employed, and insisted upon having work done in proportion to the money paid. His example has been followed by others in the neighbourhood, and the general cultivation in that district is improved, the labourers are in a far better condition, and poor-rates have consequently decreased.

The most important among recent improvements in our farm management is the erection of suitable buildings and machinery for cutting fodder and straw, pulping roots and grinding corn for consumption by live-stock. That system is at present only partially adopted; but the advantages derived from it are so obvious in the economy of fodder and roots, and the superiority of ground over unground corn, as shown by the improved condition of stock so fed, that no extensive arable-land farmer should

be without such means for using his produce of fodder, straw, root-crops, horse-corn, and inferior corn to the greatest advantage.

Another improvement is the building of tanks for liquid manure, one of which should be considered indispensable for every farmyard. The drainage from feeding-houses, stables, and fold-yards is so invaluable that it ought not to be wasted. The most economical mode for preparing the liquid manure for beneficial effect is, to mix it repeatedly with ashes, which may be readily obtained by burning soil with the cuttings of hedges; and whether ashes so fertilized are used for root-crops, on corn or pasture-land, or on meadow immediately after the hay is cleared off, the advantage to be derived from them will be found very considerable.

Forty years ago the drilling, horse-hoeing, and the growing of turnips according to the most approved system, were chiefly practised in the best-cultivated districts of Scotland and the border counties, particularly Northumberland, at which time the rents in those districts were fully one-third higher and the payments for labour fully one-third lower than in the North-Midland counties and Lincolnshire, where labourers were better paid and maintained than they were in Scotland and Northumberland; but the rents and expenses for labour respectively are now more nearly alike in all those districts—a result which has been brought about by farmers from the north removing southward, by the greatly improved general cultivation of the North-Midland counties and Lincolnshire, and by the scarcity of labourers in the north, which has led to increased wages being given there.

Indeed one remarkable feature in the present aspect of agriculture is the approximation both in prices and management which the diffusion of knowledge and increased power of transit is effecting between the most and least favoured spots, not only in England, but in Europe. We have not so much reason to pride ourselves on the achievements of any one farmer of our day, when compared with the leading men of a former generation, as on the general spread of intelligence, and the general interest felt by those connected with the soil in the full development of its resources.

Ley-Fields, Newark.
