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BY RICHARD PARKINSON,
OF DONCASTER IN THE COUNTY OF YORK.

IN TWO VOLUMES.
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INTRODUCTION.

THINKING it necessary, for the satisfaction of those who may peruse the following sheets, to say something of myself, and of the means by which I acquired that knowledge of farming in general which is now submitted to a candid Public; I sit down to write this Introduction, which contains a concise account of my own life, so far as respects the different occupations of a farmer, and of a breeder of all sorts of stock.

My father rented a farm called *Aby-Grange*, situate near Alford, in the county of Lincoln, which consisted of about 400 acres; a clay soil, much of it very poor land, chiefly used for the purpose of breeding sheep, horses, beasts, pigs, &c.

My father was famed for the best breed of black horses—horses of most action and greatest power. The horned cattle were of a very good mixed breed, well inclined to feed. We used to draw eight pair of oxen to do the farming business, and kept what may be termed a large dairy. The sheep, at one time, if not the best, were certainly not much inferior to the best in this island. I speak of a period long before Mr. Bakewell's famous breed, which is supposed to have been produced from the stock of Mr. Stow, of Bilsby, about four miles from the place of my birth. My father hired rams of Mr. Stow. We had very good pigs. Of grass-land my father was an excellent manager; by his great attention to surface-draining, he converted a farm remarkable for rotting sheep into a perfectly sound and thriving pasture. As a proof of this, he did not in the last thirty years lose a score of sheep, although in one year there was a general rot all over the island; but in that year he did not lose more than six, or *seven* at the most.

My father had a farm at Salfleetby, one at Trusthorpe, and another at Skegnest: these three farms were all in what is termed the MARSHES, and consisted entirely of grass-land.

It

It may, perhaps, convey some useful knowledge, to inform the reader of the purposes to which these farms were applied.

The *fresh-water* marshes were proper for feeding cattle and sheep, and were far from being bad for horses. The *salt* marshes were much better for horses, and excellent for old sheep. Upon horses they act as physic, and at the same time make them fat; but they are improper and unwholesome for steers, and for all *young* stock, except horses. Lambs feeding on them will purge to death, whilst a *young* horse will thrive in a most astonishing manner.

My father employed every means in his power to instruct me thoroughly in the business he practised with so much success, and neglected no opportunity of gratifying the ardent desire he had of making me a complete farmer; and the strong propensity he thought he discovered in me, at a very early age, for the profession, encouraged him to persevere in his endeavours.

He made me assist in performing every part of the farming-business from the time I was able until I quitted him; and the experience I gained thus early from my own observations, joined to the instructions of my father, enabled me when very young, to be a tolerably good
judge

judge of the different sorts of soil our several farms were composed of.

The *Marshes* lay some miles distant from the home farm; and one part of my province being the driving stock to and from them, it frequently fell in my way to hear from others opinions of the stock I was attending, my father being noted for good stock. Those opinions I carefully listened to, and certainly profited by; as I had afterwards the opportunity of ascertaining the value of them, and whether they were given with judgment, by seeing how the stock turned out, and how they fed.

I also examined, with a minute degree of attention, the management of the different farms I passed; which from the slow pace the stock travelled, I had ample opportunity of doing.

My father took me a farm (of Mr. Vyner of Gautby) at Claythorpe, distant about a mile from our house. Mr. Vyner being very averse to ploughing, it was with much difficulty he was prevailed upon to suffer me to plough forty acres; but by this improvement I was enabled to keep nineteen score of sheep upon the farm, that never before had maintained a greater number than thirteen score—a very material difference. I likewise kept many more beasts
and

and horses than the old farmer my predecessor; besides raising a quantity of corn.

Four years afterwards I went to Asgaby, near Horncastle, in the county of Lincoln. This farm was unfavourable for stock of any kind; what were kept there required considerable assistance from art; as nature would of herself, in that situation, furnish but a scanty allowance. It consisted of four hundred acres of land, with right of common over the very extensive and valuable commons of the east and west fens. And here I acquired, though at a heavy expence, a thorough knowledge of the advantages and disadvantages of pasturing on commons. The plough-land of this farm consisted in general of clay, with flints on the surface, covering a stratum of white clay, intermixed with a small quantity of sand and flint.

The methods pursued in agriculture, at that period of time, were turnips, barley, clover, and wheat; and that rotation of crops is in some places yet, though injudiciously, persevered in.

I well knew the value of *manure*, and felt the want of it—consequently used every means within the compass of my knowledge to procure it. I formed such a reservoir, or receptacle

tacle, for the moisture of the fold-yard, as is described in the body of this work: but I totally neglected the advantage of the *green crop*, the fold, and stall-feeding in summer; which would have increased the quantity of manure full *one third*—an acquisition of considerable consequence, independent of the saving in the food of the animals so kept. By such increase of manure, and the distribution of it as recommended in this work, my farm would have been much more profitable.

During eight years' residence on this last-mentioned farm, I became acquainted with the first and most respectable breeders of sheep in the county: Mr. Chaplin, of Tathwell; Mr. Bourne, of Dalby; Mr. Codd, of Ranby; and several others.

With Mr. Chaplin I became particularly intimate; and he introduced me to Mr. Bakewell, by prevailing upon me to go to view the stock at Dishley, and to hire a particular ram for him for the season. Glad of the opportunity of conversing with a man of Mr. Bakewell's experience and acknowledged abilities, I with pleasure accepted the commission.

My ideas of stock at that time were, that none were valuable but what were large. I
had

had that season considerably enhanced the value of my own stock (though in the time of the American war, when stock of all sorts fetched a low price), as I proved by the sale of some drape-ewes. The average prices were from *six* to seven shillings per head, even of those by the most famous breeders in the county. But one hundred of mine were purchased of me, by Mr. FydeU of Boston, at fifteen shillings per head, with forty culls at thirteen shillings per head.

I had the vanity to consider myself the first in rank as a breeder of sheep. It was not therefore extraordinary for a man who entertained so extravagant an opinion of himself, to glance superficially over the stock of another; who, from the envious disposition too common in mankind, had many detractors amongst malevolent and interested competitors. I am obliged to own (what now seems almost incredible to myself) I looked upon Mr. Bakewell's sheep with indifference, if not contempt. The first objects pointed out to me as worthy of notice, were eight rups, three heifers and calves, on a piece of land near the house; but they appeared to me so small, that I bestowed no more attention upon them than just to perceive they were

were beasts and sheep. I was shewn more rams, and behaved with the same cool indifference. I next got amongst the breeding ewes. With them were some extraordinarily large Flanders mares, of a beautiful jet black, with remarkably long manes and tails : these caught my eye—their appearance struck me forcibly ; but for the mares, I might have passed over the most valuable breed of sheep in this kingdom without noticing them ; so totally were my ideas taken up by the *large ram* I had come in quest of. Stopping to look at the mares, some ewes attracted my notice. I requested the liberty of touching them ; which was readily complied with. The ewes were immediately put in a fold, that I might examine them at leisure. According to my usual custom, I began with the best, and was much surprised at the perfection of the sheep ; but how shall I express my astonishment at not being able, after *touching* the greatest part, to find a *poor* one amongst them ! I awoke as from a sound sleep, and was ashamed of my stupidity. I discovered, in an instant, the sheep of Mr. Bakewell to be far superior to my own, which I had, until that moment, thought some of the best in the kingdom.

My

My curiosity was stimulated. I requested to be shewn the whole farm, having repeatedly been told that Mr. Bakewell's sheep were put into particular pastures for *shew* only, but that there were other pastures into which they were turned at night to feed ; and being rather ashamed of my carelessness at the outset, I determined to bestow a minute examination upon every part of Mr. Bakewell's management that I should have the opportunity of inspecting during my stay.

The pastures in which the breeding ewes just mentioned were, being much beaten by the Flanders mares and the young beasts, would no doubt justify the suspicion that the stock were only put in them for the purpose of *shew*. Before that time I had no idea of such thrift, or such disparity in the animals feeding. The *largest* of my own stock were the fattest ; I thought this to be the case every where.

In going over the farm, I saw other animals valuable as the sheep in proportion : there were some yellow cows, by far surpassing any I had before seen, beautiful in the extreme, and uncommonly fat. The cabbages were un-

touched,

touched, the carrots unpulled, turnips unstocked, the eddish uneaten ; a convincing circumstance that no deception was used in their feeding.

Returning towards the house, I perceived whence the idle and malicious tales respecting Mr. Bakewell originated ; and where lay the mistake of those who, without malice, had propagated the stories. On a small piece of land were ten sheep, six beasts, and several horses, all feeding on green fodder ! This was a novelty to me.

I had not yet seen the principal object of my journey, the great ram : of course I was obliged to enquire particularly concerning him. Immediately my curiosity was gratified with a sight of that extraordinary creature, who appeared to me to be of the *Tees-Water* kind, with but a small strain of the *Dishley* in him.

In the same pasture with the ram were several of the largest ewes I had ever seen, and some wethers, all of the *Tees-Water* kind.

In my return I saw some small rams, which I examined with care : one, a very small one, I took a particular fancy to.

I dined

I dined with Mr. Bakewell, and during four hours conversation with him, obtained more useful knowledge with respect to the breeding and management of stock, than I had been able to acquire during all the time I had practised the business of a farmer. It is with gratitude I acknowledge the obligations heaped upon me by that great, that intelligent, that useful man ; and I hope the precepts he afterwards took so much pains to instill into me, will prove beneficial to the public.

I hired the large ram, and likewise one of Mr. Bakewell's own breeding. They were much esteemed and admired by all good judges in our neighbourhood.

This journey totally removed many pernicious prejudices from my mind ; and from a conviction of my error, I acquired the habit of not trusting too implicitly to appearances and to my own preconceived opinion ; which was of great advantage to me in my researches after useful knowledge.

I left Asgasby, and went to Doncaster ; where I soon after took a farm, which may truly be called an *experimental* one. A great many of the experiments there made are described in
this

this work. I was greatly encouraged to persevere in my improvements, by the attention shewn me by Sir John Sinclair, Bart. President of the Board of Agriculture. That very useful and intelligent man, Mr. Robert Brown of Murkle in Scotland, had come to take a view of the agriculture of the west riding of Yorkshire. To him I got introduced ; and he, conceiving a favourable opinion of my knowledge of rural economy, recommended me to Sir John, who soon after did me the honour of calling upon me. Sir John was so good as to send me some reports of the state of agriculture in the Lothians, &c. and some other instructive publications ; the perusal of which raised my ideas, and excited my curiosity so much, that I was not satisfied until I examined the modes of farming practised there and in other parts of England and Scotland.—The result of my observations, and of my own experiments, I have detailed in the following Treatise.

I now must make an apology to the reader for having dwelt so long upon myself and my own concerns, which I trust his candour will not impute to egotism—I despise the character of an egotist : I only wished to point out the
sources

sources whence I derived my knowledge of the science I mean to treat of.—The height of my ambition is to be useful, and to convey my thoughts in such a plain, familiar style, as shall be perfectly intelligible to the practical farmer.

THE

THE
EXPERIENCED FARMER.

SECTION I.

Method of making Fallows by having a Crop at the same time, and sometimes Two Crops, with a Crop of Wheat the succeeding year.

ON A CLAY SOIL.

FIRST year. A pea fallow, drilled and manured.

Second year. Wheat.

Third year. Beans, drilled and manured.

Fourth year. Either wheat or barley.

Fifth year. Clover with a *top-dressing*.

Sixth year. Wheat.

This is what I term a rotation of crops; and by manuring once in two years, each crop may be expected to turn out a good one. To purchase manure (which in many situations cannot be obtained) will not be necessary; as, from
the

the succession of crops laid down, the land's own produce will supply a sufficiency. By mowing the stubble, throwing the roots and weeds into the reservoir (as will be described hereafter) you will procure *four loads* of good manure per acre each time for the two drill crops, and six loads of *top-dressing* for the clover; making together fourteen loads per acre for the six years on an average. If there be a redundancy of manure, the overplus may be laid on the clover. The bean crop might perhaps take more manure than here allowed: but pease will not bear a larger quantity, as they would be liable to run to straw and yield but little. Should beans rise too high, it will be necessary to top them with a scythe in a straight shaft; which is done at a trifling expence. But if garden beans be sown, they will not be liable to shoot too spindling, as they require richer land.

When rape seed sells well, a crop might be thrown into this sort of land; but although rape be in general reckoned profitable, in this instance it could not turn to much greater account, supposing a good return; for rape takes two years to produce a crop on fallow lands, in the old husbandry. It must be sown in the
month

month of August, and will not be fit for reaping until the following July or August twelve months; consequently from the profit must be deducted two years rent, as the land lies idle so long to receive its crop and take its fallow. On fresh or sward lands intended to be pared and burned in the months of June and July, it is certainly very proper and profitable to sow rape.

SECTION II.

A regular Rotation of Crops on different Soils, demonstrating what the different Soils are by Nature intended for.

ON A DEEP LOAM OR WHARP.

FIRST year. The potatoe-fallow, manured, will turn out the most profitable.

Second year. Wheat.

Third year. Drill beans, manured; or pease.

Fourth year. Barley.

Fifth year. Clover, manured.

Sixth year. Wheat.

Rape might be sown on this land to advantage after the crop of pease, if podded; and instead of barley as before hinted. If rape be

sown and reaped for seed, the straw must be carefully stacked up, to be used in the stall or fold as litter for cattle. The stalks and roots must be all removed carefully from the land, and carried into the fold-yard, that the cattle may tread upon them all winter. By these means a great deal of manure will be gained, as they will imbibe the urine of the cattle; and the wheat crop will be better for the refuse being taken away.

On a Sandy Soil.

First year. Turnip fallow, drilled and manured.

Second year. Barley; or wheat, if the turnips are early eaten off.

Third year. Pease, drilled and manured. The same year, Turnips in drills, if the pease be podded.

Fourth year. Barley.

Fifth year. Clover, manured.

Sixth year. Wheat.

The drill crops should have four loads of manure each; and the clover, as soon as the barley is removed, six loads of manure or compost.

On a Lime-stone Soil.

First year. Turnip fallow, drilled and manured.

Second year. Barley.

Third year. Pease, drilled and manured.

Fourth year. Wheat.

Fifth year. Clover, manured.

Sixth year. Wheat.

By way of cross-cropping, if the fourth crop were oats, it would be full as proper, and useful; some oats being generally wanted on a farm.

On Moor Land, or Peat.

First and Second year. Rape for seed, with a dressing of lime.

Third year. Wheat.

Fourth year. Drilled and manured pease or beans.

Fifth year. Wheat.

Sixth year. Oats.

On a Poor Sandy Soil.

First year. Fallow turnips, drilled and manured.

Second year, Barley.

Third

Third year. Seeds, to be eaten by sheep for three successive years: but if once mown, to be eaten by sheep the other two years, and then sown with wheat or rye. This crop ought to be dibbled.

On a Poor Limestone.

First year. Turnips drilled and manured.

Second year. Barley.

Third year. Seeds, mown, or eaten by sheep, the next two years—then sown with wheat or oats dibbled.

As the two last species of soil may be supposed not capable of bearing a constant rotation or succession of crops, they may be useful for breeding or feeding sheep: the soil will be enriched by keeping them upon it; and if, the last year of the seeds, the farmer bestow a top-dressing of manure, from his reservoir of compost prepared for that use, of from four to six loads per acre; the benefit of such dressing will appear in the wheat crop, and repay him well.

N. B. The manure will proceed from the barley crop and first year's seeds' mowing.

Loose Gravelly Soil -

must be treated in the same manner as poor sand. There are some moor lands which are sandy,
and

and consequently proper to be eaten by sheep, in the same manner as the two former soils, if they do not rot them.

N. B. The mode and expence of preparing land for these crops will be explained in Section XLV.

SECTION III.

The proper method of making Manure, and bringing it with despatch to the greatest degree of perfection; so that the whole quantity may be put on the Land the same Season, and Crops immediately grow thereon.

ALL fold-manure ought to be moved from the fold every *month* or *six weeks*. By letting it lie longer, the cattle will tread it so hard in some places as to prevent the regular putrefaction; and if there come dry weather in the spring months, it will rot only *partially*, and not *equally*: and it is a very desirable quality in manure to rot. It is therefore necessary to carry the whole from the fold-yard, and to throw it up in hills, so that the rain and snow may penetrate freely; which will cause the manure to ferment, and the fermentation produced by the heat of the dunghill will destroy the
seeds

feeds of noxious weeds as effectually as if they were boiled in water, and will render them as incapable of vegetation as if they had lain twelve months in a hill.

It has been customary with some farmers, intelligent men in other respects, to turn their manure over in the fold, in the spring, in dry weather; and as it is dry and trodden down hard, they are obliged to cut it with a hay-knife, and throw it up in lumps: but, in heating, the dry part will injure the moist, and prevent putrefaction. That, therefore, is not so good a method; for the more it is shaken about, and the lighter the hill is made, the quicker it heats and rots: and no fold-manure can be in a proper state to be laid on land till it has undergone a degree of fermentation. The manure thrown out at stable-doors, if the cattle do not tread it down, may change into a proper state without being moved. The greater variety in the sorts of manure, the better; such as the dung of pigs, horses, cows, &c.

By this method you may, in one or two months, make excellent manure, far exceeding that made by the common process, which requires so much time and labour to bring it to perfection. The *old* farmer prides himself on
having

having manure accumulated for a year at least preceding the use: but he is wrong to boast of such management—it is false economy. The salts and oil, which constitute the richest part of the manure, evaporate; and the juices drain from it, if it lie long after being taken from the fold-yard or reservoir.

When roots of grafs, couch, stubble-roots, rotten vegetables of most sorts, weeds from standing pools and ditches, and almost all kinds of refuse stuff, by being plunged in the reservoir, are made into manure, it will take much longer time to rot it down; as, from its being made chiefly of weeds, and roots of weeds, they will be liable to grow again, especially if there be any couch-roots among them.

Let the manure from the reservoir be worked down very fine, and, when composed of roots of weeds, laid as a *top-dressing* on clover or seeds two years eaten; for, were it put in drills, and covered with mould, there is danger of its again filling the land with weeds. It is well known the smallest piece of couch-grass will, from its great succulency, be liable to vegetate. I tried an experiment, by raking the couch clean from the fallow in very hot dry weather, and had it carried into the fold-yard, where at the
time

time upwards of one hundred pigs were, and continued feeding during the whole of the summer, which was remarkably dry. The couch was of course much turned over by the rooting of the pigs. During the course of the winter it was covered with horse-dung, cow-dung, and a variety of matters by the different stock turned in, and by manure carried from the stables and cow-houses; and it remained in the fold-yard eleven months, and was afterwards used on the land set with potatoes. A small quantity of the couch, notwithstanding, sprouted amongst the potatoes.

Another very good mode of making manure (of which some experiments have been tried under my direction) is, by driving sheep out of the fold where they have been folded, to eat turnips in the day, and putting them at night into a straw-fold, made purposely for sheep. This not only answers the purpose of making manure, but also causes the sheep to feed quicker and consume less turnip; for when sheep leave turnips, they will eat *straw* by way of variety—as a well-fed citizen will devour a decent quantity of pudding after a few pounds of beef. Sheep lying in the fold littered with straw, find themselves much more comfortable than

than on a cold dirty layer, where turnips have been eaten off by them; and were these sheep continued in the field, as many of them as could would creep into the hedge-bottoms for shelter, and there drop much of their manure, which would be totally lost to the use of the land.

For greater conveniency, you may make a fold in some place near the turnip-field; carry the straw into the fold, and put the sheep into it.

It is proper to rouse the sheep and stir them about in the fold before they are driven abroad in the morning. By this means they empty themselves; and thus disorders incident to sheep at turnip may be frequently prevented, and a quantity of dung is saved which otherwise would be lost on the road to the turnip-field. I know a farmer who, by following the above rules, has this season made a considerable quantity of manure of an excellent quality.

By attending to the above directions, manure in high perfection may be made in six weeks or two months; and, instead of lying, according to the old custom, on the high roads, in hedge bottoms, fold-yards, &c. may,

by drill-husbandry, be deposited in the land, and good crops of pease, potatoes, beans, cabbages, turnips, &c. be growing thereon.

SECTION IV.

By Drill-Husbandry, four Loads of Manure, properly managed and applied, will answer the purpose of sixteen Loads in the old Way of Husbandry.

BY drills being made two feet asunder, and the drill six inches wide at the bottom, there will be just one fourth part of the ground covered with manure. Now, as six inches multiplied by four gives two feet, which will be the distance from drill to drill, and as four multiplied by four makes sixteen, it follows, that if the whole of the land had been covered with manure, sixteen loads would have been required for what is as fully and beneficially performed by four; that is, by one quarter of the quantity used by the old method of dressing, supposing it of the same thickness and quality: and, as in the drills it is so closely laid in the earth, and the seed sown upon it, the crop receives the whole of the benefit.

It

It will be generally agreed, that beans, pease, cabbages, &c. are by this method allowed a proper space to bring them to the greatest perfection, and a sufficient quantity of manure to promote a strong vegetation: but by spreading only four loads of manure in the old way, and sowing the seed broad-cast, the farmer will find himself greatly deficient in yield of CORN, weight of turnips, cabbages, &c. compared with the crop produced by the new system.

Another great advantage attending my method is, that the crop will have double earth to grow in, and that the land may be cleaned at the same time it is growing, and bear a much better crop of wheat afterwards. Many other benefits will arise from the use of this drill husbandry. By putting the manure in as here directed, the sun is prevented from exhaling most of its fine subtile parts, so conducive to the nourishment of the plant: the earth, by covering the manure, receives all the juices the manure is capable of bestowing: whereas, by throwing or spreading it about upon the land, perhaps the seed falls in one place, and in another the manure, which the sun and wind dries to such a degree that it becomes like straw again, as the scantiness of the crop too often makes evident.

SECTION

SECTION V.

Method of making Drills, and putting Manure in them.

THE best method of making the drill is with the Rotherham or swing-plough, by drawing a furrow down the land, then coming back without any furrow to the place you began at, and beginning there and drawing, by the side of the first furrow, another furrow twenty-four inches distant, in the manner land is wrest-baulked, and then coming up the first furrow again. The first drill is then finished. By this method the plough makes an open ridge, so as properly to contain the manure. When this is done throughout the field, or as much of it as you choose; then, to put the manure in the drills, let the horses go up one drill; and the cart-wheels up the two others. Going along the drills in this manner will injure them but little. The man in the cart may, if required, throw from the same station manure into nine drills. The load of manure should be such as to go through the field in a straight line; as turning round with the cart would spoil the drills: therefore no more drills must be manured than the load will go through with. My
 custom

custom is to have one man on the cart, and a woman, or boys and girls, to spread the manure regularly along the drills. This is a good method of proceeding. It is very easy to count the number of drills contained in an acre of land; and thus, if your carts are regularly filled, every acre of ground will be manured in an equal manner, which is not easily done by the old method.

SECTION VI.

Best Method of treating each Crop; with the Season for Sowing and Reaping.

THE wheat crop may be sown from September to January with nearly equal success. Late sowing in some parts has answered so well, that many farmers have sown so late as February; but, in general, November will be found to be the best month; except where lands are liable to be flooded in the winter. That sort of land should be sown as early as possible; because, if the plants get weaned from the kernel, and take hold of the earth for support, water may continue upon them a long time, without much injuring them. But, if the land were flooded before the wheat comes up, it would be totally destroyed.

Land

Land liable to be flooded should be sown with a drill, for the following reasons: If a wet winter be succeeded by a dry spring, the soil will become so hard as very much to impede the progress of the plant; and when rain falls, it penetrates the earth but partially. Were the scarifier and horse-hoe used, it would lighten the soil, and the rain would penetrate more generally.

The sort of land we are now speaking of is very apt to abound with what is called spry-grass—a species of grass which comes up so thick as to make absolute swards of the spots it grows in, which are generally the moistest parts of the field. This kind of grass robs the wheat-plants of their food or nutriment: and where it abounds, you must expect but a scanty crop of corn. As a remedy for this evil, sow the seed-wheat in drills, and in the interval betwixt drill and drill scarify or horse-hoe the land; which will destroy the grass and weeds growing in the intervals, and pulverise the soil so as to receive freely and equally the rain and dews. The wheat may be moulded by the hoe; which will make the plants vigorous, enable them quickly to cover and protect the ground from the effects of drought, and ensure the success of the crop. It would likewise be a great saving
towards.

towards cleaning the land for the next year in the bean-fallow ; for such land may be constantly managed, as above directed, with beans, and wheat.

This kind of land is likewise liable to crack, and to gape so wide as to receive, to a considerable depth, the foot of a horse, and consequently make it dangerous for man or beast to walk over it. The pulverizing it in the manner before mentioned, would in a great measure prevent the cracking.

Where the old system is followed, beans very often fail of producing on this soil a good crop, owing to too much or too little moisture while growing. Oats prosper on some of this sort of land ; and a crop of oats may be taken after wheat, when the land is in good condition ; but I do not approve of such cropping. Before the bean-fallow, the beans must be drilled and manured ; and if you bestow *six loads* per acre in the drills, as before described, the land will be far less liable to crack ; for, by moulding the beans, they will soon acquire strength and size sufficient to shelter the land, and by keeping it shaded prevent its cracking. In my opinion, peas are more proper than beans for land so circumstanced ; as, by lying
down

down, they cover the ground more closely and preserve a greater degree of moisture : but if you have a bean crop, and the beans run up too high, it will be advisable to top them with a scythe in a straight shaft. A man would top them for six pence per acre; and the operation would make them bear better.

I must repeat my predilection for peas on land liable to be flooded, as they are much sooner ripe ; and the shorter the time the crop is on the land, the less the danger of loss by such floods : therefore the earlier the peas the better. I see no reason against sowing garden-peas generally. I have always found them to produce the greatest crop ; and if used, they would be equally cheap to the grower for seed, and surely more profitable, as they would boil, grind, into flour, and turn to great advantage by being gathered green at the beginning of summer. Besides, as they are early off the land, it might be scarified to make as perfect a fallow as the farmer could desire. By such a succession of crops, the straw, stubble, &c. would produce sufficient manure to furnish at least six loads per acre every two years.

I cannot advise the sowing of clover, or of any of the grass-seeds, on this land, except
wanted

wanted for pasture or meadow. If the soil here spoken of, viz. clay, have had a large quantity of lime on it, there is no doubt but the lime may have injured it, and you may expect the ground to crack much, as most sorts of lime impoverish land.

A *sandy* soil, or a *lime-stone*, is not difficult to till, being of a kinder nature than stiff clay. I found that the best time for sowing wheat on these soils was the month of November ; and the wetter the land, the more likely you are to succeed. But if the land be clean, I do not recommend scarifying the wheat in the spring ; but prefer treading with sheep early in that season. Bush harrowing and rolling answer well on these kinds of soil.

Peas may be sown, if the weather prove favourable, soon after Christmas. A month or six weeks difference in the time of sowing is not very material ; but if sown early, the crop will be sooner ripe, and equally productive. You may stir the mould about them till May : and by doing so you will keep the ground as clear of weeds as if the peas had been sown late. Even in the month of May they may be sown with advantage, if your land cannot be put in a proper condition before.

Beans may be sown in February, and until April. Barley is best sown in March : late sowing of barley makes the grain small and coarse, and much inferior to that sown early : however, it may be sown from March to May. Oats may be sown from March to May. Clover-seed is best sown with barley or oats, and harrowed in, as are all other seeds intended for sward, &c. Bush-harrowing is a good way where seeds are sown.

Having spoken particularly as to the times of sowing, it may be necessary to say something generally as to the times both of *sowing* and of *reaping* ; for, as situations and seasons, which are the guides to both, vary so much, no precise rules can be absolutely laid down for either the one or the other. But one general observation may be made : Corn sown early is most likely to succeed, by having more time for tillering or branching, and from being sooner ready for reaping. Early sowing has so many advantages over the late, that, in my own practice, I have experienced a difference of one third in the amount of the produce, by the difference of a few days in sowing, upon land similar in every respect. Without doubt, it is best to be as early as the season and the nature of the intended crop will admit of.

SECTION

SECTION VII.

The Method of scarifying and making Land fit for Wheat after the other Crops are off.

BY putting the manure, as before directed, into drills two feet asunder, it becomes necessary to cross the drills to mix the manure well in the soil, and to pulverise it. The readiest way to do this is, by Cook's scarifier : but those who are not in possession of that useful machine, may substitute one of a simple construction, which will be described hereafter. Ploughing in this case is very improper. For if there be a small quantity of couch-grass, or of any other weed, the plough turns it downwards, causes it to spread abundantly, and hides it ; so that, when you come to plough for sowing wheat, the weeds are set at liberty again to sprout out at a season when no weeds die. Cook's scarifier draws out the roots of the couch-grass at full length. The plough would cut them up, and turn them over, and consequently increase the number of roots ; the smallest bit of which will grow. By the scarifier all other weeds, such as thistles, &c. are cut up, and, when harrowed, are easily collected together and carried off.

Strong

Strong clay-land, when in drills, may be scarified, when a plough in a dry season would have no good effect, not even touch it in the old way of cultivating land. Cross-ploughing of fallows, though so frequently practised, is a most pernicious custom; for, if it were possible to desire a crop of couch-grass, ploughing in that manner, and harrowing after without raking up the refuse, would most effectually answer the purpose.

SECTION VIII.

A Calculation of Six Years Expences of the Drill-Husbandry, according to the New System, and of the Old, shewing the Disbursements for each.

OLD SYSTEM.			NEW SYSTEM.		
<i>First year, Fallow.</i>			<i>First year, Turnips.</i>		
	£.	s. d.		£.	s. d.
Four ploughings and harrowings at 6s. each, - - - - -	1	4 0	Ploughing an inch and half deep, -	0	4 0
Twelve loads of manure at 8. per load, 4	16	0	Harrowing and raking, rolling, &c.	0	3 6
			Ploughing twice, harrowing, raking, &c.	0	13 0
			Leading off refuse,	0	1 0
			Seed and sowing, -	0	1 6
			Making of drills, -	0	2 6
			Three times ploughing the turnips, and hoeing, - - - -	0	8 6
			Six loads of manure, at 8s. per load, -	2	8 0
	£ 6	0 0		£ 4	2 0

OLD SYSTEM.

Brought over - - - £. s. d.
6 0 0

Second year, Barley.

Ploughing, harrow-
ing, and sowing, 0 6 6
Weeding the crop, 0 0 6

Third year, Beans.

Ploughing, harrow-
ing, and sowing 0 6 6
Weeding, - - - - 0 0 6

Fourth year, Fallow.

Ploughing three times
and harrowing, 6s.
each time, - - - 0 18 0

Fifth year, Wheat.

Ploughing and sow-
ing, - - - - 0 6 0
Weeding, - - - - 0 0 6

Sixth year, Oats.

Ploughing and sow-
ing, - - - - 0 6 6
Weeding, - - - - 0 0 6

£. 8 5 6

NEW SYSTEM.

Brought over - - - £. s. d.
4 2 0

Second year, Barley.

Ploughing and sow-
ing, harrowing, &c. 0 6 6
Weeding, - - - - 0 0 3

Third year, Beans or Peas.

Two ploughings har-
rowing, raking, &c. 0 13 0
Drill making, - - - 0 2 6
Four loads manure,
at 8s. per load, - 1 12 0
Three times plough-
ing, to mould the
peas and destroy the
weeds, - - - - 0 4 9
Leading off refuse, 0 1 0

Fourth year, Wheat.

Scarifying, - - - - 0 2 6
Ploughing, sowing &c. 0 6 0
Weeding, - - - - 0 0 3

*Fifth year, Clover.**Sixth year, Wheat.*

Ploughing and sow-
ing, - - - - 0 6 6
Weeding, - - - - 0 0 3

£ 7 17 6
Balance in favour }
of the new system } 0 8 0

£. 8 5 6

This calculation is made upon one acre of land from the old mode of fallowing once in every three years, or two crops and a fallow, which the *old* farmers call *not running* the land. With those I vary very much, as will be shewn more fully in Section XLV.

The expences of the new mode are less by eight shillings than those of the old in the first six years ; and will somewhat decrease in the next six years, except in manure, which will be more, as in my mode the reservoir and five crops of straw will produce nearly double the quantity. My manure is all raised from the produce of the land it is laid on : but, to make his twelve loads, the *old* farmer robs the meadow or any piece of fresh land he is allowed to plough up. This is the principal cause why so many tenants are restricted from ploughing old swards ; as they do not carry back the manure to its proper place.

In all my calculations, I suppose that two loads of manure can be made from every acre of straw, if the crop be a good one. Therefore by the old system (admitting the crop to be a good one, which frequently is not the case) there would be only eight loads of manure raised in six years, and by the new, ten loads, even without the assistance of the reservoir. But in
the

the second six years, if my plan be followed, I expect to have fourteen loads.

In making the above statement I have followed the usual mode of calculations upon agriculture, by charging the manure as an expence ; which, however, is very wrong, when it is not purchased, but produced from the land.

S E C T I O N IX.

Wheat-Crop through all the stages, Drill-Husbandry or Broad-Cast, Reaping, Threshing, cutting Straw for Chaff, &c.

TO sow wheat by the drill, six pecks of seed are thought sufficient for one acre : but I say, ten pecks ; for broad-cast, twelve. Two men with one horse will drill with Cook's machine eight acres in one day. By broad-cast, one man will sow twelve.

To prevent the smut in wheat, dissolve salt in water till an egg swims in it : put your seed-wheat into the brine, and separate the light grains that swim at the top from those which sink. Some let it remain twenty-four hours in the brine : this I disapprove of, as it can produce no good, and bad consequences may ensue. When you have taken the wheat out
of

of the salt and water, sprinkle it over with chamberlie, or with water in which arsenic has been boiled (one pound to eight gallons of water ;) then throw on dry lime to make it spread, and to prevent the birds, which do not like the lime, from eating it. Oats and barley may be prepared in the same manner as wheat. The arsenic-water or chamberlie penetrates into the infected or damaged grain, destroys the vegetative power, and causes it to rot in the ground; by which means more room is left for the sound to grow. The operation with the chamberlie or arsenic-water is dangerous; and often almost the whole crop is spoiled by it. This will appear from the following accident that happened to me : the chamberlie, being taken from the bottom of the tub where it was kept, and consequently stronger, killed the seed-wheat. I had steeped the wheat in salt and water over night, as is our usual way, and then sprinkled it with chamberlie and lime. The time of sowing was from eight o'clock in the morning to four o'clock in the afternoon. The wheat that was sown at eight in the morning, sprung up the same as that sown on the preceding day; but kept declining, and became thinner and thinner, until at last scarcely a tenth part grew.

A small part of the field which had been left unsown, was finished the next day ; though in the night there fell much rain, and I had then an aversion to sowing any thing in wet weather. Being called from home for some time, my first pursuit, on returning, was to look how the wheat came up. To my great astonishment, that sown in the latter part of the first day looked very ill ; I therefore enquired into the cause ; and having great numbers of pigeons, I suspected they must have eaten it. I consequently returned to the field, and on searching into the mould, found thousands of the grain rotting. The wheat being all of one quality, and all prepared alike, I was more than ever puzzled. Knowing, however, there must be a cause, I reconsidered the whole ; and at last I remembered the rainy night. The tub which had the chamberlie in it was uncovered, the rain had fallen into it, and had lowered the strength of the chamberlie ; and consequently the wheat that was sown the last day was by far the best in the field. This circumstance had prevented me from ascribing the bad state of the wheat, to the chamberlie. But the chamberlie had certainly injured it, so that the part sown before the men went to dinner,

and that part sown after dinner, might be distinguished to an inch. Had the wheat remained unsown two hours longer, the chamberlie would probably have killed it all. The part sown after the rain was the best crop at reaping. I have since tried twenty experiments by sowing in rain, or when land is wet ; and I always found it answer in the autumn. In spring the practice is improper, as there is danger of the land's setting.

Shearing or reaping with the sickle is most generally practised in respect to wheat when fit to cut ; but in some parts they *mow* it—a method I much disapprove of. Although reaping costs double the price of mowing, the difference is much more than made up by the great saving of grain, and by the goodness of the straw for the purpose of cutting into chaff ; for by shearing you have only the fine part of the straw, and it requires less carrying, and less room in the barn or stack ; and the stubble serves for litter. If shorn, the best method of securing wheat in the field for harvest, is to set up ten sheaves against each other, and hood or cap them. Hooding or capping will prevent the pigeons doing damage, and, by being a good guard against rain, give an opportunity

to the corn of standing a sufficient time in the stook to be ready for the barn.

Thrashing is most profitably performed by the machine, as will be explained in the following section.

It is needless to say any thing here of chopping of straw ; as the operation is so simple and generally known, and frequently spoken of in the course of the Work.

S E C T I O N X.

Use of the Thrashing-Machine.

BY thrashing with the machine, little corn will be left in the straw. I do not mean to describe the machine minutely : the inventor is ready to give particulars to those who choose to apply to him. It is sufficient for me to say, that by the operation of this machine the corn is to a certainty freed from the straw and all extraneous matter. Thrashing with the flail is uncertain at the best, even supposing the thrasher disposed to do his work well ; for he may beat a long time and not meet with every head of corn, which with the machine it is scarcely possible to miss. The grain wasted by the use of the flail is beyond belief. One circumstance

stance struck me forcibly as to the waste of wheat by bad thrashing. I had the curiosity, when in London (it was at the time her Royal Highness the Princess of Wales lay in), to look at the Prince's horses : some straw was then drawing into the stables, which I observed to be very slovenly thrashed. The court, or stable yard, was at the time covered with straw, on account of the Princess's situation : this of course was much beat by carriages ; and when the litter was taken up, the ground was strewn with corn. I am of opinion, the corn lost by thrashing with the flail is more than would pay for thrashing it all over the kingdom by the machine.

The only plausible objection to the thrashing machine I ever heard, is the expence attending the making and using it. But, the first expence will be counterbalanced by the saving in the erection of barns ; as one of a moderate size will be sufficient, where it is now necessary to build two or three of great extent. And those who object to the expence of working it know nothing of the matter. Experiments have been made upon what has been left by the flail, as well thrashed as men could do it : and on having it done over again by the machine

chine worked by one horse, it has been found to pay well for the trouble.

Every machine must be worked by some power ; and whether the power is applied by means of living animals, by fire, wind, or water, the effect will be the same. The use of water is attended with the least expence ; but it is confined to particular situations. Wind is uncertain, even to a proverb. Fire, in countries where coal is cheap, may be applied to great advantage ; steam-engines being now improved to a degree of perfection that heretofore they were thought impossible of attaining. They are dangerous, however, where straw is concerned. But the power most generally used to put the thrashing-machine in motion, is that of living animals. A farmer intending to erect one of these machines, will no doubt proportion it to the size of his farm, and to the quantity of corn he means to thrash ; though, indeed, the power may be applied to many other uses. The dimensions of this machine may be such as to work with one horse only ; or it may be large enough to work with half a dozen, where the farm is very extensive, and expedition is necessary.

The

The machine will require five pair of hands to work it. But let not the farmer be alarmed at the number of hands mentioned ; for one woman and four children will easily work one upon a middling scale.

The method is as follows : One takes the sheaf from the mow ; another unties, spreads, and lays it on a place proper for the third person, whose business it is to feed the machine. This third person must be a steady one. A fourth takes away the straw. Fifthly, a boy to drive the horse : but when the horse becomes used to his work, a driver will be unnecessary. Be the size of the farm more or less, there are almost always horses to be spared for work of this kind, which may be so contrived as to be done at a leisure time. But supposing the farm so large as to employ a machine worked with *five* horses ; it is highly probable that on such a farm there may be brood-mares, kept solely for the purpose of breeding : it would be good economy to use such mares when the foals are taken from them, which is usually done in the thrashing-season. Such a practice would encourage the breeding of horses ; and the mares so used would raise their foals well, and lose no time.

But

But the farmer is not confined to the use of horses ; the employing oxen, or young growing steers, would be profitable ; as in that case they would earn their meat. It is no doubt pleasant to the farmer to derive a reasonable profit from all the animals he keeps ; which might be the case here.

It is a mistaken notion to suppose that the use of this machine will decrease the demand for labour. On the contrary, it will afford employment for children, who, unless they are placed in the neighbourhood of manufacturing towns, consume their youth in idleness, and contract a habit of pilfering ; beginning perhaps with hedge-breaking, and progressively proceeding to crimes of a capital nature. An honest man, fond of work, and inured to industry, will always meet with encouragement.

SECTION XI.

Different Sorts of Grain proper for different Soils.

WHEAT will grow upon almost any soil, with proper care and management ; but it prospers best upon a clay, loam, or wharpe.

Barley

Barley delights in sandy or gravelly soils, or lime-stone ; yet, if a clay soil be well managed, it will produce the best barley for the purpose of making malt ; for when properly manufactured, malt made from barley that has grown on clay-land is found to be more abundant in that saccharine juice in which consists its value for the brewer. Barley will not thrive on moor-land, or peat-earth ; nor does it like a low and wet situation.

Oats will grow upon any soil, but bear the heaviest and finest crops upon gravel or sand. Fen-lands will produce abundant crops of oats, as will in general all low land, if of a good quality. Lime-stone land very seldom produces large crops of oats ; neither is a stiff clay favourable to the propagation of this grain.

Beans succeed best on a clay soil, loam, or wharp. With manure and proper management they will grow on any soil ; but on few so well as on clay.

Peas will grow and prosper on almost any soil. They will produce abundantly, and with less manure than any grain I ever made trial of.

Tares will thrive well on all soils ; they grow spontaneously on poor soils of a dry nature.

Garden-peas

Garden-peas I have lately found to bear the winter much better than the field-pea, with the same treatment. But they all require a little manure. Four loads per acre will produce upon a middling soil a good crop.

SECTION XII.

Turnip-Culture in all the different Stages ; with the great Advantage of the Drill.

TO raise turnip-feed in the best manner, you must pull up, from the field where they stood all winter, some turnips of the most approved sorts (I prefer the white-top, or the stone-turnip), and plant them in a small spot of ground—a dozen will produce plenty of seed. Preserve that seed, and sow it in some convenient place, to raise seed for your whole crop the next year. Put them in drills, and do not hoe them ; but draw them out by hand, leaving such plants as take the lead. When they have appled or turned, carefully pull out every improper turnip. By following the above method, your seed will be more vigorous, will vegetate with less moisture, and produce stronger and hardier plants. It is usual at present to transplant a

large quantity of turnips to raise seed for the whole crop, which practice is more expensive and very injurious ; for, by pulling the turnip and planting it again, you destroy the tap-root, and weaken the turnip's strength and vigour, so that the seed from it must be of an inferior quality.

By drilling the turnips it is highly probable every plant will grow to perfection, if the manure be properly deposited ; and, by making the drills, a hollow place is left, which will both attract and retain moisture ; and likewise shade the plants from the heat of the sun, and thus deprive the fly, which is so dangerous an enemy to the turnip, in some measure of her favourite situation. Drilling likewise empowers the farmer to sow the seed much thicker ; and it is much less liable to be all devoured by the fly when so sown, than when superficially scattered by the broad-cast. By the latter method the seed is sprinkled unequally ; and by adventitious circumstances (such as a puff of wind, or part of the seed falling on a hard clod higher than the rest of the land, and rebounding to a distance from the spot it was intended to be deposited upon) it is possible a large space
may

may be left nearly void, or perhaps with only a plant or two. Now it too often happens that the mischievous fly attacks the very plants so thinly sown, and by destroying them leaves a large space of ground uncovered. It is certainly a most difficult task regularly to cover the land by the broad-cast : on the contrary, by the drill-method the seed will all fall into the hollow part, and the mould (especially if harrowed with the bush-harrow) will be so finely pulverised, as to afford immediate nourishment to it ; by which means the plants will get quickly forward. And when they are ready for hoeing, it will not require so expert a hand to divide them ; and it will be easier to choose the master plant, which is of great importance in a crop of any kind. When they are planted in rows, any boy, girl, or woman, may do the business effectually ; and as this operation is performed at a season of the year when men have generally full employment in other branches of husbandry, it is convenient to the farmer that women or children may answer his purpose, and that at a cheaper rate than taking men from more important concerns.

After

After the turnip has acquired sufficient strength to bear ploughing the earth from the plants, it must be done without delay. The first ploughing will add sufficient earth to the plant according to the then size. The turnips may be made to grow to what size the farmer chooses (according to the nature of his soil) by only leaving them from six to twelve inches asunder in the rows : and he may at any time add earth sufficient to prevent their rotting by frost in winter.

This often occasions great loss : but the farmer may easily guard against it, by covering them properly with mould ; for he may plough as often as he chooses, and at his leisure, after the turnips are up ; and in the rows he may pluck up the weeds any time before they get into seed. Turnips sown as above directed stand moist in summer and dry in winter.

The securing a crop by laying from *four* to *six* loads per acre of manure, as heretofore described, instead of *twelve*, is too great an advantage to be neglected.

In eating turnips off with sheep, great loss is frequently sustained from want of proper management ; but more particularly in the broad-
cast,

cast, where the custom is to give sheep a large fold of turnips. Perhaps frost comes on immediately, and continues some days ; a fall of snow probably succeeds : in such case, even the most obstinate advocate for the old method certainly must allow the drill to be far preferable ; as it would be easy to have sheep-pens or turnip-trays made and set in such a manner as to form a kind of trough, moveable of course. The bar or tray must be set near the far side of the row of turnips ; and a board, from ten to twelve inches broad, with two or three stakes (longer or shorter according to the depth of the soil) nailed to it, must be fixed on the side where the sheep are to eat ; for the narrower the space the turnips are enclosed in, the better. It may possibly be feared lest the sheep should get in amongst the turnips fenced off. I say, no. For, supposing the turnips to take up a regular space of twelve inches, the trough may be made not much more than a foot wide at bottom, sloping upward : and the tray or bar may incline towards the sheep and hang over the trough, or part where the turnips are, and prevent them from getting into it.

By

By this means sheep might have their food quite clean ; and by setting off only the quantity necessary for the day, they would eat their portion with avidity, and not dung upon it, and spoil more than they eat. Every animal has a natural antipathy to its own excrement : can we then suppose such clean feeders as sheep an exception to the general rule ? Even their lying down upon their food gives these delicate creatures disgust ; and they have so great an aversion for what they have lain upon, that, unless impelled by hunger, they will not meddle with it. Will any farmer indiscriminately use certain utensils of his bed-chamber for the purposes to which those of his kitchen are generally applied ?

The opulent farmer, who may chance to read this, will probably exclaim : “ This method may suit a man who has a small flock ; but what am I to do with thousands and tens of thousands of sheep ? ” I answer : Examine the difference in expence, you will find my method cheaper than driving your thousands or tens of thousands from ten to fifty miles from home. For, besides the loss of manure, and the waste of turnip, you will not be able to see them, per-
haps,

haps, above once in a month ; and though your shepherd be a careful fellow, the flock will be diminished by disasters which they would not have been liable to under the eye of the master. By keeping the sheep at home, in the manner before described, they will tread the ground regularly, and considerably enrich the farm by depositing their manure where it ought to be ; and, on the *lowest* calculation, three sheep may be kept this way to two by the old method—perhaps even double the number : and by observing the regularity recommended above, they will fatten much sooner than by the old system.

It is well understood in feeding cattle, horses, pigs, &c. that if you lay a redundancy of food before them, they will not, in many instances, feed so well: they eat just sufficient to satisfy nature, and waste the rest.

If the sheep were driven into straw-folds, they might breakfast on straw, which would cause them to retain the turnips longer in their stomachs, and thus to fatten sooner. Meanwhile the shepherd and boy might be moving the fold a row farther; or, if found more convenient, they might move the sheep early in the evening

to

to the straw-fold, and at that time shift the pen. Where there are both feeding sheep and stock sheep, it would be advisable to give the feeding sheep rather more than sufficient for the day, and the next day to turn the stock sheep into the fold to eat up what the others had left. By this method, a man may soon judge what length of turnips to give to the sheep, so as to commit little or no waste.

The advantage of my method will appear from the following calculation: Suppose two hundred sheep to employ one man and one boy every day. I agree, the boy might be superfluous in the old way; but allow one shilling per day for him. The same quantity of turnips I estimate to keep three sheep where only two were kept before. Three hundred sheep will then be kept where only two hundred were kept. Reckoning the profit on one hundred sheep at two-pence weekly per head, it will amount to 16*s.* 8*d.* per week; and deducting from it the extra charge of seven shillings for the boy, there remains a clear profit of 9*s.* 8*d.* per week. If the flock is larger, the profit will increase in proportion; as a man and boy can manage four hundred sheep. Two hundred
are

are sufficient to be fed together: but if four hundred were equally divided, a man and boy could manage both flocks.

But I am of opinion, that even *two* sheep may be kept by my method for *one* in the old way. If so, the money would be 1*l.* 13*s.* 4*d* per week, which in twenty weeks would amount to 33*l.* 6*s.* 8*d.* which sum would more than clear the expences of the boy, and of the extraordinary pen the first season.

Where cattle are to be fed on turnips, they may be treated in the same manner as sheep, provided the land be dry.

Having so plainly demonstrated the superiority of turnip-culture by the drill, it would be superfluous to say more of the broad cast. The latter method will, I hope, be exploded by every farmer who can prevail upon himself to give the former a fair trial. To render what is above recommended more easy and no less profitable, it may be proper to plant, along with the turnips, in the middle of the field, a proper space (proportioned to the size of your flock) with potatoes, which might be taken up at the proper season; and the vacant ground would serve for the sheep to pass to and fro to eat their food.

To preserve the potatoes from frost, make them into what we call a *pie*: a term well understood in Yorkshire; but perhaps not very intelligible in other parts of the Island. For the manner of making such a *pie*, see Section XVII.

Potatoes might be given to the sheep in frosty weather, when it would be difficult to move the trays or pens. They might be given in the space where the turnips had been. If you have more potatoes than necessary for the sheep, you may feed milch-cows with them; as milk and butter are far better from potatoe-food than turnips. In fact, potatoes are excellent food for cattle of all kinds.

S E C T I O N XIII.

Best Method of Seeding Land; Quantity necessary and proper Sort for every Soil.

THE best method of sowing feeds, if with barley or any spring crop, is to sow them after the corn is in, and the ground is harrowed to a fine mould. After sowing them, it is a good method immediately to bush-harrow, and to roll the earth, for from want of such precaution many of them fail of producing the expected

pected crop ; as, not being sufficiently fixed in the earth, they are liable to be over-scorched by the sun, or destroyed by birds or otherwise. This rolling and bush-harrowing not only prevents, but likewise assists in reducing the mould to a more equal degree of fineness and smoothness.

On land of any kind, intended for pasture, my practice is to sow four bushels of rye-grass, ten pounds of trefoil, and ten pounds of white clover, per acre. If the land is intended to be mown, and it is required to have rye-grass, one or two pecks of that seed is sufficient, with ten pounds of red clover, and six pounds of trefoil, per acre.

If the rye-grass is omitted, but the crop intended for mowing ; fourteen pounds of red clover, with six of trefoil, per acre, will be necessary.

If seeds are sown in spring, upon land sown with wheat the preceding autumn, the following method will best cover them. Harrow the land, if it will bear it, and roll it immediately after, If the wheat is to be eaten with sheep, sow the seeds ; then lay on such a number of sheep as will tread the land sufficiently within two or three days. A large flock will

eat the wheat within that time, and tread the seeds into the earth far better than if you put in half the quantity of sheep, and let that half remain double the time; for they eat the weakest wheat first, and let the strong alone: therefore the greater the number of sheep the better. When they are taken out, bush-harrow and roll immediately.

Of saintfoin sow not less than five bushels, and from that to eight bushels, per acre, though four bushels is the usual quantity: for as saintfoin is intended to be mown for a number of years, the difference in the expence of the seed, at first sowing, is trifling, when it is considered, that by sowing the quantity recommended you may get every year one ton of hay more per acre, than by sowing four bushels only. I never knew an instance of a crop of saintfoin, or any other grafs, being injured by sowing the seed thick.

Saintfoin should be sown in a clean fallow, upon a spring crop, and harrowed in and rolled immediately. Almost any sort of soil that has a rocky bottom, or a white clay, is proper for it; but it will not thrive well except upon land with a firm bottom. Saintfoin certainly finds food

food in stone, as in the soil it is partial to there can be little or no food in the surface, especially for such a number of years. I have been told that where stone-quarries have been made after saintfoin has grown on the land, the roots have been found to strike several feet down into the rock. This is a profitable herb, far exceeding any yet propagated on poor land: no other is so beneficial to the farmer, according to the value of the land it is sown upon; but great care must be taken, if manure be laid upon it, that such manure be as clear from grass-seeds of different kinds as possible; for saintfoin is very liable to be injured by adventitious seeds getting amongst it. Pigeons' dung, rape-dust, malt-combs, foot, or almost any *band-manure*, are proper. Saintfoin, if properly sown, and on suitable land, will bear good crops from ten to fourteen years; may be eaten with sheep for three years afterwards, and will maintain three times more stock than the produce of the land in the natural state. I have known it mown for fourteen years. The first year there will always be a thin crop; but the succeeding ten years it has yielded upwards of two tons per acre, on land which at this time is not worth
more

more than five shillings per acre for any other use. Saintfoin ought always to be preserved for mowing. The method of treating it is as follows:—If sown in the spring with barley; when the barley is mown, the stubble must be left high. It would be much better if the barley were shorn, as the stubble would then afford shelter for the plant during winter. Rake the stubble off in the spring; but put no stock upon it from the time of harvesting the barley to the time of mowing the first crop, which, as I said before, will not be abundant. In the month of September there will be after-grass, which may be depastured by sheep and beasts, but not by horses. Sheep must not be kept on it after the frost sets in; for, by eating too near the root, at the latter end of the year they will do the plant much injury. This caution is, therefore, absolutely necessary.

No stock must be put upon this grass in the spring; and it will be ready to mow early in summer, most probably in the beginning of June. It must not be suffered to grow too long before it is mown, or many bad consequences may ensue; for the root is thereby exhausted, and the duration of the plant much short-

shortened. If full blown, the spirituous and nourishing juices are spent and lost, the sap is impoverished, and the hay destitute of that richness which it possesses when cut early. But, above all, it should be mown before any of the flowers begin to decay. It is impossible to get this kind of hay over-green; but care must be taken that it be well dried. Very moderate care will suffice for that purpose, as from the stalkiness of the plant the air has a freedom of circulation when the hay is in small cocks. But if it be laid up rather green, it will be advisable to have a chimney or vent-hole, from the bottom to the top of the rick, through which the superfluous moisture may exhale; and when the heating is over, the rick must be thatched. All ricks of this hay perfectly dried ought to be thatched with as much expedition as possible after they are made. That which is put into the rick perfectly dried, will cut out of a green colour; but that which has been laid up over-moist, will be liable to heat much, and consequently become brown.

Saintfoin (so much esteemed in France, that our Gallic neighbours have canonized it by adding the epithet *holy*) is for horses undoubtedly the best hay hitherto known. Many farmers

farmers keep them the whole winter upon it without much corn, and the horses are fat and fine as hunters. Post-horses thrive well upon it, and, next to corn, nothing will keep them in such good heart. It is excellent for sheep, but not proper for cows. If the crop has been suffered to remain until it was ripe, and the hay be thrashed for seed, it is still fit for horses, and may be cut into chaff, and will give as much nourishment as treble the quantity of chaff from straw. If the farmer has a redundancy of feeds after thrashing, they may with great advantage be given to horses in lieu of corn, in the proportion of *three* to *four*.

By mowing this grass early in the summer, the eddish, or after-grass, will spring immediately, and be soon fit to be depastured; and the stock may be taken out sooner in the autumn. It has been objected, that faintfoin is a great impoverisher of land; but I request those who have adopted such an opinion upon trust, to keep a debtor and creditor account: for I insist that no plant in use will improve land so quickly, with so great a profit, at such a small expence. If we consider, that two tons of hay will make three loads of excellent manure; allowing one load of straw to litter the horses,

horses, there will remain two loads of manure yearly to the account of the saintfoin, for each acre. The poor land upon which this hay is grown would not produce one ton of hay from natural grass in ten years; but by being sown with saintfoin it is capable of raising within that period twenty loads of manure of an excellent quality. In the natural state of the land, it would not raise more than one load of manure in ten years, and even that of such a quality as to be worth little or nothing. When saintfoin is exhausted and ploughed up; from the saintfoin ley the first crop ought to be wheat dibbled, or peas. If you plough early in the winter to let the frost act upon the land; and in the spring drill, and manure with four loads per acre of its own manure, and sow the peas as directed in section XLV, a productive crop would follow. We have now, for the ten years, sixteen loads of manure remaining on hand for each acre. The next winter a fallow for turnips. Debit for six loads more manure per acre for a crop of turnips, drilled and eaten off with sheep, which would put the land in a proper state for barley and clover. We can then afford to manure the

young clover in the autumn, with the remaining ten loads; but five loads made into compost would be sufficient, and bring a very luxuriant crop; and there being so much manure in the land, we may expect good wheat. After this we shall have another turnip fallow; and having lent to the farm in general a crop of pea-straw, a crop of barley-straw, a crop of clover, and a crop of wheat-straw, all this stuff may raise ten loads of manure. We therefore call for six loads for each acre again, and have another turnip crop, then barley and grass-seeds for sheep, if required. Now we have four loads of manure (or nine, if the compost be used in the clover crop) owing to every acre of land; we have received no interest for the use of the ten crops of saintfoin manure, nor of the peas, barley, clover or wheat; the interest of such manure being lent during that time. If we say, four loads per acre ought to be paid in lieu of interest, it will be much below the quantity: but we will estimate it at only four loads, and we shall then have eight loads (or thirteen) to lay on our young grass-seeds, which are to be depastured by sheep for two years and then ploughed up again, &c.

After

After this fair statement, who shall say saintfoin is detrimental to land ? But, as a further elucidation, we will suppose a gentleman to grant his tenant a lease for twenty-one years, with free liberty to follow the method here laid down ; and another gentleman to retain the same quantity of land in the natural state, for the like term of twenty-one years. We allow fresh land to bring more luxuriant crops than old going land ; but I dare say every one will allow the land that has been sown with saintfoin, which is now ready to enter upon in fresh seeds with eight loads of manure upon it per acre, will at least feed ten ewes and lambs on each acre for two months, four sheep for the rest of the summer, and two from that time until Christmas.

Now on the other hand, what will the land of the same quality do in the natural state ? During the twenty-one years it has not kept any thing in the winter seasons, and not more than a sheep per acre in summer.

The superior advantages arising from a rotation of saintfoin, and other crops for twenty-one years will appear clearly from the following statements,

Accounts

*Account of Expences and Profit on an Acre of Land, sown
with Saintfoin and other Crops, according to my Method.*

Dr. to EXPENCES.			Cr. by PRODUCE.		
1st Year, TURNIPS.					
	£.	s. d.	By turnips	£.	s. d.
To paring and burn- ing	1	1 0		2	12 6
To ploughing and seed	0	6 0			
To hoeing	0	5 0			
To rent	0	5 0			
To assessment	0	5 0			
	£.2	2 0		£.2	12 6
2d Year, BARLEY.					
To ploughing and sowing	0	6 0	By three quarters of barley, at 25s. per quarter	3	15 0
To seed, three bush.	0	10 0			
To saintfoin seed	2	10 0			
To rent and assessment	0	10 0			
	£.3	16 0		£.3	15 0
3d Year, SAINTFOIN.					
To rent and assessment	0	10 0	By one ton saintfoin hay	4	0 0
To mowing, &c.	0	5 6			
	£.0	15 6		£.4	0 0
4th Year, SAINTFOIN.					
The expence will be the same so long as the field is in saintfoin	0	15 6	By two ton of saint- foin hay	8	0 0
	£.0	15 6	By eddish	0	10 0
	£.7	9 0		£.8	10 0
				£.18	17 6

Dr. to EXPENCE.	Cr. by PRODUCE.
Brt. over £.7 9 0	Brt. over £.18 17-6
5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, which is ten years ex- pences.	
<div> <div>£. s. d.</div> <div>Rents, assessments, &c. 15s. 6d. per year</div> <div>7 15 0</div> </div>	<div> <div>£. s. d.</div> <div>By ten years hay and reddish, at £.8 10s. per year</div> <div>85 0 0</div> </div>
£ 7 15 0	£ 85 0 0
15th, 16th, 17th, Depastured with SHEEP.	
Rent and assessment for three years	<div> <div>By one ewe and lamb per acre, for three years</div> <div>3 0 0</div> </div>
£.1 10 0	£.3 0 0
18th Year, PEAS in Drills, or WHEAT dibbled.	
To ploughing and harrowing	<div> <div>By three quarters of peas</div> <div>6 0 0</div> </div>
To four loads of ma- nure, leading, &c.	By straw 1 0 0
To seed peas, one sack	
To rent and assess- ment	
To reaping and thrashing	
£.2 6 0	£.7 0 0
£ 19 0 0	£.113 17 6

<i>Dr. to EXPENCE.</i>	<i>Cr. by PRODUCE.</i>
Brt. over £.19 0 0 19th Year, TURNIPS.	Bt. over £.113 17 6
<i>£. s. d.</i>	
To two ploughings and harrowing 0 15 0	By turnips <i>£. s. d.</i> 3 0 0
To drilling 0 2 6	
To manure, leading six loads 0 4 6	
To sowing feed, and harrowing 0 1 0	
To hoeing 0 3 0	
To three ploughings 0 4 6	
To rent and affest- ments 0 10 0	
<hr/> £.2 0 6 <hr/>	<hr/> £.3 0 0 <hr/>
20th Year, BARLEY.	
To ploughing and harrowing 0 6 6	By barley, four quar- ters, at 25s. per quarter 5 0 0
To one sack of barley 0 12 6	
To one quarter of rye-grass, and ten pounds of white clover and ten pounds of trefoil 2 10 0	
<hr/> £.3 9 0 <hr/>	<hr/> £.5 0 0 <hr/>
21st Year, in SEEDS.	
To rent and affest- ment 0 10 0	By profit on sheep 4 0 0
<hr/> £.0 10 0 <hr/>	<hr/> £.4 0 0 <hr/>
<hr/> £.24 19 6 <hr/>	<hr/> £.125 17 6 <hr/>
Profit in 21 years £.100 18 0	
<hr/> £.125 17 6 <hr/>	

*Account of Expences and Profit on an Acre of Land, left
in its natural State.*

<i>Dr. to EXPENCE.</i>		<i>Cr. by PRODUCE.</i>	
	£. s. d.		£. s. d.
To rent and assessments for twenty-one years	10 10 0	By twenty-one years herbage, one ewe and lamb, on an acre in the summer, and nothing in the winter	15 15 0
To profit in twenty-one years	5 5 0		
	<u>£. 15 15 0</u>		<u>£. 15 15 0</u>

There is then a clear profit of £.100 18s. upon one acre by my method of cropping, for twenty-one years. I do not think it is possible to apply this sort of land to a better purpose, when a farm can spare a proper quantity of it for that use. In the natural state it has paid £.5 5s. in twenty-one years, which is just 5s. per acre, and as much as can be expected.

Red clover ought not to be sown but where the land is intended to lie for only one year. It is, in my opinion, the best preparation for wheat, when the ground it is sown upon is perfectly clean; but by no means so, when the land is foul and full of couch-grass, &c. The seed should be sown with the spring crop of barley

barley or oats. The clover crop lies eighteen months, after which only one ploughing will be requisite before the field be sown with wheat. The wheat will be about ten months on the ground ; and it will be two months after the crop is reaped, before it be fallowed for turnips, &c ; which together makes a period of thirty months for one ploughing. By letting the clover crop lie 18 months, the couch-grass gets a very strong root ; and, when the land is ploughed for wheat, and the soil lightened, that pernicious weed will spread rapidly around. Therefore all possible care should be taken to clean the field thoroughly, before it is sown with turnips, and made ready for barley and clover ; for, if you neglect the opportunity of doing it at that time, you will not have another before April three years after.

Red clover is properly a native of a clay soil ; but will succeed upon almost any, in proportion to the goodness of the land. It is improper to be sown with grass-seeds, when intended for pasture or meadow ; for, as it has a root not only very large, but likewise very broad at the bottom ; and as it tillers very much, it must of course obstruct their growth. Trefoil is very
proper

proper to be sown with red-clover ; as trefoil grows with a small vine-like fibre, which runs up with the clover something like rodded peas. By that means, the crop, from the support it receives from the clover, becomes fuller and more weighty, and the hay much better than it possibly could be without such assistance.

Clover may be depastured in the autumn by sheep ; and even in spring, if absolute necessity should require it ; but it is better, if possible, not to admit them to it at that season. The best crop of clover I ever had was from letting turnip-sheep run at leisure upon a field of it, for about four months in the winter. It consisted of about twelve acres, situated at the corner of a sixty acres' walk : and being short of fencing, and the rest of my clover very good, I thought I would run the risk of spoiling the twelve acres. Three hundred sheep ran upon it until the twentieth of February. They were then moved from it, and at the time they were taken away, you could not, at a few yards distance discover the piece to have been clover—in some places, not even if you walked over it. But when it was mown, it turned out, as observed above, the most abundant crop I had ever ob-

tained. I do think, there were two tons and a half per acre. On the above experiment I have to remark, that the sheep, by running and lying on the clover, and there depositing their excrement, deprived the barley land of its manure ; and that it furnishes a strong proof of what manure is capable of performing ; for, had those twelve acres been eaten by only as many sheep as they would have kept, the crop in all probability had been spoiled.

When clover is to be followed by wheat, it is better to mow it twice in one summer ; as mowing will not only clear the land of weeds, but will render it more mellow, and pulverise it for the reception of the wheat. For, if the ground were at that season of the year, after the first mowing, totally covered with a stack of straw, it would produce better wheat. I once had a proof of this, by stacking some woodkids or faggots upon a part of the land where clover had been mown once. The stack remained until the time of sowing wheat ; and on the spot where it stood was by far the best wheat in the field.

I have had many instances of clover being better for twice mowing. I have tried experiments,

ments, by eating one part with sheep all the summer, cropping or mowing a part, fencing another part, and eating with sheep after mowing. Another I mowed once, and then attempted to get feed from the after-crop. The season setting in wet, I mowed and took it off for manure into the fold-yard. I then ploughed the land, and sowed it the next day ; and that part of the field produced by far the best crop of wheat, in respect both to quantity and goodness of grain. I have ploughed the second crop of clover in ; but I never found any benefit from that.

When you intend the red clover for hay, you must watch very closely in respect to the time of cutting ; for, should you mow it too soon, and the weather turn out wet, the crop would quickly receive damage, and be a long time getting ready for stacking. If on the contrary you let it stand too long, until the leaf, which is the best part of the clover, begins to fall, it makes the stalks stumpy, and you suffer great loss by the dropping of the leaf, and by the waste of the most pleasant and nutritive part of the hay. It certainly is preferable to be rather too soon, than too late, in mowing. For,
 though

though clover should be harvested dry, it should be preserved green, so as to admit of one fourth part of wheat-straw being added to and stacked with it, by alternate layers of hay and straw. The consequence of this management will be, that, from the sweating of the clover in the stack, the straw will imbibe the subtil odoriferous effluvia of the plant, and be in some degree impregnated with the oily vapour that exhales from the clover, which without such precaution would be dissipated and lost. When such hay and straw are cut together, they make better food than clover and straw cut separately into chaff. For, from the quantity of oil this plant abounds with, and from the frothiness of its nature, it is not advisable to give a horse destined to work hard too great a quantity, without an allay of one half straw, to cool him and assist in promoting a regular digestion.

Great care must be taken to put no more straw into the stack than the clover will bear, so as not to prevent the whole from taking a regular and necessary heat. This method is attended with another advantage; you may stack your clover without fear of danger from heating to excess, many days sooner than you otherwise

otherwise could have done. When I speak of giving an *equal* quantity of straw with the clover to horses, I do not mean that as much straw as clover should be put in the stack; for that would entirely prevent it from heating. As clover is not much safer in the cock than in the swathe, the method I recommend will be found useful; for, as soon as the clover is fit to cock, you may stack it, and by that means often save the crop, instead of running the risk of many days' delay, by waiting to stack it according to the old method.

I have found it beneficial to sow rye-grass with clover, by way of making it hardier to harvest; but rye-grass is an enemy to the following crop of wheat, and wheat-straw is more beneficial when put in the stack. Rye-grass is a sort of grass I am very partial to: but no doubt I shall find many differ from me in opinion. However, I by experience know that one acre sown for sheep with rye-grass, white clover and trefoil, will maintain a proportion of three to two sheep more than with any other kind of grass, or mixture of grasses, I know of. When I say *of three to two*, I mean for twelve months; as rye-grass is both the earliest and
the

the latest. In the spring it cannot be eaten too early, if the animals can but live upon it; for, if it be suffered to spindle, it will be exhausted before the spring, or best season is over: on the contrary, if eaten close, it will keep continually springing, as cabbages sprout after being cut; and the more it is eaten, the more it will grow.

At the time when the rye-grass is so very luxuriant, the white clover is totally concealed in the ground, but the trefoil makes some small appearance; and when the rye-grass has done all that can be expected, the trefoil springs up and becomes food for the sheep; after which the white clover succeeds, and in like manner supplies the sheep or cattle. When the white clover is done, the rye-grass again springs up, and continues growing all winter, if the weather prove tolerably open. At all events, it will grow if any grass *can grow*.

If you intend it for meadow, and sow one sack upon an acre, it will be like throwing the seeds of the trefoil and white clover away; as rye-grass, by springing so early and by smothering the land, prevents the others from growing to any degree of perfection.

The

The seed of rye-grass is rarely to be found pure. Much of what is sold is, in general, a mixture of swine-grass, couch, and several other noxious sorts: and this is the reason why this seed is so generally disliked, and why rye-grass is said to fill land full of twitch or couch-grass. But this is an erroneous opinion; for rye-grass will no more produce twitch than it will produce wheat. Therefore, the farmer must either have sown the seeds of twitch with the seeds of rye-grass; or, at the time he prepared the land, must have left the plants or seeds of twitch in the ground. The fact is, that great part of the seed sold for rye-grass, is in reality chiefly that of twitch; for this kind of seed is most frequently raised by the lower sort of farmers, who, not having money sufficient to purchase stock for the purpose of eating the herbage, meadow it and let it stand for seed, crops of which it will produce for many years. But, if there be any twitch when the rye-grass is first sown, the twitch, as being more luxuriant, will increase the fastest and in length of time get into sole possession of the field. At present, there is very little land in England without twitch. I know no herb which
increases

increases so rapidly, or which it is so difficult to destroy.

To enable the farmer to distinguish rye-grass, it will be necessary to describe the seed. Real rye-grass has seed something like rye, short and black-hearted, very full of flour and very heavy, as it will weigh from eight to nine stone per sack, reckoning fourteen pounds to the stone, and four bushels Winchester measure to the sack. The seed of couch-grass is longer and lighter, the root of the plant joints, and so do the branches, and it is so succulent that every joint will emit a root. There are a great many species of it. As this plant is so abundant, the earth no doubt is strongly impregnated with the seed, which renders the total eradication of it next to impossible. But yet, although it cannot be totally destroyed, it may by good management *be kept under*.

On my return from valuing an estate in the county of Lincoln, I passed over some land rented by a farmer, and there saw the most prolific crop of twitch I ever before had met with. I believe that had the roots been carefully collected, dried and stacked, they would have proved more abundant, and formed a much larger

larger stack than any quantity of hay that could have been raised from the same piece of land by the art and industry of man. The roots, in light soils, run in a most astonishing manner, much more than I thought possible, until I saw the above-mentioned field. I was told however, that it had been sown with what had been called rye-grass seed, and that the farmer had likewise sold as such the seed produced from it. No wonder twitch is so common! I do not suppose one single acre of rye-grass in the kingdom is to be found without it; because so little care is taken in selecting the seed, in the choice of which much knowledge and great circumspection are necessary. Rye-grass is a very fine grass with a small bushy root, full of fibres, but short; and, when the land is ploughed up and sown with corn, may be destroyed with as much ease as clover. But as it seeds every year, there will undoubtedly be much of the seed shed, which will appear in the ensuing crops.

Rye-grass is thought to impoverish land; but (allowing this to be true, which in many cases may be owing to the quantity of twitch sown with it) the returns, and the great quan-

tity of stock maintained by it, fully compensate for what it takes from the land. It may not be so proper to sow wheat after rye-grass, as it is a sort of white crop like wheat, and requires the same kind of nourishment. It may be better followed by a crop of peas: but I prefer wheat dibbled.

Rye-grass, if mown for hay, should be cut when in blossom, and got in green. The hay made from it does not heat or sweat much, and is very good for horses, but not for sheep or cattle. If it is suffered to stand too long before it be cut, the seeds rob the plant of the juices, and leave it no better than wheat or rye-straw.

Clay land is most proper to raise the seed of rye-grass upon: as twitch-grass does not delight in, and may with more ease be cleared from, such soil, than from any other. I have known a strong clayey land laid down very full of the roots of twitch-grass; and, by the succeeding summer proving dry, and sheep treading the ground, and eating the grass bare, it has, when ploughed up, been nearly clear.

Rye-grass is not so proper to be sown for mowing, for it tillers very little, but readily
shoots

shoots up ; and if depastured, it will branch for a long time before it runs into feed. To prevent this, you must crowd it with different kinds of stock, such as sheep, beasts, and horses ; and if of different ages, they will be more likely to clear the land by eating the crop clean off ; for if it be suffered to run to seed, the root becomes exhausted. If, in spite of the stock you have put on, you find a disposition in the grass to feed, increase the number of horses, which are the only animals that are fond of it when seeding ; and you may diminish the number of sheep, for in that state of the plant they derive but little nourishment from it, as few leaves are then left upon the stem ; which is one reason for sowing trefoil and white clover with it.

Trefoil is esteemed a bitter plant, and sheep are thought not to be fond of it ; but I must own that nothing within the compass of my experience has led me to adopt this opinion. Trefoil grows about a month earlier than white-clover, and long before the rye-grass is exhausted. It is improper to be sown alone, except for the express purpose of raising feed. There are no soils proper for trefoil but what
will

will produce rye-grass and white-clover. Hay made from trefoil only is a pretty hay, but not very abundant in the produce. I am of opinion I could raise more trefoil on any given quantity of land, by sowing rye-grass amongst it than without; for, as before observed, trefoil, like the vine and pea, wants support from some stronger substance it may cling to. For this reason it will also prosper well with red-clover, around which its tendrils will twine like wood-bines in a thorn hedge. I also do believe that the crop of clover will be very little less in quantity or weight from the trefoil growing amongst it.

The after-grass of trefoil is worth very little; for which reason some people recommend it to be followed by wheat. But I can assert from continued experience, that land intended for wheat cannot possibly be too much smothered with crops of every sort.

White clover is thought to be an herb that sheep are very fond of: I believe they may; but I do not esteem it much. It is a tardy plant, and yields but a small quantity of hay in comparison with many others. In quality it is of a fattening nature (which may partly arise

arise from its springing so late in the season); but I never found it superior in any respect to red clover; nor do I think it near so useful. Red-clover, when made into hay, is excellent food for all sorts of animals. White-clover grows only about two months with any degree of vigour, and requires much warmth before it springs up. It will grow upon any soil; for all soils contain its seed. The barren commons near Buxton in Derbyshire, when limed, will produce fine white clover: and we are sure that no seed has been sown upon it except by the hand of Providence; for it is well-known that lime passes through the fire before it is used as manure, and consequently cannot contain seed of white-clover or of any other plant. The uncultivated land in North-America abounds with white-clover. The earth, indeed, seems to have been impregnated with its seed from the creation; as any kind of land, when manured, will produce it. From curiosity, I took a dry clod of clay, pounded and sifted it, and found white-clover seed. I then put the whole of the pulverised matter into a garden-pot, and had the satisfaction of seeing white-clover spring up. Almost every herb delights more in one
kind

kind of soil than in another : but I believe white-clover to be the least partial of any. Few animals like the nap of white-clover : you see it in every pasture remain until the seed is perfectly ripe, when it drops on the land and remains until by some movement of the earth a small fermentation is caused, and vegetation takes place. One load of manure put in a state of fermentation into the land, is of double the value of the same quantity, after it has been suffered to lie until all fermentation is over, and has shrunk to one half its bulk.

White-clover has been by some supposed to cause the rot in sheep. But in that case all the land in the world, capable of feeding sheep, must cause the rot. On the contrary, I am of opinion this distemper is not occasioned by any sort of herb, but by a kind of egg or spawn, frequently deposited in very small stagnant swamps of water. These the sheep swallow, and are not able to digest : the liver affords them a nest in which they are hatched, and where the animalcula produced from them dwell, derive nourishment from the blood, and increase in bulk.

Having said so much on the three plants, rye-grass, trefoil, and white-clover, under their
separate

separate heads; we shall now consider them jointly. It is well known that all land will be more profitable by having a green crop one year, and a white crop another; and so on alternately: therefore, as rye-grass is a kind of white crop, like wheat or rye, and drawing a nourishment different from that of trefoil or clover; it will, no doubt, be admitted that the three are proper to be sown together, and that they are thus likely to be more productive than any one of the sorts sown separate; for they assist each other, like true friends, throughout the season. Rye-grass, by far the hardiest, peeps forth and soon rears its head in the spring: as the mild weather advances, trefoil comes forward: and lastly the warm season ushers in white-clover. At the time the white-clover approaches to maturity, the sun has a scorching power extremely detrimental to it: but the mischief is prevented by the shade which the bent of the rye-grass affords it.

Hay-seeds are very properly so called; for they are indeed the seeds of hay, and consequently a collection of good, bad, and indifferent stuff. They are scarce ever to be met with free from a noxious mixture. How should
it

it be otherwise? By far the greatest part of them are collected at inns in market-towns. The master of the inn buys the coarsest hay he can procure, for fear his customers' horses should over-gorge themselves. One may often hear some of these landlords say: "*That* hay is too good for our market-horses." So he buys any rubbish, provided it is not mouldy. The ostler thrashes the hay before he gives it to the horses, and sells the seeds as part of his perquisites. Can the buyer then wonder at having a plentiful crop of twitch and other baneful weeds?

To procure the hay-seeds clean, the meadow ought, in summer, to be most carefully weeded. The master, or a man in whom he can confide, should watch with a strict eye over the people employed to weed; and the grass should be suffered to stand sufficiently long to ripen the seed before mowing, so as not to heat over much in the stack or mow. Some of the seed will of course be destroyed by the heat: but it is the business of the grower to take care that as little be damaged as possible. When a stack of good hay is opened, the best judge can hardly distinguish the seeds that will grow from those

those which have been spoiled by too much heat: neither is it an easy matter to ascertain the exact degree of heat necessary to the perfection of hay.

Unless the farmer can depend upon his seed, how is he to know the quantity proper to be sown per acre? It is very common to hear him complain: "I sowed such a quantity of seed upon the land; but very little has grown!" Perhaps the seed was good for nothing—the land may not have been in a proper condition to receive it—or frosts may have destroyed it. The missing of a crop is most probably owing to want of care in the process; for we know that seed will vegetate when put properly into the earth, provided the heart or germ of such seed be not injured.

It may not be superfluous to observe, that hay-seeds, although light in themselves, have considerable gravity compared with the chaff or hulls which inclose them. It is the custom to dress these hay-seeds by a gentle wind; and the very *lightest* are sold, though they consist of scarce any thing but chaff. The sower scatters, perhaps, eight bushels of this stuff per acre. But, alas! he scratches his head with

astonishment at having missed a good crop. However, as we take it for granted he sowed little else than chaff, had he spread eighty bushels per acre, the disappointment would have been nearly the same.

When I first commenced farmer I did like my neighbours, and pinned my faith upon him who was most esteemed as a good manager. When I saw some extraordinarily good grass, I enquired how the owner managed it. I soon found that men of acknowledged abilities and experience differed in practice; and it struck me that it might be possible to form a system of my own, that I might avoid some things which they were wedded to by custom, but which I saw strong reasons to disapprove. In short, being determined to think for myself, I tried a great number of experiments, and never ventured to recommend any new method to others until I had full proof of its efficacy from my own trials.

In time of seed-sowing a dealer will offer hay-seeds for sale, and will assert their goodness, though all his knowledge centres in having looked at them. If they are fair to the eye, that, in his opinion, constitutes perfection.

From

From the character I bear amongst the farmers of that part of the country I dwell in, I am supposed to understand seeds; and I have been frequently applied to by the dealers or venders for my approbation of their wares; as they thought, that, if they could obtain my recommendation, they would find a ready market for them. I must own that I have frequently diverted myself with the embarrassment of these dealers, by taking out a seed promiscuously, and enquiring the name of it. "Indeed, sir, I cannot tell," is generally the answer. What will it produce? "Oh, sir! that is quite uncertain." Nor does he know any one except the rib-grass, which is the plantain with a long leaf, and which of all grasses I think the very worst.

It would be a good method, and easily accomplished, if a person would pick from a good meadow some of the very best seed; then dress a small piece of land perfectly clean, as much so at least as you would for the choicest flowers in the garden; sow your seeds, and save the produce. They will quickly increase sufficiently to sow a large field; and by a proper degree of attention in eradicating weeds you
will

will soon have most excellent grafs, and a constant supply of good hay-feeds, such as are not now to be met with. In all probability nothing in the farm would be found more advantageous than a meadow of such sort of grafs; for, if the farmer had more seed of this kind than necessary for his own immediate use, he would find purchasers in plenty who would be glad to get it by paying a good price. Indeed, I recommend to the possessor of a farm of considerable size to grow all his own feeds of every sort or denomination; as it is a safe way, and a great saving.

There are men who are bigoted to an opinion absurd in the extreme: They say, "Land ought to be sown with the same as it produced before ploughing." But I say, No; unless it produced better grafs, or at least as good as may be got elsewhere. Land of almost every sort will improve by being ploughed up, provided sufficient care be taken to make the straw into manure, to lay it on in a proper manner, and to sow the different crops with judgment. All these things have been formerly but little attended to.

A piece of land laid down, and sown with grafs-seeds to lie for sward, will, from having
been

been ploughed and managed according to my rules, be enabled to produce better grafs than it did before, and of course will keep a greater number of sheep, cattle, horses, &c. than if laid down with shear-grafs, moss, ling, goss, &c. &c.

If a gentleman suffers his tenant to plough up a piece of rich pasture-land with the intention of taking six or eight crops from it; in all probability the tenant has some poor worn-out ploughed land, and he makes the straw which grows on the fresh, into manure, and lays it on the poor land. The tenant says, "The fresh land wants no manure; and possibly he may be in the right. For, by bestowing on the old ploughed land the manure arising from the new, he will derive from the former more abundant crops, and the latter will be sufficiently prolific without manure. By this method the farmer may improve his whole farm, and enrich the poor land considerably, without impoverishing that which he may have recently broken up.

Were the fresh rich land to be repaid all the manure which the poor ploughed land has at a former period borrowed; the rich land would not be impoverished by ploughing, but on the
contrary

contrary much enriched. The tenant proves his own enemy, if he exhausts the rich land by improper cropping, or by depriving it of all the manure which has grown upon it, to enrich other land. The landlord receives almost as much damage by this practice as if the straw were sold from that land for six or eight years; and the tenant, after the land has been nearly worn out, probably lays it down with a bad kind of seed, or at least something which does not vegetate! He then applies to the landlord for leave to plough up another fresh piece; but the landlord, if he knows his own interest, answers "No! The close I suffered you to plough you have ruined; if I let you proceed, you will spoil the whole farm."

Suppose we lay down what is commonly called the worst mode of culture; and begin by paring and burning—sow with rape-feed, then wheat, then beans—the bean-crop in drills. We shall have six loads of manure per acre to lay in the drills, consequently shall expect a very great crop of beans. Then wheat again—then a crop of oats—then turnips. Then we shall have six loads of manure from these beans, wheat and oats, to lay on our turnip-

nip-fallow. The turnips must be eaten off by sheep; and the next crop will be barley, and grafs-seeds to lay down for a time. Now there will have been the *ashes*, and *twelve* loads of manure in six years, which together are equal to *six* loads every other year; not taking into the account the barley-crop, the straw of which will in all probability amount to two loads more of manure to return to this piece of land: and were the two last-mentioned loads worked up with fresh earth into a good compost, they would produce four loads. If the land were sown with rye-grass, trefoil, and white-clover, during the summer, as large a quantity of seeds would be shed as ever were sown upon the land. If the compost were then spread (four loads per acre) and bush-harrowed in, and the field not depastured during the winter; the seeds shed in the summer would vegetate, with the additional help and encouragement of the manure, and the land would be in no respect injured by ploughing.

Having explained at length the method of seeding land for grafs to lie for a considerable time, I recommend (as it is almost impossible to procure hay-seeds of a proper sort, except
by

by the mean above pointed out) rye-grafs, trefoil, and white-clover; but particularly white-clover, where land is seeded to lie for a number of years. Not but that I think a skilful botanist might collect from meadows the seeds of many grasses much preferable to rye-grafs, both for fattening cattle, and the long continuance of the crop, whether depastured or mown. Those which abound more in leaf, which afford to the young springing grafs more shade from the scorching rays of the summer sun, and the succulent herbs, which collect the dews, and are so charged with nutritive juices, would no doubt turn to more advantage.

SECTION XIV.

Method of Stocking the Seeds, or Mowing; and the Difference in Profit.

THE method of stocking rye-grafs, white-clover and trefoil, is described under the foregoing article:

As to *red-clover*, it ought not to be eaten with any cattle whatever; for the young plants of clover are very tender. Above all, a horse should

should not be suffered upon it; for by treading he will spoil more with his feet, than he devours with his mouth. This is easily proved to any farmer who may doubt of the fact, by turning loose any given number of horses into any quantity of land sown with clover; and, on the contrary, mowing an equal quantity, and stall or fold-feeding: he will find the advantage of fold-feeding to be four to one in his favour.

Cow-grass, being of the same nature, ought to be treated in the same manner as red-clover.

Lucerne ought not to be eaten while growing. It should be mown, and treated like a garden. It produces a wonderful profit, if used for stall-feeding; and, after being mown, it will immediately spring up again from the stumps. In making it into hay it should be treated like faintfoin: but care should be taken to mow it before it flowers: it is a sweet and very fattening food for cattle, who will eat it so greedily, that great caution must be used in giving them only a sufficient quantity at a time; otherwise they will swell and overload their stomachs with it till they burst, as they will with many other succulent plants. To avoid this, either give such

herbs sparingly, or mow them the day before you use them.

White-clover ought to be eaten by sheep.

Trefail, which is itself a species of clover, should also be eaten by sheep; for, if either this or white clover is mown for hay, there will be much loss in the crops. The best method, if intended for depasturing, is to sow it mixed with rye-grass and white-clover: and if for mowing, with red clover. If for feeding sheep or cattle, I think it best to mix red and white-clover together: but red-clover is the most fattening.

From the pulpy nature of clover, the feet of cattle, or horses, as we before observed, will very much damage the plants. They bruise the young sprouts, and bruise them so much as effectually to destroy vegetation, at a time, perhaps, when the root protruded the last shoot: and the farmer thus finds himself deceived in his hopes of abundance. Let him therefore depasture it with sheep, foals, calves, or some other stock of light weight. A mixed stock of sheep, young beasts and foals will pay best. Pigs may likewise be turned in upon clover-fields: but it is more profitable to feed them in
the

the fold, for many reasons, which will be explained hereafter.

Yellow-clover is a sort I do not like; it being of a very poor nature, and its increase not abundant, its leaf small, and its stalk like wire.

SECTION XV.

Culture of Potatoes fully explained, by a new System, on all Sorts of Soils.

I HAVE derived the greatest profits from planting the potatoes thick; nor do they thrive better by any method than by ploughing sward very thin, and setting them under furrow about nine inches asunder. They do not thrive well when encumbered with too great a weight of earth: when set under the sward, one furrow bearing upon another gives liberty to the fibres which are as fine as a hair and easily obstructed, to run abundantly and freely, producing knots spreading over the whole of the soil. After the potatoes have been set, begin to harrow; and when they begin to appear through the seams, you must harrow them again with the utmost

utmost possible care. Your own judgment must be the guide as to the sort of harrow you make use of, and as to the time of doing it. It is next to impossible to harrow them too well. I have seen an extraordinary crop on sward without harrowing it at all; but it certainly is the best and surest way not to omit it.

The above is a very cheap method of raising potatoes, and perhaps the most profitable of all others upon sward-land; for by the very smothering crop, and the getting up of the potatoes at the latter end of the year, the soil is finely broken and reduced nearly to a pulverised state, cheaper and sooner than by any other means; and consequently this is the readiest and best mode of rendering it fit to receive corn.

If the land is covered with moss, or with rough grass, rushes or hafts, the method here prescribed will be found to answer, though not so well as paring and burning. The potatoes being ploughed up, and scratched out of the ground by women and children, the roots become so much loosened that it is easy to harrow them out, and they may be quickly gathered up.

Where

Where the land is poor, if manure can be spared, it is proper to put it in with this crop, as the potatoes will thence doubtless grow much larger, and in greater abundance. And in the wheat crop the benefit will visibly appear again; therefore the farmer may be assured, the advantage of manure to this crop will be as great as to any one without exception.

The mode of setting potatoes on fallow land, is to clean the ground from all kinds of refuse stuff whatever, and then manure it with eighteen loads of manure per acre, if you have it. Spread it all over the land; plough, and make the furrows about sixteen inches wide; and in each furrow plant the potatoes from about six to nine inches asunder.

Twelve sacks will set an acre in my way: eight sacks is the usual quantity. I cut the potatoes, and leave two eyes in every *set*, if I can. In this way I have raised 180 sacks, or 2160 pecks per acre; in drills, never more than 100 sacks per acre. But then, when I followed the latter method, I used only twelve loads of manure per acre. One man and two horses, with the assistance of a man and six children, will plant six roods per day. The man must look after the children, lest they should
set

set them over thin and improperly. There must be four women to rake the manure into the furrow; and the man should watch them likewise that they do it well. The potatoe must be laid upon the manure. This last is a most material and beneficial part of the process; by attending to it, the produce will be much greater than if you followed the opposite method.

If you have not sufficient manure to cover the land, it is better to set the potatoes in drills, as they will make but poor progress upon most sorts of soil without manure; except upon remarkably rich ground, or on sward, and sward-land the next year after it has been broken up.

This is a crop I raise much cheaper, after set, than any fallow crop. I never hoe potatoes planted in my way. I let the land remain as left by the plough, until the weeds vegetate, which will be in ten days or a fortnight. I then harrow it over once or twice, so as to destroy the weeds. This harrowing will cause more to spring up: and these must, as soon as they appear, be in like manner destroyed. Continue this process till the potatoes are up, and, after they are up, until they are from three to four inches high. The harrowing may
injure

injure here and there a plant; but, as they are set so thick, it will do no material injury: on the contrary, it pulverises the soil, and leaves the potatoes every opportunity to grow and spread; so that in a short time their tops cover the land, and prevent any more weeds from growing that season. I have made land cleaner by this process than by any other I ever yet tried. Seldom a weed makes its appearance, and the few that do are easily destroyed; and when the potatoes are ploughed up, the women and children who gather them so separate the roots of every kind of weeds, that, by harrowing, they are very easily collected and carried off.

To get your potatoes out of the ground, you must first pull up all the tops and carry them off, and collect the potatoes that are pulled up along with them: then take a plough without a coulter, and plough the land deep enough to raise all the potatoes. You must have people sufficient to gather up every furrow, to keep the man and horses at work. The number of hands depends upon your crop. That done, you must with a pair of harrows with long teeth harrow the land well, to raise the potatoes missed

missed in gathering. When you sow your wheat, you must harrow again: there will be potatoes left worth gathering.

Potatoes for planting ought to be of a large size, as their eyes are stronger, and will produce a stronger plant, and bring a much larger produce; so much as to make the difference of thirty sacks per acre betwixt large and small potatoes for sets.

It may be necessary to add, that all the species of potatoes may be managed according to the above methods, on all kinds of soil.

SECTION XVI.

Explanation why Wheat prospers better after Potatoes than any other Crop.

AS the land is densely covered and shaded by the potatoes all the hot dry season, and when they are gathered by hand in autumn, is harrowed and much trodden, it becomes to a great degree pulverised; but yet preserves a beneficial moisture. At the same time the manure originally laid in for the potatoes intimately mingles with the soil, qualifies it to receive the grain,

grain, and in the quickest and most perfect manner promotes vegetation. If the manure were put into the ground at the season of sowing wheat, it would lie in lumps, and act more partially; would add to the straw, but little to the grain.

S E C T I O N XVII.

Different Kinds of Potatoes; Method of preserving them; their Use in feeding Cattle, Horses, Pigs, Sheep, &c. Best Method of treating Stock so kept, by giving the Animals different Food at the same time.

THE sorts of potatoe most productive to the planter, are, the ox-noble, the manly, the champion, and the cluster-potatoe.

The red-nose kidney requires a good soil; but is apt to curl at top, so as to make it a precarious crop, unless the sort is frequently changed.

There are many sorts of potatoes besides those which I have enumerated; but amongst the species into which this root is subdivided,

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none,

none, in my opinion, is so productive as the ox-noble, nor any so good for the table as the kidney. I speak of the sorts now in use: but it is highly probable that by experiments in raising from seed, we may at some future time obtain potatoes superior to any at present known.

The best method of preserving potatoes is to make them into what is termed a *pie*. To make the pie, choose a dry piece of ground, dig it about eight inches deep, and lay the sods or mould so taken out bankwise on each side the intended pie; which will prevent the potatoes from running about. Let the pie be from six to nine feet wide at the base, and the sides fronting the east and west; one end only being exposed to the north. Raise it as high as you please, diminishing it to a sharp ridge, like the roof of a house or barn. If it be brought to a single row at the top, the pie will be the better for it. You must then cover the heap, first with straw, and then with mould regularly a foot thick: but if you add a greater thickness, you will better insure the safety of your pie from intense frosts, which, if suffered to penetrate, would spoil the whole. After incrusting your
pie

pie with a sufficient covering of mould, it will be most adviseable, as it is absolutely necessary to keep the contents dry, to thatch it in the same manner as a corn-stack. This will cause but little trouble, and effectually exclude rain and frost. Some, it is true, do not thatch them, and they may answer without: but it is safest not to omit that precaution; and I never think the trifling expence thrown away.

To wash potatoes, carrots, &c.—Take a vessel made in the form of a barrel-churn. The sides must be composed of pantile-laths, or something like them, nailed to the two ends, at such a distance from each other as to prevent the carrots or potatoes from falling out, and to suffer the water to pass freely through. A door must be left on one side, to put the carrots in and let them out at.

The vessel is hung over a square tub of water, so that about one half of it, and of the carrots, is immersed in water. You must turn it quickly round; and by these means you will soon wash great quantities of potatoes, carrots, turnips, &c. Fix the vessel over the tub in such a manner that when you have sufficiently washed your potatoes, you may lift it from the
part

part it turns in, to a higher one near to one side of the tub. Then open the door of the vessel, turn it round, and deliver the potatoes into a wheel-barrow.

Potatoes should not be given to horses in large quantities: I do not approve of working horses being fed with them.

Young horses may thrive very well on potatoes: but it will be adviseable to give them either some cut straw or other dry food at the time, as they are too juicy and cold of themselves, although horses are very fond of them. Many people boil or steam potatoes for horses, cattle, &c. but I do not approve of that practice, as they stick in the teeth of the animal, and are disagreeable. I think it would be better if they were only just warmed through. If cattle be fed on potatoes, chaff or chopped straw should be mixed with them, as they are liable to choak with eating potatoes alone. There have been numberless accidents of that kind: therefore precaution is necessary.

Giving too large a quantity at one time may prove of great detriment: this caution must be attended to, not only in respect to potatoes, but many sorts of green food, such as the different

ferent kinds of clover, saintfoin, lucerne, &c. &c. It is, indeed, not surprising that animals should over-gorge themselves, when the food is green and luscious to their taste: but I had once a fine young horse, who, by slipping his halter in the stable, got to the corn-bin, and so immoderately stuffed himself with oats, that he was unable to digest them, and died within less than twenty-four hours. Dry food given at intervals, whilst they feed occasionally upon green, will be found the best method of treating these kinds of animals: always taking care to be profuse in neither sort.

Sheep are very fond of potatoes; yet I never knew them over-feed upon them: but doubtless they may, as they frequently do upon turnips.

Cows fed with potatoes produce much better milk and butter, than when they eat cabbage or turnips.

S E C T I O N XVIII.

Method of harvesting Grain of all Kinds, with Proofs from actual Experiments.

THE reaping corn from ten to fourteen days earlier than my neighbours, is an advantage I have lately attended to. As corn begins
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to decay first at the root, all the nourishment it can afterwards receive while it stands uncut must be derived from the straw. The dews may feed the grain at one time; but, when nearly ripe, and the root gone, the sun and wind have so much power as to ripen it too quickly, or to scorch it up before its natural period of maturity. How often do the *old* farmers complain, that the season of harvest is so dry that the corn will all be small! There would be little cause for this complaint, if they cut the corn earlier, and put the sheaves into stooks in the field, which would secure it from the intense heat of the sun, and from those violent winds that so frequently occasion great losses by shaking the grain out of the ear before reaped.

Once, by chance, riding on the road about harvest-time, I saw a field of wheat that had taken the mildew. This is known by the straw being of a remarkably deep green, and, instead of dying, appearing to revive and acquire a greater verdure; which plainly indicates that the nutritive sap stagnates, and that the grain receives from it no further nourishment. Nor does it, after such appearance comes on, ever
receive

receive any, or grow larger. The straw becomes spotted and black. The sooner then it is cut, the better. I took twelve ears of the wheat, which, as likewise the straw, were green as grass, and mildewed. A great deal of rain had fallen the fore part of the day; but the wheat-ears were pretty dry. I tied them in a bunch, intending to hang them up in some dry place to ripen; but on my return home forgot, and thought no more about them. My great coat, being used only when there was reason to expect rain, was hung up in a hall; and several weeks afterwards, on putting my hand into one of the pockets, I found the ears of wheat, which immediately brought the circumstance to my recollection. The straw still remained green. I rubbed out the grain; and, to my astonishment, never saw better. It was fine in colour, and well filled; but what remained in the field I took these ears from, was very small, and of little value.

From this it would appear, that were wheat cut on the appearance of the mildew, and set in the field in small stacks of about a cart-load each, so as neither to heat nor mould, it might render it much better than is done by the method

thod now practised. Indeed the mildew in wheat is like the mildew on all other things. It is caused by damp in the soil. Very warm dry situations seldom have any mildewed wheat: as in a warm dry room your paper or linen is not mildewed; consequently, after your wheat is perceived to be getting into that state, the sooner it can be preserved from it the better.

I had taken at the same time twelve ears of wheat from an adjoining field riper, which I put in the other pocket of my great coat. These last, though at the time of gathering they appeared so much superior to those which had taken the mildew, did not turn out nearly so good as the others. The reason appeared plain to me: the ripe wheat had stood too long, and the wind and sun had shrivelled it up, and caused it to be small.

From the above circumstances I have ever since been partial to cutting wheat when the straw appears of a reddish cast, or some of it green, and the joints are full of sap: and it always has fulfilled my expectations; for the straw, if intended for chaff, will be better, the flour much fairer and heavier; and if intended for fine flour, it will grind into broad bran
much

much better than that harvested according to the old method. I do not however think that wheat which has not taken the mildew ought to be cut so green.

Rye sown along with wheat is a great preventative of the mildew; for rye is of a much drier nature, and most certainly prevents so much damp rising to the straw of the wheat. It is evident the damp rises upwards; for if you build a house upon a wet or damp foundation, all the sun and air in the universe will not sufficiently make it comfortably dry and warm. You will find swamps on a field more subject to mildew than the more elevated parts. I have sown rye mixed with wheat upon one piece of a field, and on the next wheat only; and the wheat amongst the rye was scarcely damaged, and the other in a very bad condition from the mildew. As the damp from the earth is the principal cause of this malady in corn, the best remedy is to drain the land, and to lay on it manure of the driest nature, such as bones, ashes, &c.

There are other proofs of the damp from the earth causing the mildew; such as, that other white corn is not so much, or seldom at all, at-

tacked by it. Wheat being sown in autumn, and lying so long on the land, the soil has not so good an opportunity to get dried after the winter, by being exposed to the sun and air. It may likewise be observed, that, in years when the season has caused the leaf to be more abundant, and to smother the land the most, the mildew is most prevalent. Late crops are more given to this malady; and the cause is the soil's getting damper. I do not recollect to have seen spring wheat take the mildew; owing, I suppose, to its lying a less time on the ground.

Oats for meal, if early reaped, are much finer in colour; the straw is better; and there is less loss in the field.

Barley, by being cut soon enough, becomes much better for malting; even though cut so early that some part of it may not be ripe. Were you to let it stand until it were all ripe, it would still differ in respect to the dying or ripening of part; consequently, when wetted to undergo the necessary process for malting, as it died at different times, so will it have different times of resurrection or sprouting. Killing it all at one time by art, may enable the maltster

maltster by art again to revive it, perhaps on the same day—a desirable acquisition in making malt to perfection; for if one grain begins to vegetate before another, part will be ready for the kiln before the rest; and when the maltster hopes to have the whole in a proper state for drying, those grains which had first vegetated would be acre-spired, and the saccharine quality be reduced at least one fifth—a loss which would be heavily felt by the brewer.

In peas—a great advantage arises from cutting early. The straw, being full of leaf, makes excellent fodder; and, if there be wet weather, it does not occasion the pods to open so soon. I do not approve of sheafing peas, or tying them up; a mode chiefly made use of in Scotland. By drilling with manure, the straw will be very long, and of course require a different method of reaping. My peas were from ten to twelve feet long, last year, podded from top to bottom, and yielded forty bushels per acre: a very great produce, as they were of the Hastings kind, which are very small. They were reaped with sickles, ripping them up for a few feet, then pulling them from the standing ones,
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laying the green end down, and the bottom upwards, and lapping the pods as much inwards as possible. By this method, the green part dried gradually: and pigeons, which frequently destroy much of this crop if they can get to the pods, were prevented from doing much damage.

It is best to mow barley, and let it lie in the swath for some days before you sheaf it; as every possible precaution should be used to prevent mow-heating.

Oats are best mown, and bound in sheaves after the scythe, and left upon the ground, not set up in stooks, as commonly practised. But the people who bind them must give them a turn over; as the side they tie them on would readily receive the wet, but on the other side it cannot get in. By laying that side upwards, no rain will injure them for a long time; and they will *harvest* much quicker than in the stook; as the wind will have a free passage through the bottom, which requires the most air: whereas, if set in the stook, it would be a long while before they were fit to carry; and if left in the swath, should the weather prove wet, great part would be lost by turning over.

Beans

Beans are generally mown; but I approve of pulling them up: as the roots are very injurious to a wheat-crop, so much so as to prevent wheat being sown; on account of snails crawling into the land and destroying the wheat. The expence is little different. They should be tied up in sheaves with wheat-straw. If they stand till the leaf decay, tie them loosely in small bunches, and set them up in stooks (four sheafs to the stook) in the field, where they will soon be fit for carrying home; for the leaf being gone, the wet will not remain upon them, and the bean will retain its proper colour, which otherwise would become black. Let them be stacked upon a belfry or tuffel, and they will receive for a long time no injury, as the air freely penetrates.

SECTION XIX.

Method of preserving Crops, after reaped, to the greatest Advantage, when Barns are not large enough for such Crops.

TO preserve corn expeditiously and safely, must no doubt be desirable. On a fine day, when corn is ready to be carried, it is an excellent

cellent method to stack it in the field where it grew; for by so doing you will probably secure as much in *one* day, as you would have been able to carry home in *four*; or, if the distance be considerable, perhaps in a week. And if rain should come the next day, or soon after, and continue, this manner of proceeding may be of very great convenience and advantage; it may make in the corn the difference of *good*, and of *good for nothing*; but to a certainty that of *good* and *indifferent*.

It may not perhaps be unnecessary to say how a stack should be constructed, so as to be liable to the least inconvenience. Begin to make the middle of the stack first, so that, when it is taken in, the middle must be fullest: the outside sheaves will then act as thatch; and even if the stack were not thatched, no common rain of short duration could injure one so made. But supposing it tolerably, or what the thatcher would call *well* thatched, it is possible rain may penetrate; but if it did, the corn would receive little injury, as the moisture, from the construction here laid down, would entirely ooze out: nor can rats, mice, or many other vermin which frequently cause havock amongst corn do so much damage in a stack so made.

Another

Another advantage attending the making of a stack in an open field is, that the grain by the free circulation of air becomes soon dry, and preserves the original sweetness; whereas in confined places, such as *stack-garths*, where great numbers of stacks stand close together, or in *barns*, the air frequently stagnates, and the corn becomes musty, or acquires a putrid smell.

The above method will be found to answer for corn in general.

S E C T I O N XX.

*The Author's Opinion on Transplanting Wheat:
Reasons why it must prove beneficial.*

TRANSPLANTING of wheat, so as to set a whole field, is not likely to become a general practice: but circumstances frequently occur where it may be attended with some benefit. For example, when some misfortune happens to a part of the field, a diligent observer will generally discover some spots to have missed, and to be thinner than the others. Whatever may have been the cause of the ground's

ground's not being regularly covered, whether the wheat's having been destroyed by water in the winter, or from any other accident; the farmer may always find some part of the same field from whence he may draw plants without doing any harm; and if he be a neat husbandman, he may fill up the vacancies by transplanting from those spots where the plants are so thick as to injure each other.

S E C T I O N XXI.

Advantage of Dibbling Wheat.

THE great advantage of dibbling wheat is in the treading of the light land by people passing and repassing; for the regularity of sowing is not so great, children often dropping in twenty grains instead of four. I much approve of the practice on all flag land or swards ploughed up for clover, hay, &c.; for the men or women stepping backward upon every furrow to make the holes, and the children to deposit the wheat, tread the land down so that it has an immediate connection with the ramel. The grain is deposited where it ought to be, in the best

best of the surface soil, about three inches asunder every way, and about one inch and half deep in each furrow; so that it just reaches the best part of the surface soil to derive its support from. Should your ploughman *turn-over* twelve inches, four rows of wheat ought to be set on each furrow: and to do this, the iron or dibble might have two prongs. It is not indeed usual to plough the furrow twelve inches broad: but, for dibbling, I do not think the furrow can be too broad, provided the plough clears her way and lays it flat. The seed in the broad-cast falls where it ought not to do, betwixt the furrow, where the soil being light continually keeps dropping from the root, so that it is left without proper nourishment, by which means the growth of the plant is retarded, and the produce diminished. On the contrary, when dibbled, the root stands upon the firm earth, and the worms or grubs, &c. are in some measure deprived of the immediate opportunity of feeding on it.

Eight pecks of seed might, if properly deposited, be sufficient for dibbling one acre. Ten pecks is what I should use. I am no friend to the saving of seed; as on every experiment

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I have tried, the loss of produce in both straw and corn greatly surpassed the value of the seed saved. Some use in dibbling only six pecks per acre. But this certainly is too small a quantity; for many of the grains fall by the sides of the holes, and grow not up to perfection. However, among dibbled wheat you will find the fewest small and light ears.

The expence of dibbling is with some an objection. Individually it costs money; but publicly it costs nothing, because it is done chiefly by women and children, who must be maintained from the produce of the earth; and is it not better that the women and children should work for their meat and clothing, than to have it found them for nothing? And in the proper season for dibbling wheat there is no other sort of work for them. The expence is from 9s. to 10s. 6d. per acre.

Some may say, "Clay soils it will injure." But I say, no. For, during the winter the frosts lighten the soil; and on swards or clover-ley there is a mellowness which prevents them from being of too binding a nature. It might be an improvement in the present practice, with the skim-plough thinly to pare the sod or stubble,
and

and lay them in the bottom of the furrow; as that would prevent all kinds of grafs or weeds from making their appearance: and then the broader the furrow the better.

Dibbling of spring-corn, where land is liable to set or bake, may be attended with some of these inconveniences. Therefore, judgment is required in the spring to distinguish the sort of land proper for dibbling.

Oats, peas, and beans ought all to be dibbled; as harrowing them brings them to the top as it does stones: and it is impossible to cover them properly, but by dibbling or drilling.

The necessary operations for dibbling are as follow: Plough the land in broad furrows as deep as the soil will admit, afterwards roll it. Then a man or woman takes a couple of irons, and going backwards makes two holes at one time, one with each hand. The dibbling-irons are fixed to handles of a proper length: and the point must be so contrived as to make the holes one inch and a half wide, and one inch and a half deep: then put in the seed about four grains in each hole: then bush-harrow two or three times lengthwise, and then across the lands. If a flock of sheep were driven across the
the

the field, it would be of great use, as the feet of the sheep would tread the earth into the holes where the seed is deposited, and prevent the water from lodging in them. After the sheep are removed from the field; bush-harrow again.

SECTION XXII.

Use and Advantage of Drilling Wheat.

DRILLING of wheat is a great saving of grain. No one can doubt of this assertion being a fact; as by it the seed may be put into the ground in a regular manner, either as to depth or distance. It may likewise be made use of for all other kinds of grain: and I think the saving of seed would be at least one third. As to scarifying afterwards, that seems of little use except in land that is apt to *bake* and crack—See Section VII.

There cannot be a doubt but all corn ought to be deposited a certain depth in the ground, and at certain distances: therefore, to do that, the land must be first pulverized and made ready to receive its crop; and then the corn
put

put in it. It little matters by what mode this is done; the more simple the better. The drill-roller does its work with as much despatch as any thing I have seen, and fully as well. It may be necessary to describe it (simple as it is) to those who have not seen it. It is a roller, of any given length, made of wood, with nicks cut in it about six inches asunder, as deep as your timber will properly admit. The edges must be shod with iron rather sharp, that when it turns round it may make small furrows or drills proper for your grain to fall in. You must sow it broad-cast, and bush-harrow the land after-wards. As to depth, you must add more weight to your rollers, if you see it not penetrate far enough. It is a good way to fix at the back-part of the roller something to clean out the nicks, or they will clog up and not make drills sufficiently deep to receive the grain. I have seen some very regular good crops, that had been sown in this way.

SECTION XXIII.

*What Horses most proper for Husbandry;
Instructions for Breeding them; of their Shape,
Action, &c.*

THE horse used in husbandry ought to be larger, but in other respects like the road-horse: and, instead of walking two or three miles an hour, he ought to walk four or five. In that case, he would be able both to plough more land in a given time, and would work in the cart or waggon with more dispatch, when wanted. In harvest time a nimble and strong horse is valuable. In drawing manure into the field, or corn to market, the farmer will also find his account in strength and activity: for, as the draught in all these cases is light one way, such horses would do their business with speed. The small farmer need not with this kind of horse keep an idle one; he might carry his master to market, and plough the remainder of the week. This is the sort of horse proper for a gentleman's heavy coach: therefore, if the farmer should determine to breed, and take a little pains to rear horses of bone and action, it
would

would not only prove advantageous to himself, but useful to the public.

These horses should be bred to be from fifteen to sixteen hands high, should walk light five miles an hour, trot twelve; and if one now and then turned out rather low, he would notwithstanding fetch a good deal of money for carrying some heavy gentleman.

Horses of this description are hardy, and require less food to support them than the long-waisted washy things of fashion, which some half-connoisseurs in horse-flesh are so fond of.

The general opinion is, that, if a horse is put to draw, it will make him stumble. If he is over-weighted and worn down, this possibly may be true: but keep a horse above his work, and he will be no worse for the saddle. I have a proof of this in a mare I now ride. She is of the breed I recommend. I bought her, when she was four years old, out of a man's team, which he worked for hire. He had drawn her two years very hard, yet she has carried me (though I ride nineteen stone) nine years, and has never once been down with me, although I have ridden her over as dangerous roads as any in the kingdom—in Derbyshire, Cheshire,

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Lancashire, Westmoreland, &c. I do not now think her, as to safety, in any respect worse than when I bought her: on the contrary, I really think her better. I gave eighteen pounds for her, which was thought too high a price by some who pretended to be judges: but I have many time since been bid fifty pounds for her, and once absolutely sold her for sixty; but the gentleman to whom I sold her, at my own earnest request, let me have her again for the same money. She will carry my weight ten miles an hour with ease. I have ridden her from Lincoln to Doncaster, which is forty-two miles, within five hours. This mare was bred from one of the cart kind, and got by a blood-horse. The service she has done makes me so strenuously advise breeding this sort of horses, which will in all probability turn out so useful to the breeder and to the public.

S E C T I O N XXIV.

Description of a Road-Horse; particular Action necessary for the Ease and Safety of the Rider.

THE road-horse should have a small head, a quick eye, with a rising forehead or neck; his shoulder to be cast into his back, not very fine
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in the chine. His back must be straight, not over short. Let him be high in his ribs, and straight in his hind quarters, his hucks lying close or round with his rib, and his tail standing straight with his quarter; thick in his thigh, and broad in his breast; short in his legs, with his fetlock very short; a good round hoof, not over steep. He should rather stand a little out with his fore toes, and his hind feet the same; for by that position he is both stronger and safer. He cannot move with one leg too near the other, provided he does not cut. For, when a horse moves, he must have two legs off the ground: therefore by keeping his legs near each other he is stronger. By one leg on the ground being perpendicular, and his toes standing a little out, he is much safer: if he makes a trip, he does not so soon lose his balance, or get over his knee. The shorter he steps the better, if he is but quick (for light moving is equal to strength); and by keeping his legs under him, he does not tire like a horse who oversteps and fatigues himself. Nor does he beat the ground so hard; so that his feet and legs last much longer.

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SECTION XXV.

Best Method of Shoeing the Road-Horse, to empower him to travel with Ease and Comfort to himself.

THE foot of a horse should be kept in the same form it had when he was foaled; the toe short, and the heel up. The shoe should not be longer than the hoof of the toe, and the least that is possible in the heels. For, if you shoe him much longer at the heel than the corner, that part of the shoe acts like a lever behind his heel, as if you meant to lame him by prizing it with a crow, or bar of iron. Indeed the shoe of a horse ought to cover little or no more ground than his foot would if not shod; for if it does, it will only serve to break his hoof, draw out the nails and loosen the shoe; as, if he treads the least uneven, which is frequently the case, the superfluous iron acts in the way just mentioned.

If the horse's hoof is naturally hollow, the shoe should be thickest near the edge or nail-holes.

If he have a flat, or what is termed an *oyster* foot, the shoe on the contrary ought to be dish-
ed,

ed, as in that sort of foot the quick lies near, and of course he must be tender. Bar shoes are proper for such feet.

SECTION XXVI.

Description of the Dray-Horse, and the Stage-Waggon-Horse to travel.

DRAYS require the slowest movement in a horse. The burthens are generally excessively heavy; in London streets particularly, where no swiftnefs, but great power is required to move the immense weights drays are often loaded with. Horses for this purpose, therefore, should be very broad-breasted, and thick in the shoulders, which should not lie backward. Nor should the fore-hand be up as recommended in the road-horse; for, by holding up their heads, they would be choaked by the collar, as they would, if so formed, draw too much by the throat, and their wind being thus stopped, would be in danger of falling down. The neck of a dray-horse is not the better for being long. If his head be small, he is likely to be of better thrift; but then on the other hand, a small head is sometimes a sign of a lively

lively spirit, which makes a horse not steady in drawing; and it is a great fault in a dray-horse to be quick or hasty in temper. Like all horses, he should be chosen with short legs, and good strong hoofs. He ought to be thick in his thighs, and large in bone: but I can see no necessity for that great quantity of hair so frequently met with upon the legs of these animals. I am of opinion, that, in respect to use, he would be better without that superfluous ornament: but perhaps, the dealer would not give so good a price for him without the hair, as with: therefore, as breeders, like other men, must look to their profit, they will no doubt continue to rear such horses as will fetch most at market, and think more of show than real use; for a redundancy of hair is not a sure indication of strength.

Most of the observations laid down respecting the dray-horse are equally applicable to the stage-waggon horse. His shape and make, however, must not be exactly the same; for, as the waggon-horse is required to travel, he must partake of the nature both of the true dray-horse, which originally was a native of Flanders, and of the true English coach-horse, a breed unknown anywhere but in this island.

A quicker movement is required for a stage-waggon than for a dray, and something more of spirit in the horse. A true dray-horse could not last long in a waggon; as he is rather too heavy.

SECTION XXVII.

Opinion on Draught Oxen; the Sort for such Use.

THE Devon ox is a pattern, as to make and shape, for all draught-oxen. The Devonshire ox is better formed to move than any sort I have seen, excepting the Scotch ox, called the Fifeshire ox, which is made better in respect to walking than any other; for he has the best feet I ever met with. The Welsh ox is in many respects similar to the Scotch.

The ox mostly used by our farmers is of the Tees-water or Durham, and the Holdernefs species.

The Devonshire oxen are as good, if not better feeders than any sort I have yet seen: they attain very heavy weights, and cut up as fine as any, without exception.

The Fifeshire fattens not so quickly as the Devonshire ox; but, when fat, is equally delicious.

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The Tees-water ox is proper for heavy draughts, is much larger in size, and will pay better for his keep. He may draw from the age of *two* to that of *eight*; if fattened when two years old, he may weigh about forty stone; if made fat at the age of eight, he will weigh ninety stone or more. Supposing beef at seven shillings per stone, the difference between slaughtering him at the age of two, and at that of eight years will be as 14*l.* to 31*l.* 10*s.* that is, 17*l.* 10*s.* for the keep of the ox for six years, which is 2*l.* 18*s.* and a fraction per year.

Now it is well known the horse frequently decreases as much in value. But is not that the farmer's fault? For horses may be made to pay for their meat as well as oxen. A mare, for example, may breed a foal, and do a great deal of work; in the winter at this rate she may be reckoned at about 6*l.* per year. In summer an ox is kept at a cheap rate, and may supply her place. A young horse, bought in with judgment, and worked easily, will pay two guineas per year, on the lowest estimate. A horse will not thrive upon such food as will keep an ox; but if you work an ox with a horse side by side, the ox must be fed with corn in the winter. After all, the advantage is clearly on the

the side of the ox; unless you sell the horse when he comes just into his prime. For, if you wear the horse out, his flesh is fit only for the dogs, and the carcase with the skin will not fetch more than a dozen or fifteen shillings, whilst an ox will fetch from 20*l.* to 30*l.* or perhaps much more. I think that farmer the best manager who keeps both horses and oxen for draught; for he will thus be enabled to send the most commodities to market from any given quantity of acres of land.

There is a sort of oxen which I have not yet described, which are the long-horned or Craven kind: these oxen are bad workers, but in general pay best when killed very young—at the age of three years, for example. Therefore they seldom draw or plough much. The Irish oxen, which respect to working, are very similar to the Craven kind.

It has been asserted that an ox will plough as much land in any given time as a horse: but that is impossible, if the horse be of the right sort for the plough. The horse would certainly walk over three miles while the ox walks over two, therefore would plough three acres of land whilst the ox ploughs two acres. I believe,
that

that at present the ox does as much work in any given time as the horse; but that is either the fault of the master or the man; for the master must either have provided a horse of very slow movement, or the man must be very idle. I will undertake to find a man and pair of horses to plough three acres while another man and a pair of oxen ploughs two acres, for twelve months together. But then we must consider the difference of expence in their feeding, and of the value of the carcase of the worn-out horse and the worn-out ox, as has been remarked above. Both are very useful, and ought always to form part of the stock of a farm of considerable extent.

A man in a very small farm, consisting of from eight to twenty acres should work his milch-cows, or such as he may be rearing for that purpose. By tilling his small quantity of land to advantage, he might keep eight or ten cows, and get fifteen acres of corn every year; which, at 10*l.* per acre, would make 150*l.* besides the profit of the cows, which might be managed in such a way as to injure them very little, as there are so many to do so little work.

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The ox, I will allow, is not the most pleasant animal to do husbandry business with: the farmer's servant will discover as much difference between the horse and ox in this respect, as he would between the horse and ass, were he obliged occasionally to use both for a journey: but the pleasure of the servant in that case has been more considered than the profit of the farmer. The horse passes quickly over the ground; and, in a bad seed-time, when land is liable to *fét*, become hard, or over-wet, getting the seed in quickly in the proper season is of infinite consequence to a crop; and, oxen being slow, the farmer must either employ an extra number of them, or bestow more time in sowing his crop, or in doing any other kind of business.

S E C T I O N XXVIII.

Milch-Cows proper for the Dairy, and for Fattening.

THE cow which gives the most milk is not the cow which fattens the fastest. It is impossible she can vie in flesh with the cow which gives only a small quantity, and whose food is principally applied to the fattening of

her. The draining of nutritive juices by milking must, with very few exceptions, keep the milch-cow down: and the same observation will hold good respecting the quick-feeding or fast-fattening cow, which will always be found to be scanty of milk.

The features of good milch-cows, and of those for fattening, are nearly the same. A cow for milking ought to have a small head, a thin hide, fine chaps, a small tail, the thighs thin, and of small bone. Her paps should hang square; the udder should be round, and not fleshy; her milk-vein very strong. The vein called the milk-vein runs upwards from the udder towards the huck. There are cows of a different description, which yet are good milkers: but the above sort will be found of most general use. Some very ill-shaped cows give a large quantity of milk; but, for the most part, they have a small tail and thin chaps.

The cow with a disposition to fatten fast differs from the milch-cow by the milk-vein being much smaller, and the udder appearing less, and of course containing less milk: her hide, if thick and mellow, is a sign of her thriving; and what is termed a thin or paper hide covers generally a poor animal and a bad thriver.

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SECTION XXIX.

*Method of Fattening Calves to the best
Advantage:*

TO make calves fat in the speediest manner, take the milk from the cow and boil it, and let it stand to be cool enough for the calf to drink. By this method the flesh will become white without bleeding; the veal will be juicy, have a good flavour, and be much better for eating, than the calf whose juices had been so much exhausted and dried by frequent bleedings, that the flesh has no more nourishment in it than the pith of a willow-stick. It is very proper to give the calf in the middle of the day a ball or two mixed up with common gin, which not only will promote sleep, but will prevent the milk from turning sour on his stomach, and likewise keep his body regularly open. A small glass of gin is sufficient to wet flour enough for two balls; and no other ingredients are required. These balls are not to be used before the calf is a month old. The calf cannot be kept in too close a place: he should be well bedded with clean straw; and the place where he stands should be made slanting, so that all

wet

wet immediately run off; for, if he lies wet, he lies cold; and great care ought to be taken that he lie dry and warm. I have fed a calf that at the age of thirteen weeks has produced, when slaughtered, 8*l.* 19*s.* 6*d.* This calf weighed seventy pounds per quarter.—See *Annals of Agriculture*, No. 155, p. 557.

SECTION XXX.

Use of Sheep in Improving Land: the great Profit arising therefrom.

SHEEP are the most profitable of animals; as they not only increase in flesh much quicker than most others, but pay a yearly tribute to the owner by their fleeces. They supply us with a staple commodity, which employs an infinite number of people at home, and produces a most beneficial trade abroad.

Where sheep eat the herbage, they manure land very regularly, and cause the grass to come finer after than when eaten by any other animal I know, except deer.

Sheep by nature are cleaners of land. To maintain themselves, they will eat every kind
of

of weed, except nettles and thistles, and consequently eat to greater profit than any other animal. The loss in sheep is attended with less loss of property than generally attends the loss of other animals which are accounted as stock by the farmer: the skin at every age is of some value; and so is the flesh in many instances, when you have a careful and attentive shepherd. They are very prolific, and begin breeding early. I have bought a drape-ewe in September, and by the September following with two lambs she paid clear profit 3*l.* 16*s.* when sold to the butcher. I bought her in at 1*l.* 4*s.* She sold for 2*l.* 5*s.*; the fleece for 5*s.*; the two lambs for 1*l.* 5*s.* each; which together makes five pounds. Deducting then the original cost of 1*l.* 4*s.* I have a clear balance of 3*l.* 16*s.* Two such ewes would bring 7*l.* 12*s.* profit: one acre of good land would keep them, and sufficient bite be left for a horse or beast to defray all expences.

By expending 2*l.* 8*s.* in the purchase of two sheep, a clear profit may be gained of 7*l.* 12*s.* I know of no other animal that will do as much upon one acre of land with so little risque of capital;

capital; as, in case of accident, you in all probability have the chance of several lives, and the original cost is but trifling.

S E C T I O N X X X I.

Description of the best Sort of Sheep, with Instructions for Breeding them; the Sort of Wool required, and how to promote the Growth of it.

THE Dishley sheep are without dispute the best. The breed is now so universally spread over this island, that it might be thought superfluous to describe them; but as this work may possibly be read in other countries besides England, I think it necessary to give a sketch of this very useful animal. A true Dishley sheep from the top of the back, that is, from head to tail, resembles the back of a tortoise; the head is small; the neck or crag particularly so, and so short that, when the sheep is hung up by the heels, you cannot see any neck; the fat and flesh so completely covering it that the fore-quarter appears as if joined to the head. The breast is remarkably wide or broad; the car-

carcase not very long; but the rib stands up well (that is, high and round), so that by laying your hand upon him you will perceive an extraordinary breadth. He is much inclined to accumulate flesh upon the back : the fat of many of them upon the ribs and sides hangs in such a manner as to cause what is called the fore-flank and the neck-vein to be larger than you can grasp with your hand; something like a bullock's flank, but very frequently fuller, except it be a very fat bullock. I have seen mutton of this kind cut six inches deep on the rib. In his twist he will be so cloven between the legs as almost to touch his *camerils*. In short, the offal (such as the shanks, neck, and head) of this sort of sheep, which weighs from thirty to forty pounds per quarter, will weigh but few pounds ! And what renders it still more an object of profit is, that it not only eats less than any other kind, but from its propensity to thrive becomes fat much sooner.

Were these sheep kept poor upon thin lands, on commons of a dry gravel or limestone soil, until they were four or five years old (as some of the Downs and Scotch sheep are), and then made fat, I have no doubt but the mutton
would

would be full of gravy, and the best in the world; as they are remarkably juicy and fine-grained. Many gentlemen have observed to me that sheep of this kind are liable to get over-fat; and that the flavour of the mutton is not so delicate as that of some other sorts. My answer is, that sheep of this kind are at present in the hands of the best feeders, as well as breeders; and as the price of the ram is very high, great care is in general taken of the offspring—such care that they are frequently kept fat the whole time they live, sometimes too much so; which causes their flesh to become strong: and this I believe to be the case in all animals when they attain a certain age. I had a striking proof of this, in regard to the flavour of flesh, in a very poor pig which my father bought of one of his labourers. The pig had been given very young to the man by my father and was of the same litter with some we were then fattening: they were all fed in the same sty, and with the same food: the *poor* pig fattened astonishingly fast, and was afterwards found to be as superior in flavour to the others, as Scarborough mutton is to the large Lincolnshire or Tees water sheep.

It is so likewise with fowls, a proof of which I also had. When I lived at Afsasby, in the vicinity of the East and West Fens, the general opinion of my neighbours was, that a fen-geese, from drinking the stagnant water in the pools, and living on grafs, would always be found rank, or at least very strong, food. I went with the tide of opinion, and for a long while fancied I had a particular aversion to fen-geese: but, the making of experiments might be termed my hobby-horse: and, on seeing by accident thirty fen-geese, composed of nothing but skin and bone (for they were destitute of flesh and feathers), the situation of the half-starved pig rushed so forcibly upon my memory, that I was induced to buy the whole flock. I put them in fold amongst some cattle, where there was no water to swim in. What water they got came from a pump—a very pure spring. Their food was barley (for the cattle were fed on nothing but barley-straw); nor could they get at any thing else. After the geese had remained about a month at this food, I had one killed and dressed—a better never was eaten, and not one of the thirty but was equal to the first. There is another prejudice, which sup-

poses that pulling the feathers whilst alive makes the goose rank: but those I speak of, had been pulled thrice at least.

It is the quality of the food that determines the taste of the flesh; this one more instance may elucidate. Whilst in Lincolnshire, a man one day at market sold two of the fattest geese I had ever seen. My curiosity was stimulated: I was anxious and inquisitive to know what means were used to give them so great a quantity of flesh and fat. The vender assured me they had eaten nothing but grass; I thought this must be a much cheaper method than the one we practised, which was to give them as many oats almost as they were worth when killed; and I hoped that from thenceforth I might eat my roast-geese, or my goose-pie, upon cheaper terms than formerly. I had then some at grass, which, though not so fat as those the man sold, were yet fatter than any I had fed on corn: but when my goose came to be put to the fire, I soon resolved upon returning to my old method of feeding with corn; for although this, in common with the rest of my geese in the field, had as fine a stream of water as is in any part of England to swim in, no
fox,

fox, or any other kind of vermin, if put down to roast, could stink worse than my grass-goose. She fed on a rich pasture, and sandy soil.

It has been thought by some to be very indifferent what pigs feed upon, provided they eat and get fat.—A circumstance that once happened to me may serve as a caution to the feeder of pigs, in respect of pigs nearly fit for slaughtering. I had upwards of forty pigs feeding. The gardener pulled up some onions, and threw the tops (consisting of a barrow-ful) to the pigs. Two days after, I had one of the pigs killed, and in the fry perceived a strong taste of onions: I had recourse to the cook for an explanation; but she was entirely ignorant of the cause. I then applied to the pig-feeder, who readily told me what the gardener had done. The pigs had been confined in a fold, and had no food but such as grains and brewers' wash. The remaining part of the pig killed I had salted and hung to dry: but it proved to be uneatable, and we threw it away. I mention these circumstances, to warn the farmer how necessary it is to give sweet food to such animals as are intended for the table.

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But to return to sheep. In one respect they partake of the nature of *oxen*: — I mean that the small breed is finer in flesh than the large. A sheep of the Welsh breed, which shall not weigh more than six pounds per quarter, will prove of superior grain to a Tees-water of sixty pounds per quarter. In like manner, a Scotch bullock of twenty stone will be finer flesh than one of the Durham or Holderness breed of one hundred and twenty stone: and this rule will hold good in most animals used by us as food.

Having said so much on flesh, we shall now speak of the wool, which undoubtedly is finest on the smallest kind of sheep. But the fineness of the wool is not the certain consequence of a diminutive carcase: the food is the primary cause. I have witnessed a sheep from Spain put upon the rich land in Lincolnshire near Boston; and in two years this very sheep, the finest to be procured in Spain, clipped a very unuseful kind of fleece, with more hair than wool. The rich land here referred to is more adapted to the growth of the combing sort of wool, which is the most valuable of all, as it yields by far the greatest quantity. From four
good

good wethers may be clipped two tod's of wool, the wool being frequently fourteen inches long. Allowing, then, one acre of land to keep, during winter and summer, six sheep, we have six stone of wool, which, at one guinea per tod, amounts to 3*l.* 2*s.* 6*d.* But two acres of this land frequently feed a beast likewise: therefore, if a beast pays seventy shillings by feeding for one summer on *two* acres, by allowing thirty-five shillings for one acre, you have an aggregate sum of 7*l.* This kind of land is managed at very little expence: and the profits are great at present. Sheep on the land last-mentioned are better when of a larger size, than those kept in places distant only a few miles from a good market. Sheep of a year old or under cannot bear the fatigue of driving from one to two hundred miles, like those which by age have acquired their full vigour; and the expence of sending a large or small one to market is the same.

The large sort of sheep pay for their food by the great increase in bulk, and will live and thrive on lands improper for fattening cattle and other kinds of sheep. Of such land there are large quantities in the Lincolnshire marshes. And the wool, from situation and for profit,

profit, is there required to be of a sort fit for combing, and ought to be as nearly as possible of one length and hair, of an open mellow nature, about ten inches long, even at the top, so as to have little or no tag; as the tag is not only waste, but expensive in cutting off. The food of sheep in these marshes is surprisingly apt to promote the growth of the above sort of wool; and produces it faster than any other kind of land in England.

When the large sheep feed upon barren soils of a very cold nature, their wool is fettered together and grows into what are called *cots*, and decreases to half the value of what it would have been in a good rich pasture.

For poor soils, something better than moors or mountains, the best sort of sheep is the Dishley. On such soil their wool will be shorter and weigh less; which is occasioned by suffering hardships, and by the want of rich food. The pasture not being sufficient to fatten them; they may be fed with turnips and seeds, which, when good, are excellent for sheep, and cause them to produce more wool.

Having described the sort of wool most proper for very good, and for indifferent land, I shall now shew what is most proper for mountains or heaths.

The

The sort of wool on sheep feeding in such places ought to be very fine ; the finer the better ; the length from one to two inches. It must be very thick set : in fact, it cannot be too much so ; for the coat preserves the carcass on the bleak unsheltered mountain.

It may now be necessary to remark, that any sort of wool may by attention and management be raised on the same sort of carcass, and on almost all soils ; but the nature of the soil will most assuredly in a great degree prevent the wool from attaining the highest perfection. Salt-water land, or land taken from the sea, will produce more wool and of a much heavier nature, and whiter in colour, than any other land whatever.

According to the condition of the sheep in respect to flesh, land sown with grass-seeds, or such as is liable to rot sheep, generally produces white wool. In the latter instance, the whiteness of the wool may be attributed to the great loss of blood the sheep may suffer by flowks in the liver. At Claythorpe, during my four years' residence, I never saw taken out of a sheep fed in that parish one liver free from flowks and eatable.

Sheep

Sheep will fatten on many soils that yet are not congenial to the growth of wool; the wool will be dull, not white and oily, and will weigh light in respect to the bulk of it.

S E C T I O N XXXII.

The great Use of breeding Sheep to suit different Soils; with Rules drawn from Experience how to breed the Sort required.

IN breeding sheep to suit different soils there is another consideration to be attended to by the farmer, which is that of stocking land with such a sort as will suit his situation in respect to distance from his market. The Dishley sheep suits almost all soils, and will prosper wherever there is any thing to eat. It has been generally said, the Dishley sheep did not produce fat lamb, but I have proved the contrary. I had a lamb, got by a Dishley ram out of a Northumberland ewe, that when five months old, weighed twenty pounds per quarter, and altogether fetched forty shillings. This lamb was killed in the month of September.

Here

Here perhaps I may be told that Mr. Bedel, of Foot's-cray in Kent, very frequently can sell a lamb of less than one third the weight of the one I mention for 3*l.* 3*s.* But we are to consider the different expence of pasture-lamb and house-lamb; and that he confines himself entirely to the breeding of the latter for the London epicures to furnish their tables with at Christmas.

To return to my lamb: Had he had from one to two hundred miles to travel, he would have lost a great deal of weight and value. A two or three years old wether or ewe certainly would not diminish so much by the same journey: but if you can bring a lamb to fetch the value of a two or three years old sheep, the return of money will be quicker, and the profit more considerable.

The large Lincolnshire sheep is proper for some soils. The flesh of this kind of sheep is of a coarse substance; and though not inclined to feed so quickly as the Dishley, he does not when fat, waste so much in size by travelling to market. His frame is larger, but his flesh not so delicious, or useful to the breeder in respect to value; and there will be found,

in the same weight, much more lean and much more bone than in a Dishley sheep. A labourer or hard-working man may prefer a joint of lean rank Lincolnshire mutton to the Dishley, that will cut from five to six inches deep of firm fat; but he will not find an equal weight of it satisfy so many hungry children as the Dishley fat mutton. Without doubt there exists a very considerable difference amongst that species we term Lincolnshire sheep. Some of them, when driven the distance of one hundred miles from their native pastures, appear to be little better than carrion: but if those sheep, when intended to be kept until they were three years or three and a half old, or at least till they were three times clipped, had a little more attention bestowed with judgment upon them, they would be found to produce more wool, and retain their flesh much better.

The Wiltshire sheep and the Hertfordshire sheep I do not treat of, being no judge of them. They are chiefly for folding: and the folding of sheep I do not like; it is robbing Peter to pay Paul.

Of

Of the tall slender sheep from the mountains, some will thrive and fatten on a rich soil with luxuriant pasture; others are not to be made fat by any means.

The square short-legged breed from the forests or downs, will live on barren land, and bite the closest of any; and with good keep they will soon be fit for the butcher, but not very fat.

I am of opinion, all sheep, according to their first value, might be improved equal to the Dishley or long-woolled sheep. The Downs sheep are the most useful and profitable next to the Dishley; and had as much attention been paid to them by a set of men equally capable as the breeders of the Leicestershire sheep, they might have been brought to equal perfection. They appear to be equally profitable on some soils capable of producing carding-wool. They are good-fleshed sheep, and will bear more hardships on dry land than any long-woolled sheep. They are naturally active, and some of them quick feeders. There are some of the Welsh sheep very useful. These sort of short-woolled sheep would never be made profitable in the Lincolnshire marshes.

The

The Norfolk sheep are of a great size, and sometimes profitable : but perhaps few sheep are better kept ; their winter food being superior to that of any other country, and their layer continually dry. No sheep likes or will prosper on wet land. The sort called Lincolnshire-sheep do the best upon such land.

S E C T I O N XXXIII.

The cheapest and most expeditious Method of feeding sheep.

THE cheapest and most expeditious method of feeding sheep in the winter, is to give them rape, cole, or turnips, in pennis or trays, as explained in Section XII. p. 59.

Rape and cole should be eaten in the same way as the turnips. The folding in a straw-fold would doubtless save hundreds of sheep which die of the resp or red-water. The losses sustained in the Lincolnshire fens are innumerable for want of such caution. See Section XXXIV.

The

The cheapest food in summer upon good land is grass, although not the most fattening. Good feeds fatten them quicker upon moderately good soils, such as do not carry more sheep than can thereon do well; for it often happens that upon too luxuriant land sheep thrive but indifferently, by their being such numbers feeding on it until it actually stinks of them.

Great advantage would arise from feeding sheep in the summer on green food, in the same manner as is described for horses, beasts, &c. Green tares and cabbages, &c. would be very quick-fattening and cheap food.

SECTION XXXIV.

Disorders incident to Sheep; with the Methods of Cure.

ONE of the most extraordinary disorders to which sheep are liable is called the *red-water* or *resp.* This disease undoubtedly is brought on by the stomach and bowels being overloaded with food too much abounding with juices.

Turnips

Turnips will give it to sheep, as likewise will rape or cole; so will eddish, young clover, or any kind of grass where rich manure has recently been laid on the land.

I had twelve acres of clover, with one hundred ewes and lambs upon it. I intended to sow the field with turnips; but, the weather being dry, I could not plough it. In order to be ready against wet weather came, I had the manure carried on the land. A twenty-four hours' rain fell; and the next day three ewes were dead with the *red-water*, though both ewes and lambs had been constantly there for some weeks without a single accident. It may be necessary to observe that the manure was taken out of the fold-yard, and consisted chiefly of rich horse-dung, cow-dung, pig-dung, &c. It was laid in heaps, so that, when the rain came, the furrows ran with a black-coloured water, the juices of the manure. Since this accident I have heard and known of many similar, and from the same cause. I caution the farmer against putting sheep upon land newly manured, especially if with fresh dung: it makes the plants to be over succulent for the animals' bowels.

To

To cure the *red-water*, the best remedy I know is foot from pit-coal, mixt up with salt water, or with salt and chamberlye. Mix so much salt with water that an egg will swim; and put for every sheep a large spoonful of foot: stir the ingredients well together, and let them remain until the following day, or about twelve hours. Give three large spoonfuls for a dose to each sheep early in the morning, after it has been kept from food the preceding night. Repeat the above dose every fifth or sixth day, if the sheep are much affected by the disorder, and you will find the medicine an effectual remedy. I hardly ever knew it fail of working a perfect cure.

Raising the sheep at night, and driving them about so as to cause them to empty themselves, is another good and simple remedy; for a sheep, being a greedy animal, fills his stomach with food; and, being naturally indolent, he lies a considerable time in one posture, which prevents a proper digestion, which moderate exercise would effectually promote. It is not uncommon for the coats of the stomachs to be so distended as to burst some of the many sanguiferous vessels with which they so amply abound,

bound, and whose use is to secrete the liquor gastricus, or liquor of the stomachs. By an accident of this kind I have had sheep die suddenly; and have upon a close examination into the cause of their death, taken from two to three gallons of red-water from the inside of one sheep. The bowels were full of this water, which seemed tinged with blood, and emitted a very putrid smell. Part of the flesh was in a mortified state, and stunk horridly, which it will do even before life has left the sheep.

The above prescription will not fail of ridding the animal of this terrible disorder. The first object is to cleanse the bowels, and brace the stomach: the salt does the one, and the foot, I suppose, the other. This disorder seldom happens in the summer, unless to a sheep who gets over-cast; for a sheep does not lie still in summer above four hours in the four-and-twenty: but in winter he lies still full half the time, that is, twelve hours out of the twenty-four.

This disorder may be totally prevented by following the method before laid down for fattening sheep with turnips or cole, that is, by moving them into the straw-fold at night. Do this early in the evening; and you may easily
raise

raise them before you go to bed and with little trouble give them the quantity of exercise which may be thought necessary. The giving of fresh folds of turnips in the evening frequently brings on this disorder, and occasions almost immediate death, especially if the sheep have been kept rather short of food for some days before. I have known fifty sheep in one hundred die of it in the course of one winter. If by administering the medicine here recommended, and by using the straw-fold, five only of the fifty had been saved, it would well have paid the trouble attending their cure.

It is very necessary that sheep should be carefully attended, that, on the first symptoms of the above or any other distemper, remedies may be applied, and a cure attempted in time.

There is a disorder in sheep called the *turn* or *giddy*. This disorder proceeds from a bleb of watery matters formed upon the brain. Some people attempt a cure by opening or trepanning the skull, extracting the bleb, and then closing the parts again: but this operation, however easy to an expert surgeon, is too difficult and dangerous to succeed in the hands of such clumsy operators as are generally employed on such occasions: and six out of seven of

the patients die under their hands. I have cured great numbers of this disorder by a very easy and simple method. I take the sheep by the ears, which I pull violently, and then cut off as close as possible to the head : this is the best remedy I ever tried ; and the trial is never attended with danger. I do not pretend to explain how this effects a cure : it is sufficient for me to assert the fact. Perhaps the violent pulling of the ears may disturb the collection of watery matter ; and the cutting them close to the head may give vent to it by the hæmorrhage which follows of course. Whatever may be the cause, the remedy is pretty sure.

It was by accident I discovered this more perfect cure for the *giddy*. When I lived with my father, one of our lamb-hogs had taken the *turn*. I ordered the shepherd to catch it, that I might cut off the ears. When sheep have this disorder, they will frequently turn round for a long time together, have a stupid heavy look, quit their companions and feed by themselves. You may go very near them before they discover you ; which seems to indicate that they lose their hearing. But as soon as they become sensible of your approach, they will

will run as swift as they did before the disorder seized them. The shepherd went behind to catch it : but the moment the lamb perceived him, it ran away, and continued running for about ten minutes. It was an excellent chace, and afforded fine sport, which I relished highly. The shepherd, who was a famous runner, was terribly enraged against the poor lamb ; and, as soon as he overtook it, began to pull and twirl it most violently round by the ears. As it was at a considerable distance when he caught it, he had full time to gratify his revenge. I immediately cut off the ears, and in two days the lamb was perfectly cured.

I had succeeded pretty well before the time now spoken of, in curing the distemper by only cutting off the ears : but repeated practice has proved to me in the most satisfactory manner, that pulling the ears violently before they are cut off is the best method of ensuring the cure : you may depend upon saving nine out of ten, at least. I have never known this disorder to return after having been once cured.

Those ewes which have or have had this disorder are no worse for breeding, as the lambs do not take the disorder from their dams. The

The *foot-rot* is a disease which will attack numbers at the same time. Sheep, when feeding on a hot sandy soil, are very liable to contract it, from the particles of sand or gravel getting into their feet; as likewise in wet weather, when the grass is long. If one single sheep should be attacked by the disorder, it would be adviseable to separate him immediately from the rest at the time of folding; for, if the shepherd does not use such precaution, he may expect a great part of the flock to be infected by the sheep treading on each other's feet. I had from a gentleman a ram who had the foot-rot, and I was so negligent as to put him in the month of September, with fifty ewes, upon land where I never knew sheep to be troubled with the disease; nor had the ewes been affected before. I had before known that it was contagious, or what shepherds call *smitting*, though I did not suppose it was so dangerous. I thought the worst consequence that possibly could ensue would be the giving me a little trouble: and I am fond of trying experiments. A great number of the ewes caught the disorder: nor could I get them entirely clear the whole year; although I attended them

them closely myself during the progress of their cure. However valuable a tup might be, I would not accept of him as a gift for the purpose of going with ewes, were he troubled with the foot-rot, unless I cured him first.

The method of cure is as follows: Pare the foot with great care, so as not to injure the quick: look narrowly for the gravel, which is often so much inclosed that it is difficult to extract it; and when that happens, the animal will suffer great pain, and speedily decrease in flesh. Where the gravel is, the hoof will be very hard, hot, and dry. In paring the foot, you must be careful not to cut so much as to make it bleed; for that will retard the cure. Take blue vitriol; pound it very fine, and apply it to the part affected. Some use for this purpose the blue vitriol-water, which is easily procured at the chemists' or apothecaries' shops, and is made by dissolving three ounces of blue vitriol, and two ounces of alum, in a pint and a half of vinegar; and afterwards adding two ounces of strong spirit or oil of vitriol, and letting it stand for use. Some use with success, clear spirits or oil of vitriol alone: but, from the violence of this remedy, it must
be

used with the greatest caution. Any strong astringent, such as aquafortis, &c. may likewise be applied with advantage.

Much rain will, no doubt, frequently occasion this distemper, especially if the pasture be of a hot burning nature, and the grass long and luxuriant. The long continued wet opens the pores of the feet and causes them to swell: and, on the return of the hot weather, they are suddenly contracted, and inclose sand and other noxious matters. Indeed what we call by the general term of *foot-rot* differs widely in respect to causes or symptoms; and each variety of the disease requires a different treatment. In some cases, on examining the sheep's foot, you will find it much inflamed between the claws, and a substance something similar to wax inclosed in little bags. To cure this, get a small hook made of strong iron-wire, with a handle; put the hook in the hole which you will find formed by nature: take fast hold of the skin, and pull it towards you, so that you may, with a sharp knife, cut round the hook and take the bleb or matter clean out. Dress the wounds by applying tar with about one sixth part of verdgris, and a little salt, well mixed

mixed together. Take care to rub this composition in between the claws, and it will effect a cure.

The *scab* is a disorder in sheep which is easily cured. It is a cutaneous disease, something like the itch amongst men. If it be of a mild sort, and the cure be attempted in time, tobacco-water (or river-water strongly impregnated by steeping tobacco in it) will remove it, without risk; for, as this lotion is perfectly inoffensive, the sheep may be washed with it without much danger.

If the disease is of the more virulent kind, the cure is performed by an application of the common blue ointment of the shops, which is composed of quicksilver and hog's-lard, in the proportion of two ounces of quicksilver to sixteen ounces of the lard; and may be had, ready made for use, at any chemist, druggist, or apothecary's, as there is generally a large demand for this ointment for other purposes than that of curing the scab in sheep. A pound of the ointment will be sufficient for four sheep. It is very necessary that the greatest caution should be used in applying this ointment, most especially if ewes have lambs
sucking

sucking them : the sucking their mothers and hot weather will bring on or occasion salivation, and prove fatal to the lambs. A friend of mine once had a very heavy loss on salving his ewes at clipping day.

My method is, to lay on the ointment in very small quantities, in sheds four inches asunder, and to rub it into the skin as perfectly as possible.

This ointment in clumsy injudicious hands kills many sheep in hot weather : but I do my sheep lightly over with it at the latter end of every season, at an expence of two-pence per head, to destroy fags and lice. It is a great preserver of wool, whereas mercury-water is apt to clot and spoil it.

There are disorders which are called the *meagrim*s, *rickets*, and *rubbers*. These diseases are supposed by many to arise from breeding from the same sort of sheep a long time together on the same land : but this opinion was fully confuted by Mr. Bakewell ; for he persevered in breeding from one sort of sheep on the same soil, for a considerable number of successive years, without any inconvenience of the kind.

However

However, when sheep are once infected, it is certain that, if the farmer will then persist in breeding from the tainted stock, he will run the risque of losing his whole flock ; for these diseases are undoubtedly hereditary. I therefore advise the farmer, so soon as he perceives the distemper gaining ground, to change the breed ; as no perfect cure has ever, to my knowledge, been performed by any means hitherto employed.

When a sheep is attacked by the *meagrim*s, the symptoms are, cocking his tail like a well-nicked horse : he will canter like a lady's pad ; and if you clap your hand upon his back, he will immediately drop down ; which seems to indicate that the disorder is seated in the back of the animal. *Rickets* are so much like meagrim's, that I have never been able to distinguish the one from the other.

When a sheep has the *rubbers*, it occasions such an itching that, if he can get near a post, a tree, or any thing proper for his purpose, he will rub himself to death—he will neglect his food and fall into a regular decline, and be two or three months dying.

Heavy

Heavy losses have been sustained from the havoc made by the above disorders, which should be carefully guarded against.

When a sheep is attacked by the disorder called the *black-leg*; if he be fat, the sooner you kill him the better; I never knew one cured. You will first perceive a black spot near the stifle joint, and the sheep will become so lame as scarcely to be able to move: this spot generally increases very rapidly, and soon turns to a mortification. I have tried fomentations and many other remedies; but all in vain. I must own that I have never heard a rational explanation given of the cause of this disorder; nor can I account for it. I have sometimes been tempted to attribute the appearance of the disorder to some external injury by a blow: but on reflection I have dropped that opinion: for it cannot be a bruise. It is more probable that it is caused by the bite of some venomous reptile, as it often happens that a number of sheep have it in the same pasture.

Blindness in sheep is a very common disease, and is brought on by a cold falling into the eyes. The most disagreeable consequence ensuing from it is the danger of the sheep's drowning himself,

himself, if there should be a pond or other receptacle for water in the pasture.

What will cure blindness in one animal, will no doubt be good for the eyes of another. I make an ointment with honey and verdigris, called distilled verdigris, finely pounded. I dip a duck's feather in the ointment, and gently apply it to the eye. The feather you make use of cannot be too soft: or, if a skin be formed on the eye, you may put a little of the verdigris into a quill, and blow it on the eye. This disorder will cure of itself, if let alone; but will cause the carcass of the sheep to shrink very much.

The *white skit*, in sucking lambs, is cured by a table spoonful of runnet or yearning put into about half a pint of milk just taken from the cow, and given immediately; that is, before the milk has time to turn into perfect curds and whey, as the cure depends upon the milk getting into the rumen or first stomach before it becomes completely turned. This disorder is the effect of a cold, and generally seizes the lamb about the time he begins to eat plentifully of grass, and to suck less milk.

The

The *green-skit* is another disorder in lambs? If you put a green willow round its neck, it will effect a cure.

To destroy *maukes* in sheep, take two ounces of mercury sublimate pounded, one pint of spirits of turpentine, and one gallon of water : mix the whole well together, and shake it up every time you use it. It is a good way to wash the wool affected in clean water after the maukes are taken out : and, if they have penetrated the skin, rub on the part a little tar, to prevent the mercury from doing injury. After the wool is washed, you must apply some more worm-water, or the flies will strike the part again.

For *fly-beating*, or *galling*, the part must be covered by some means with cloth ; and it is proper to hopple the sheep behind, if it be upon his head, to prevent his scratching. The hopping will not prevent his thriving.

SECTION XXXV.

The proper Time for putting the Ram to the Ewes; with the Method of treating the Ewes when Lambing.

THE best time for putting the ram to the ewes is about the tenth of October: if for early fat lambs, the beginning of September, when they have only grass to feed on. The space of five weeks is a sufficient time for the ram to remain with the ewes

When ewes seem ready to yean their lambs, great caution should be used by the shepherd. He should not be over-forward in giving them assistance, but suffer nature to complete her work. Much damage has arisen from impatience or hastiness of temper on such occasions: I therefore recommend the waiting with coolness the proper time. Circumstances sometimes arise, where help may be necessary, but nature will act sufficiently her own part ninety-nine times in the hundred.

If an ewe gives ill from lambing, I always found spirits of turpentine applied to the part, and good nursing with caudles, &c. to be the best remedies.

SECTION

S E C T I O N XXXVI.

Sheep-Shearing: Reasons why the Time should vary according to Situation.

IN situations near woods, which commonly abound with flies, those galling enemies to new-shorn sheep, they should be clipped the beginning of June.

But in open countries, downs, or marshes it is advisable to clip late; for there they will not be much in danger of being galled by those flies which so cruelly infest them near woods or thick hedges; and as great part of the sheep may be intended to be made fat and sold that season, by clipping late you obtain a greater quantity of wool. The hot weather occasions wool to grow fast from the free circulation of the natural oil; and July, in my opinion, will be early enough to commence shearing in the last-mentioned situations.

SECTION XXXVII.

Method of treating Sheep before Shearing, by Washing the Wool: Reasons why they should go a certain Time in the Wool between Washing and Shearing.

SHEEP should be washed ten days at least, and not more than fourteen days before clipping; the sheep are not suffered to rest at least ten days between the washing and clipping of them, the wool will not have recovered the natural oil which has been expelled or squeezed out together with the filth in washing; and it will be dry and hask. Although the wool, if clipped wet, would, when first taken from the sheep, weigh more than if clipped dry; yet, after keeping it a little, you will find it considerably lighter than what has been taken off the sheep dry. A fleece shorn wet will soon diminish in weight: one taken off dry will not. The reason is obvious—The water which the wool imbibes by washing, soon evaporates; water being an heterogeneous intruder, and soon expelled; whilst oil, one of the component principles of wool, obstinately retains its natural situation.

If

If you suffer sheep to go longer than fourteen days between washing and clipping, the wool will be liable to receive injury by dirt or filth; which will diminish the value, though it may add to the immediate weight. It will be of advantage to house the sheep the night before clipping; they will then sweat much, and rub against each other; which will not only add weight to the wool, but also soften it, give it a finer appearance, and absolutely render it better. However some men may despise these *niceties* (as they may term them), they will find their account by practising them.

Provide yourself with a bottle of spirits of turpentine; and if the shearer snip the skin in shearing, twist a bit of wool round a stick, which dip in the bottle, and dab on the wound. Apply then a small quantity of tar to the part, which will keep off the flies, and turn the rain. The lambs, four or five days after their mothers are clipped, will be found to have the fags and lice. These vermine may be destroyed by a lotion composed of arsenic mixed up with water and soft soap. The following is a recipe for making the lotion: Two pounds of arsenic boiled in a small quantity of water, which
after-

afterwards may be increased to the quantity of twenty gallons by adding so much more water. In this mixture dissolve two pounds of soft soap: you then will have stuff sufficient to wash a number of lambs. The readiest method is to put it in a tub large enough to contain a lamb: and the shepherd must have an assistant; for one person must lay hold of the fore legs of the lamb, and with the other hand take hold of the crown of the head; as the head must on no account be immersed in the wash, since swallowing a very small portion would inevitably poison the lamb. Let the assistant take hold of the hind legs, and in this manner dip the lamb, which need not remain longer in the tub than is sufficient to wet his wool. An empty tub must be at hand, to let the lamb stand in to drain the water from the wool, or he would carry away a great quantity of superfluous water with him. When the lamb is placed in the tub to drain, the men must with their hands wring the wool, to force out the wet. The tub last mentioned must be frequently emptied.

SECTION XXXVIII.

Description of a Ram proper to get the best Stock.

THOSE who wish to reap great profit by breeding, should bestow a particular attention in the choice of a ram: for by a good choice their wish is most likely to be gratified; by a bad choice, they at best are sure to receive little emolument, and perhaps may suffer great loss.

The male animal communicates his good or bad qualities to his offspring. To prove this, I have tried many experiments with swine and dogs. By putting to a long-eared sow, first a long-eared lean boar of the same kind, and then a tunky short-eared one, I have procured at the same litter two species of pigs, which, though all suckled together and kept alike, ever after remained dissimilar and distinct: those by the short-eared boar fattened with as little keep as I ever saw: the others by the long-eared sire were lean, and could not
be

be made fat without a very large quantity of food.

Respecting the produce of the above sow, it proves that when a sow is brimmed by one boar, if you send her to another, she will in all probability have more pigs. This sow had twelve pigs, ten long-eared white ones, and two tunky black ones. The sow was white and long-eared; the boar the same. The tunky boar was black. A man who has but one sow, and is desirous to have some roasting pigs, some of a small kind for pork, and some of a large kind for profit, may in all probability have them at the same litter. As a sow gives more milk the first month than afterwards; it would do well to kill a few pigs off at the expiration of that time: the sow would rear the remainder better, and at less expence. And if two sows are kept instead of one, the roasting-pigs would nearly be clear gain.

With grey-hounds I have made similar trials. A very middling bitch, if put to a capital dog, breeds a good-running dog: but put the best bitch to a bad-running dog, the whelps will be good for little or nothing. It is my opinion,

opinion, that race-horses are the easiest to breed of any, as the male and female are so sufficiently tried that they cannot vary much. There are no general rules without exceptions ; but fewer in the following than any—" Like " get like."

To choose a proper ram, it will be of advantage to keep in mind what has already been said in describing the best sort of sheep, and to remember the Dishley, new Leicester or Bakewell ram: all sheep, whether you breed them large or small, for forest or pasture, ought to be of that make.

His back or upper part should be like the top part of a tortoise ; his head small, and his back broad. He should be broad in his breast, round in his ribs, wide in his hind quarters, let down low in his twist. His tail should stand low ; so that the fat of his cushion will descend farther down into his leg towards the shank. His bone must be small, his eye quick. As to size, every one must judge for himself, and select him according to the purpose he may want him for. I recommend to keep a sheep within some moderate compass ; for when you make an attempt for a larger size, you

you will get more bone, and inevitably lose so much fat or thrift; and, as you will lose it gradually, you may go too far in increasing the bulk of your sheep, before you perceive it: and thrift in all animals intended to be fattened, is the object which should be most carefully attended to.

Let the sort of wool be according to the intended situation; for I am of opinion, that every sort of wool may be grown on one sort of flesh; and there are good and bad-fleshed animals of all descriptions.

Rams of different ages have been recommended by many different persons: I have tried them from one year to ten years old, and never found any material difference in the stock in respect to quality; but in quantity I certainly have. It may easily be supposed that a ram two or three years old will get more stock than one ten years old. The proper number of ewes for a shearling ram is from fifty to sixty. I have turned a two-shear ram to nine score of ewes, and of that number only five missed. I had that tup from Mr. Chaplin; my men called him the Grand Seigneur: but I question whether his
 Sublime

Sublime Highness made such effectual use of his seraglio.

After all, I must own that I do not approve of any ram being put with more than six score of ewes: it is, in my opinion, as many as any one ought to have. If he is a valuable ram, he should be allowed a *teazer*, sufficiently secured to prevent mischief, and the ewes should be put to him in a proper place.

S E C T I O N XXXIX.

Forest Sheep, and the Improvement that Kind are capable of.

FOREST sheep should not intermix so as to cross the breed, but be kept to their own kind; for many reasons—their wonderful agility in leaping from rock to rock, their activity and speed in search of food, that wonderful instinct they are endowed with by nature, in lying down in such places as the snow shall not drift over them: a caution so absolutely necessary to sheep in mountainous parts. The Dishley sheep are the reverse of the forest sort; for though the Dishley with great care and good food are so very profitable, yet are they
the

the most tender sheep I ever knew. They are starved if the least neglected : they soon become fat in good keep, but poor with indifference.

If you choose to cross the breed of forest sheep with the Dishley, draw a few of the best into an inclosed pasture, and put your favourite ram to them. This will be found the surest and best method to improve them ; but I do not think it would answer to stock the mountains with sheep so bred : they would require more care and attention than could be there given them.

S E C T I O N XL.

Description of Fold-yards : Necessity of a Receptacle for the Juices which drain from the Fold-yard ; and the best method of applying the same.

THE fold-yard ought to be so situated amongst the buildings, as easily to receive every sort of manure : which the pigs by rooting and turning it over continually will thoroughly intermix. The cattle will eat much of the litter which is thrown out from the
herse-

horse-stables, which always contains small quantities of hay wasted by the horses, and at times a little corn and other matters, which by this management will turn to the farmer's profit in a greater degree than if the same quantity of such hay had been taken from the stack, and immediately spread in the fold-yard; as the cattle in this case eat a great deal of the horse-dung or refuse straw along with it. The fold-yard should be nearly level, with a small inclination or slope towards the receptacle or reservoir.

I cannot approve of the management of those who would give the fold-yard the form of the inside of a bowl: in such a concavity, the cattle on the approach of winter would starve by lying so much in wet: neither would the manure be so soon fit for use; for the materials it is composed of, if constantly covered with water, would scarcely ever rot. Any man may satisfy himself of the truth of this assertion, by immersing manure in water and keeping it constantly covered.—A singular proof of this happened not many years since in the vicinity of London. In sinking a well at Tottenham Court, on the estate of the late lord

lord Southampton, at about eighteen feet from the surface the workmen dug into something soft, which, upon being sent up in the bucket, was found to contain the paunch or *rumen* of an animal, with a quantity of undigested hay, to all appearance as if it had been chewed but a few hours before. On further search, the horns of the cow and part of the head with the hair on, were separated by the axe and spade. Incredible as it may seem, the whole appeared as fresh as if they had been recently deposited; though afterwards proved to have lain there upwards of forty years. Upon enquiry, it was discovered that the identical spot had been a large pit, or pond of water, into which at the time of the great distemper amongst the horned cattle a neighbouring cow-keeper, who then rented the place, had thrown a great number of cows which had died of it. The pond afterwards was filled up, chiefly by rubbish from London; and it is almost unnecessary to add, that the present proprietor immediately had the well closed again.

The fold-yard, then, should have a small declination or slope from where the rain falls from the buildings, and in general from every

other part of the premisses, so that the refuse of the house, and all other washings, may gently ooze into the reservoir or common receptacle. If the fold-yard is paved, one inch drip in twelve feet will be found to be sufficient.

The reservoir must be made sufficiently capacious and deep enough to receive a quantity of roots, corn-stubble, earth from different soils, &c. which will imbibe the juices as they gradually ooze in, and form a matter that, when taken out, will ferment strongly, and in this manner be worked into a good compost very little inferior to the fold-manure. By using this compost (as prescribed in the Method of making Fallows) at the latter end of the year, or so soon as harvest is over, the farmer will reap more benefit than at first he will think possible. He will raise a dunghill from the greatest nuisances; for what can be more injurious to land than the roots of stubble, which, like wood, rob the soil of nourishment, and keep the parts from adhering sufficiently close to assist vegetation in the ensuing crop.

It is not enough to make the reservoir sufficiently large: the bottom of it must be
well

well rammed in with stiff clay to such a thickness as to retain the juices, and not suffer the fine parts to drain away. The liquor or juice retained in the reservoir too soon and readily evaporates, and is lost when thrown on the land in its natural state. The farmer therefore will be careful to have all the parts well worked together into one body, as directed above.

SECTION XLI.

Reasons why Stall-feeding in Summer ought to be practised, from Tares, Clover-grass, Cabbage, &c.

STALL-FEEDING horses for the plough, &c. has already been recommended in Section XIV. p. 97 ; where I mentioned the uses of clover : but fold-feeding cattle, pigs, foals, in summer, and some other circumstances were not sufficiently noticed. From stall-feeding in summer the farmer may derive great assistance towards improving his land ; as abundance of the best kind of manure may be made by
cattle

cattle of all kinds eating green fodder in folds, or stalls: and I am firmly of opinion that beasts intended for the slaughter-house will fatten much quicker by stall-feeding; as, in the heat of summer, the flies disturb their rest, make them uneasy, and occasion them to run about continually; which must prevent their becoming fat.

Hunters and race-horses would, from the quantity of meat they eat, be as fat as pigs, if exercise did not keep them down. It would be singular to see an Irish labourer, accustomed daily to run up and down a ladder four stories high, over-loaded with flesh: a fat alderman is not a very great curiosity. Therefore, were cattle tied up, and suffered to enjoy rest, by eating their food in peace, they would feed more heartily, and the mown food would not be liable to be spoiled by dunging or stalling upon it; which must happen to a considerable part when cattle feed in the field.

Red-clover, if intended for horses to feed upon, should be brought into the fold-yard or stable; as animals of weight by treading upon a plant of such a pulpy nature will spoil much more than they eat. To be convinced of this,

let

let the *old* farmer put four horses upon an acre of clover to depasture it, and let him keep an account of the number of days the piece keeps the four horses. Then let him keep the same number of horses in the stable, and feed them with the clover mown from a field of the same extent. He will find the horses which have depastured to have destroyed three times as much with their feet as with their mouths—besides the loss of that manure which they would have made by being fed in the stall or fold.

We will now consider the objections commonly made against stall-feeding. The first will be, that clover is not fit to cut so early as it is to depasture. The second objection is the trouble of cutting and fetching it home. The first objection I allow—it is a real inconvenience; as the month's keeping in May is of great value: but if we, the preceding year, make into hay a proportion sufficient for that month or until the clover gets strong enough to mow, the difficulty is got over.

To the second objection I say, that the trouble of fetching home the clover is little more than that of driving the horses to and from
the

the close where it grows: and if you feed them in the fold, you will not be under the necessity of fetching them a mile or two when you rise to your labour in the morning, nor of taking them the same distance in the evening.

I have frequently mentioned cutting wheat-straw with the clover; and I do most earnestly recommend the practice with every kind of green food for the reasons already stated, and on account of the great saving which the farmer will find by the use. I likewise advise to give the horses which eat green food their corn late in the evening: the last thing you do before you go to bed. If you give it in the morning, and then immediately go to work, the corn quickly passes without contributing to their support by proper digestion.

From the refuse of the green fodder, with a small addition of other food, a number of pigs may be kept; and they would increase the manure-hill.

In respect to foals, they might not possibly do so well with this management: but if they are put in the stall for the day, and well fed and let out for the night in some pasture, they would add to the dunghill, and thrive much better

better than if (as they frequently are) either standing in a pond of water the whole day, or under some tree, stamping their manure, to no use. If they drop it in the pond, it is totally lost. Let the farmer calculate the damage done to grafs by cattle trampling upon and bruising the very roots, and he will soon give the preference to stall-feeding.

Feeding with cabbages is rather a new plan, but I am of opinion it will soon be generally practised. They afford abundance of good food in summer : and, as they may be cut two or three times, great profit must undoubtedly arise from the use of them. The expence of raising cabbages is not great.

S E C T I O N XLII.

Use of a Fold in Winter to turn Stall-fed Cattle in.

STALL-FED cattle without doubt would thrive better to have their liberty a few hours in the middle of the day ; for by continually standing in one posture the animals are prevented from indulging themselves, and rubbing

bing their hides, in which they take particular delight; they feel uncomfortable and cannot sleep easy, and this will prevent their feeding freely. Constantly breathing in the same crib or trough makes the place unpleasant to the beasts: a free uncontaminated air is as necessary to them as to men.

Most of us know what effect foul air has upon the human frame, and but few are ignorant of the bad and often fatal consequences of it to cattle: their breath, however naturally sweet, may become very strong from the nature of the food they take, such as turnips, cabbages, linseed-cakes, &c. which, without a sufficient circulation of air, will fill the whole place with a putrid steam highly noxious to beasts and man.

I observed the cow-keepers in the vicinity of London, who in general keep a very great number, make it a constant practice to turn their cows after milking into a cold and dirty layer, or fold as we call it. Being a brewer, and keeping cows myself, which were fed nearly as those in the neighbourhood of London are, I tried the method, and was soon convinced of the utility of it. For, having made partic-
ular

ular inquiries of the servant who fed my cows, I learnt that several at one time seemed to loathe their food, that in general they did not appear to have very good appetites, and that some would not eat their grains for some days together. On my adopting the custom of turning them out for six hours in the day-time, the cows soon began to appear healthy and to fatten apace, and were never off their appetite.

With grains mixed with cut straw I have fed cows to be very good beef; and have milked them to the day on which they were killed.

I have found it an excellent method to give chopped straw to beasts with all kinds of rich food; as it is more pleasant to their palates, makes them ruminate more, promotes a regular digestion, and prevents the too quick passing of the moist or juicy food through the intestines.

SECTION XLIII.

Method of treating Horses for Husbandry in Winter, on a much better and cheaper Plan than is usually practised.

HERE again cut straw will be found of infinite use, and save many loads of hay. Although hay, in some parts of the kingdom distant from a market, may not be frequently offered for sale, and consequently the farmer not set so high a value upon it; yet if he kept a regular account of what hay is eaten by his horses during the winter, and charged the cost and trouble of making and harvesting it, and the rent of the land, he would find them a serious and heavy expence; as will be more fully explained in Section XLVI.

I am of opinion, that in London, where hay is generally dear, it is the most expensive thing to feed a horse with. I knew a stable-keeper of eminence, who was of the same opinion: he always said hay was dearer than corn; and as he dealt largely in both, he was likely to know something of the matter. I have always found it to be so.

I have

I have tried experiments to keep horses upon grains, potatoes, ground corn, bran, malt-combs, carrots, &c.; but never found any thing so cheap as chopped straw. During the winter 1795 and 1796, I did not suffer one of the nine horses I kept for the use of my brewery to eat any hay whatever. I kept two saddle-horses, which at times were ridden hard, and were never free from fair work (for I do not like man or beast to be idle); the principal part of their food was likewise chopped straw, with a regular quantity of corn. I set apart for this purpose the produce of six acres of wheat *scouge*, or wheat straw lashed. I set a man to thrash some of the straw over again, by way of seeing how much wheat would be consumed in the straw. He was two days on this business: but the wheat he got out was worth no more than the cost of three day's labour. I must also acknowledge that the wheat in this straw had a great deal of the fuzzball or smut, and for that reason was not thrashed, but *lashed*, lest the flail should bruise the fuzzballs, and turn all the wheat black. Wheat at the time was eight shillings per bushel. I therefore saved the wheat-straw, and added six acres of Tartarian oats, which were remarkably long, six feet up-

on

on an average. This quantity of oats and wheat-scouge served my nine horses from the middle of September 1795, to the month of June 1796, without any rack-meat or grafs. In the month of June the nine draught horses were turned out to grafs, during night.

It is to be observed here, that I do not speak of chopped straw as a substitute for corn: but I mean that it may well supply the place of hay; and in such respect will be found a great saving even for the greatest part of the summer.

The two saddle-horses were not much in the stable in the summer; and the six acres of each sort, as just mentioned, besides producing food for my nine draught-horses, and some given to cows, fed my saddle-horses likewise until harvest, and for a month afterwards: the whole being a period of thirteen months. Some of the wheat-scouge was left. It is to be noticed, that during the summer months I had grafs mowed, which was mixed with the cut straw.

Now, let the farmer compare this method in point of expence with that which he has been accustomed to; or let him attend to the calculation of expence of my own for one or two years prior to the time I have been speaking

speaking of. I charge the same number of horses with the rent of a close, for which I pay	£. 28	7	0
Tythe	1	7	0
Expences of harvesting at 5 s. per acre	2	5	0
	<hr/>		
	£. 31	19	0

If the eddish pays the assessments of different kinds, it is as much as can be expected. I then bought not less than forty pounds worth of hay, exclusive of the expences enumerated. The weekly allowances of corn were two quarters of oats and nine bushels of beans. Next winter when I used chopped straw, I stinted them to a shorter allowance of six bushels of beans, and dropped the use of oats. For six successive weeks I gave them potatoes: but, having found one horse dead in the stable, and in a few days another very ill, I dropped the use of that kind of food: though I am still in doubt whether the potatoes were the cause of his death. As horses are remarkably fond of the root, my man might perhaps give them too great a quantity.

The

The horse which was found dead seemed to have died without pain. He had eaten up all the food given him over night. The men left the stable at nine o'clock in the evening, and, at their return next morning before six, found him lying in such a posture, that they thought him only sleeping: he had not in the least disturbed his litter, which he must have done had he struggled.

I will now state the difference in respect to keep for two winters.

Expences according to the Old Method.

	£.	s.	d.
To hay	71	19	0
2 Quarters of oats weekly—			
104 quarters, at 1 <i>l.</i> 10 <i>s.</i>	156	0	0
9 Bushels of beans weekly—			
486 bushels, at 6 <i>s.</i>	140	8	0
	<hr/>		
	£.368	7	0
	<hr/>		

Expences.

Expences according to the Improved Method.

	£.	s.	d.
To six acres of wheat-scouge at 2 <i>l.</i> 2 <i>s.</i> per acre	12	12	0
Allowing 1 <i>l.</i> 1 <i>s.</i> per acre for the wheat, which is by far more than it is worth, as many farmers would not have accepted of it for thrashing	6	6	0
Six acres of oats, at 10 <i>l.</i> 10 <i>s.</i> per acre	63	0	0
Cutting straw; one man, fifty-two weeks, at 12 <i>s.</i> per week	31	4	0
Six bushels of beans for fifty-two weeks, at 6 <i>s.</i>	93	12	0
	<hr/>		
The sum total	£.206	14	0

	£.	s.	d.
First method	368	7	0
Improved ditto	206	14	0
Balance in favour of ————— the Improved Method	161	13	0
	<hr/>		
	£.368	7	0
	<hr/>		
	The		

The work of the horses was nearly the same each winter. Twice in every week six of the nine were used to go from Doncaster to Sheffield with a waggon loaded with about 800 gallons of ale. The weight of the waggon and ale exceeded six tons; consequently each horse had full one ton to draw for his share. The distance between Doncaster and Sheffield is eighteen miles, which made in the aggregate seventy-two miles per week; but they frequently had to go a mile beyond Sheffield.

The journey to Sheffield and returning home took up most commonly 22 hours: the spare days they were employed either going out with ale, or at plough. I could perceive no difference in respect to the condition of the horses between the years they were fed according to the first method, and those they were fed, according to the improved method, with straw, &c. They performed their work well each year; and they certainly had enough to do.

It may not be unnecessary to observe, that great part of those winters in which the horses were fed with straw, each horse worked his dray, which weighed about twenty-two hundred

dred weight : but I found this hurt the horses' backs very much, and therefore gave it up.

In the year 1793, I erected a mill for the purpose of grinding oats and beans for my horses. But I was much disappointed : for, contrary to my expectations, I found this to be the worst of all methods; though I persevered in it for some time, thinking it might answer in the end. At first I gave the number of horses before mentioned two quarters of oats and nine bushels of beans a-week, only a little broken: they soon lost their flesh. I then had both oats and beans ground to meal : but the horses appeared worse. Suspecting that the men possibly might rob the creatures of their corn, I rose early and attended them whilst eating their corn, both morning and evening : but, in spite of all my vigilance, they continued decreasing in flesh. Still I thought it impossible the corn should become worse by being ground. My men, however, did not like the trouble of grinding : and as at the time we were much hurried with business, they sometimes neglected it, and at length gave it up entirely ; which I was not sorry for. I was really ashamed of this scheme;

for it had cost me upwards of twenty pounds to erect the mill. I do not here estimate the value of the power given to the mill-work, as that part was made already for the brewery.

I could not in any manner satisfactorily explain to myself why corn should be so much worse for grinding; but I saw, a short time after, another proof that it really is so. I had occasion to go a journey; and, the weather being fine, I got upon the box with the stage-coachman. He had a pair of very fine leaders in excellent condition, which I took notice of and praised: but the coachman said, I should see them so tired before they got to the end of the stage, that he should be hardly able to whip them on. I expressed my surprise at this, as it was but a fifteen miles stage, and asked him whether his horses were *soft*. He replied, No; it was the fault of his master, who had bought a quantity of bran, and mixed it with ground oats and beans; which food made the horses so weak, that in such hot weather as we then had they could scarcely crawl after they had gone three or four miles. "You will presently see them," added the man, "in such a miserably relaxed condition, they will
be

be as white as your shirt, and sweat in such a manner as to make one pity them." The corroborating evidence of the coachman convinced me of the cause of my horses looking so bad: but, being desirous of hearing whether the coachman was capable of giving any reason for his assertions, I told him, I always understood that it was best to feed horses with ground corn. "Then you understood wrong, master," said he; "for I know my horses have been much weaker since they have been so fed." "But," said I, "probably they have less now than when they fed upon unground corn." He replied. "No; for they have all they will eat." As this man had spent his life amongst horses, in his youth was brought up in the stable, afterwards a post-boy, and then a coachman, I had the curiosity to enquire of him how the different masters he had lived with used to keep their horses. Amongst the number he mentioned, there was one who made use of chopped straw, with one third of saintfoin and beans, but no oats; and whose horses performed their work better and were stronger than any others he had ever met with. He said, that for middle-aged horses the beans were not
split;

split; but for the very old, or the very young, they were, and that the harder the beans the better. The quantity of beans given with the saintfoin and straw appeared very scanty to me; but the coachman assured me they were fully sufficient.

I am now convinced that ground corn is not proper to be given to working horses. If a horse stands in the stable, he will fatten on bran, which will not support him if he has common exercise, as his carcase will soon show. A horse will fatten sooner at grass in a good pasture, than in a stable on the best of corn; but in the latter he acquires a firm hard flesh which will bear work; and in the former only a washey soft flesh, which diminishes with trifling exercise. In short, a horse that stands in the stable to be *made up*, will fatten with almost any thing. I have tried carrots, potatoes, bran-paste, &c. but the great desideratum is to keep working horses well and cheap; and, in thirty years' experience, I never yet have found any thing equal to chopped straw with corn.

I have tried beans in the straw; and excellent food they yield after Candlemas. Peas
are

are improper ; for pea-straw is so crooked as to prevent the cutting it short enough, and the horses will throw it out with their noses.

Great part of the savings arising from the use of wheat-straw depends much upon the man who cuts the straw, and him who gives it to the horses. For, if the man who serves the horses will not give them a little at a time ; but, on the contrary to save himself trouble, throws in one skuttlefull after another, and continually keeps the manger full, the horse in that case will not thrive, and, instead of saving, the food recommended will prove expensive. If a small quantity at a time were thrown in, the horse would be enticed to feed ; and chopped straw, mixed as before directed, would be found to answer every purpose.

Let the horse continually have a clean manger. When he first comes into the stable, he will eat the straw greedily by itself, if you put but a small quantity in : when you find he begins to tire of straw, give him a few beans with it ; always taking care to deal out with a very sparing hand, until he is full enough ; which is easily known to an observing feeder.

In my opinion, if to a quick-feeding hungry horse

horse you were to spread a quartern of oats with an equal quantity of chopped straw, over the bottom of the manger, in such a manner that he must take some time in licking them up, and be obliged of course to chew every oat; it would answer the purpose of twice the quantity of the same corn thrown into the manger on a heap. For, in the latter instance he would swallow the oats whole, and they would pass through him without being properly digested. Chopped straw is good for making a horse chew and take pains with his food; and I insist upon it, that he will thrive better on it than on any quantity of corn and hay from natural grass, given in the usual manner. Some horses will eat this kind of food still better if it be watered in a tub, before you put it in the manger.

If you take a horse out of a grass field in the morning, and give him, according to the custom of most farmers, a feed of corn, and immediately afterwards ride or plough with him, or give him any fatiguing or hard exercise, the corn will be of little use, as it will quickly pass off with his grass. But, if you with more judgment give him the same quantity

quantity of corn over-night, it will then, from the inactivity of the animal, have time to digest in his stomach.

SECTION XLIV.

Method of Soiling horses for Husbandry; and the great advantage arising therefrom in Summer.

WE have repeatedly taken pains to inculcate the advantage of using chopped straw: and in no one instance will the farmer find it more highly beneficial than in mixing full half straw cut with the green fodder. It is as bread to meat with human beings; it imbibes the redundant juices of the green food, attenuates the viscosity of the humours in the body, promotes the circulation, and the discharge of noxious and excrementitious matter, and affords a most wholesome nourishment to the horse, as the sleekness of his coat will bear witness.

Soiling a horse with green food only is very apt to engender corrupt humours in the stomach,

mach, and renders the animal too laxative to support any hard work or violent exercise : such food passes suddenly through the horse ; and this crudity is most erroneously termed quick digestion, not knowing that digestion means the dissolution of the food so minutely as to enable it to enter the vessels and circulate with the mass of blood.

A horse will eat any sort of grass, when mown and laid before him in the stable or fold. The bent left in pastures where oxen and sheep feed, would thus feed a number of horses ; as likewise the grass and weeds under trees or hedges. Some tether a horse in those places : this is better than not eating the grass at all. But nothing is so good as mowing ; as by that means the horse makes manure, and the grass grows finer. On the contrary the part on which the horse is tethered, gets coarser and coarser ; for he deposits all his urine and dung upon the very spot of ground where he ought not. Road-sides, and all places where weeds and small quantity of grass grow, are worth mowing, were it only for making manure.—Indeed, weeds in highways ought always

ways to be cut down, to prevent the seeds shaking; for thistle-seed will blow for miles. There are in some fields near London more thistles than corn, from neglecting, I suppose, to destroy them before the seed ripens. If the above cautions were attended to, there would be no want of manure in places where the produce of the land is consumed upon the farm.

There are many other advantages attending the foiling horses in the stable: but as they have been frequently spoken of in this work, it is needless to say more here.

SECTION XLV.

Observations made by the Author in valuing Estimates for different Gentlemen, describing the Old and New System of Husbandry: with Debtor and Creditor Account: the great Advantage of the New System, in many instances from 50 to 100 per cent.

MY first observation is upon a tillage farm in the neighbourhood of Doncaster, consisting of 139 acres. I shall first describe the management, and next the method which ought to be pursued. To make each as clear as possible, I lay down the following debtor and creditor account, beginning with the Old System.

Rotation of Crops used under the Old System.

Dr. to EXPENCE\$. Cr. by PRODUCE.

<i>£. s. d.</i>	<i>£. s. d.</i>
To 23 acres wheat, ploughing, sowing, &c. at 7s. per acre - - - - 8 1 0	Wheat, 23 acres, at 7 loads per acre, at 18s. per load - - - 144 18 0
Seed, 23 loads, at 18s. per load - 20 14 0	Barley, 9 ditto, at 4 qrs. per acre at 25s. per quarter 45 0 0
Reaping, leading, &c. at 10s. per acre - - - 11 10 0	Oats, 23 ditto, at 4 qrs. per acre at 12s. per quarter 55 4 0
<hr/> 40 5 0	<hr/> 245 2 0

<i>Dr. to EXPENCES.</i>			<i>Cr. by PRODUCE.</i>		
	£.	s. d.		£.	s. d.
Brought over	40	5 0	Brought over	245	2 0
Thrashing, dressing, 161 loads;			Beans $4\frac{1}{2}$ ditto, at		
at 1s. per load	- 8	1 0	3 ditto per acre,		
Mowing stubble			at 24s. per qr. -	16	4 0
3s. per acre -	- 3	9 0	$59\frac{1}{2}$ ac. under plough		
9 acres of barley,			20 in fallow		
ploughing, &c.			$59\frac{1}{2}$ in grass		
at 7s. per acre	- 3	3 0	139 total quant. of acres,		
Seed, 4 quar. 4 bush.					
at 25s. per quar.	5	12 6	$59\frac{1}{2}$ acres straw, &c.		
Reaping, leading,			at 1l. per acre -	59	10 0
&c. at 8s.			12 ditto hay, at 1		
per acre -	- 3	12 0	ton per acre, 4l.		
Thrashing, &c.			per ton -	48	0 0
36 qrs. at 1s. 6d.			Profit on 5 cows,		
per qr. -	- 2	14 0	at 5l. 5s. per cow	26	5 0
23 acres oats,			Profit a bull makes		
ploughing, &c. at			per annum -	5	5 0
7s. per acre	8	1 0	9 wethers -	18	0 0
Seed, 14 qrs. 3 bush.			20 fat lambs -	15	0 0
at 12s. per qr. -	8	12 6	Wool, 30 fleeces,		
Reaping, leading,			at 3s. each -	4	10 0
&c. at 6s. per acre	6	18 0	1 horse (suppose)		
Thrashing, &c. 92			fold in 2 years,		
qrs. at 1s. per qr.	4	12 0	will be the half of		
$4\frac{1}{2}$ acres of beans,			a horse in this		
ploughing, &c. at			year's profits -	8	0 0
7s. per acre -	1	11 6	Pigs -	5	0 0
Seed, 2 qrs. 2 bush-					
els, at 24s. per					
quar. -	- 2	14 0			
Reaping, &c. at					
8s. per acre -	1	16 0			
12 acres hay, har-					
vesting, at 5s. per					
acre -	3	0 0			
	£ 104	1 6		£ 450	16 0

	£.	s.	d.		£.	s.	d.
Brought over	104	1	6	Brought over,	450	16	0
20 acres fallow,							
four times plough-							
ing, &c. at 5s. 6d.							
per acre - -	22	0	0				
142 loads of manure							
at 8s. per load -	56	16	0				
Rent - - -	110	0	0				
Assessments, at 5s	27	10	0				
	320	7	6				
	130	8	6				
	450	16	0				

Errors excepted. £450 16 0

Rotation of Crops under the New System.

Dr. to EXPENCES.

Cr. by PRODUCE.

	£.	s.	d.		£.	s.	d.
20 Acres in Turnip				20 acres turnips,			
Fallow.				at 4l. per acre	80	0	0
2 ploughings, &c.				20 ditto wheat,			
carrying twitch				8 loads per acre			
off, &c. at 7s. each	14	0	0	18s. per load	144	0	0
6 loads manure per				20 ditto peas, at			
acre, leading on,				12 loads per do.			
&c. 8s. per load	48	0	0	12s. per load	144	0	0
Drilling at 2s. 6d.				20 ditto barley, at			
per acre - -	2	10	0	4 qrs. per ditto,			
Seed, 6d. per acre	0	10	0	25s. per qr. -	100	0	0
Hoeing, and 3 times				20 ditto clover, at			
ploughing, 2s. each				2 ton per ditto,			
time per acre -	6	0	0	4l. per ton -	160	0	0
20 Acres Wheat Crop.				20 ditto wheat, at			
Ploughing, sowing,				8 loads per ditto,			
&c. 7s. per acre -	7	0	0	18s. per load -	144	0	0
Seed, 20 loads, 18s.				80 acres straw,			
per load - -	18	0	0	20s. per acre -	80	0	0
	£ 96	0	0		£ 852	0	0

	£.	s.	d.
Brought over,	96	0	0
Reaping and leading, 10s. per acre - - -	10	0	0
160 loads thrashing, &c. 1s. per load - - -	8	0	0
Stubble mowing, &c. 3s. per acre,	3	0	0
20 Acres Peas Crop.			
Ploughing, harrowing, &c. twice, 7s. per acre each -	14	0	0
Seed 10 quarters, at 32s. per quarter	16	0	0
Drill. 2s. 6d. per acre - - -	2	10	0
4 loads manure per acre, leading, &c. at 8s per load -	32	0	0
3 ploughings per ac. 1s. 6d. per ac. each	4	10	0
Reaping and thrashing 240 loads, at 8d. per load	8	0	0
20 Acres Barley Crop.			
Ploughing, &c. and sowing, 7s. per ac.	7	0	0
Seed, 4 bush. per ac. at 25s. per qr.	12	10	0
Clover-feed, 14lb. trefoil, 6lb.	8	10	0
Reaping and leading, at 8s. per ac.	8	0	0
Thrashing, &c. 30 qrs, 1s. 6d. per qr.	6	0	0
	£ 236	0	0

	£.	s.	d.
Brought over.	852	0	0
Profit brought from account of 10 acres managed according to New System			
See p. 216 -	80	0	0

£ 932 0 0

	£.	s.	d.		£.	s.	d.
Brought over -	236	0	0	Brought over -	932	0	0
20 Acres Clover- Grass.							
6 loads manure per ac. 8s. per load	48	0	0				
Mowing, &c. twice, 6s. per acre	12	0	0				
20 Acres Wheat Crop.							
Ploughing, sowing, &c. 7s. per acre	7	0	0				
Seed, 20 loads, 18s. per load	18	0	0				
Reaping and lead- ing, 10s. per ac.	10	0	0				
Thrashing, &c. at 1s. per load	8	0	0				
Stubble mowing 3s. per acre	3	0	0				
Rent and assess- ments	137	10	0				
	479	10	0				
Profit - =	452	10	0		£932	0	0
	£ 932	0	0	Errors excepted.			

We will suppose the farm-houses, barns, and buildings in general, together with the fences on the whole farm, to occupy by ad-measurement nine acres of land. There will then remain ten acres for support of the cows, horses, &c. The best method to make the ten acres answer that purpose will be to sow three and a half of them with winter tares;

two

two and a half with summer cabbages, and potatoes under them ; and the remaining four with spring tares : or you may sow part of them with buck-wheat. I mean those ten acres to supply the place of the $59\frac{1}{2}$ acres allowed for the same use in the Old System, always supposing in both cases that the buildings, fences, &c. take up nine acres.

These ten acres will most certainly cost something tilling and managing : but, if carefully looked after, they will maintain forty head of cattle and horses in summer, with the assistance of chopped straw, as before described : and the farmer will have one hundred and twenty acres of straw, clover, &c. where he had before in the old method only fifty-nine and a half ; and he may be certain that every crop by this management will be more bulky, and his quantity of manure continually increase by keeping forty head of cattle and horses in the fold, winter and summer, not to mention pigs. As the food I have recommended is too rich for breeding stock, if the farmer keeps six cows, as before mentioned, he will want twenty-six feeding beasts, which may average at five guineas each ; but much
more

more may be made—he may make two returns. However, as the profits accruing by this method may appear incredible to those who set their faces against any innovation or improvement, I will explain myself by a debtor and creditor account.

We will suppose the ten acres to be at first set with potatoes to make the land ready and clean for the tares, &c. Carry the profit on the potatoes to the general account, as it is part of the crop for the first year of the New Method.

New System on Ten Acres of Potatoes.

<i>Dr. to EXPENCES.</i>		<i>Cr. by PRODUCE.</i>	
	£. s. d.		£. s. d.
Ploughing 10 acres		By 10 acres, sold at	
at 7s. per acre	3 10 0	10l. 10s. per acre	105 0 0
120 sacks of potatoes for seed, at			
3s. per sack	18 0 0		
Harrowing at different times, 2s. per			
acre - - -	1 0 0		
Ploughing up, at 5s			
per acre - -	2 10 0		
Profit carried to the			
Gen. Account of			
one year's profit	80 0 0		
	<hr/>		<hr/>
	£105 0 0		£105 0 0

N. B. The potatoe crop is supposed to be sold on the land, as it is difficult to calculate expences when they are sold by the farmer at market, or he would make more than double the sum mentioned; for one hundred sacks, at 3s. per sack, would be 15*l.* per acre, which would be 150*l.* : but, if well set and managed, he would have an hundred and fifty sacks per acre.

Ten Acres of Land, &c. managed by the New System.

<i>Dr. to EXPENCES.</i>		<i>Cr. by PRODUCE.</i>	
	<i>£. s. d.</i>		<i>£. s. d.</i>
3½ acres ploughing		By the profit on 32	
harrowing and		beasts, at an ave-	
sowing, at 7s.		rage of 5 <i>l.</i> 5s.	
per acre	1 4 6	per beast	168 0 0
Seed tares, 2 bush-			
els per ac. at 10s.			
per bushel, and			
½ peck of rye at			
6d pr. peck	3 11 2		
1½ acre of cabbages			
ploughing, &c.			
7s. per acre	0 10 6		
2½ acres drilling,			
at 2s. 6d. per			
acre	0 6 3		
	<hr/>		
	£5 13 0		£168 0 0

	£. s. d.		£. s. d.
Brought over	5 13 0	Brought over	168 0 0
Plants which must be raised on a feed-bed. 4lb. of seed, at 6s. per lb. digging the garden and sow- ing	1 9 0		
Planting, at 5s. per acre	0 12 6		
4 acres, 3 times ploughing and sowing, at 7s. per acre	4 4 0		
Manure for 10 ac. every year, at 4 loads per acre, at 8s. per load	16 0 0		
Profit by this mode	140 1 6		
	<hr/> £168 0 0		<hr/> £168 0 0

The above balance of profit certainly appears great: but the uncommon quantity of food the ten acres will supply by the tares and rye raised upon them (when chopped with wheat straw as before described) is really incredible to those who have not given this method a fair trial. I have kept ten horses thirteen months on six acres of wheat-scouge, and six acres of oats. From this it may easily be conceived, that ten acres of green fodder, with

with ten acres of wheat-straw, will keep forty head of cattle and horses during the summer: Forty acres of wheat-straw, twenty acres of clover twice mown, twenty acres of barley-straw, and twenty acres of pea straw, together with twenty acres of turnips, will easily keep thirty-two head of beasts and eight horses during the winter. No one can suppose that I mean the ten acres alone should keep the number of the different cattle mentioned. I mean, that the produce of the ten acres appropriated to the raising of green fodder, if you mix it with the straw and clover in manner as directed, and properly and regularly feed the cattle, will be found to answer the purpose, and render every service I have asserted it capable of performing.

Cabbages of the early kind will be ready to cut the beginning of June; and you may keep cutting all summer, as, before you have got through a certain quantity, the sprouts of some will be ready to cut again. It is meant that these cabbages should be given to such beasts as are in the best condition, or nearest ready for market. When you have cut your
winter

winter tares and rye, favoy cabbages must be put in the land. You will mow your tares in summer; and the cabbages will serve the cattle in winter, and be soon enough removed from the ground to sow it with tares in the spring. Where the spring cabbages grow, you must in autumn sow winter tares in drills. Put in four or six loads of manure per acre to every crop. These ten acres are, like a garden, continually to be covered with crops; I esteem them as much a garden for the use of the cattle, as I do the kitchen-garden for the use of the family.

Although I have calculated twenty acres of turnips to be used for the feeding of cattle in the fold; they will not all be wanted, but one half, or perhaps more, may be eaten with sheep. Therefore a profit will arise, of which no notice has here been taken. The quantity of manure calculated in the New System is very much less than will arise; but as the method is so new in this and in most other parts, I very much wish to avoid placing over much profit before the reader at once. Honey is a sweet thing; but if I had never seen any, and
by

by any chance had met with some in the trunk of a tree, I should be afraid to taste it: but if I at last should venture and get one lick, I should be inclined to taste again; and when I found it both sweet to my taste, and wholesome, I should become fond of it. So much do I expect this New System of farming will prove pleasant to the farmer, when he once tastes the sweets of it. There is nothing sweetens labour so much as an adequate reward; and method is the soul of all business. By the rules laid down in this Treatise a farm becomes almost as productive as a garden; and I would stimulate every one to exert himself to follow them in practice. I have been used to feed cattle upon the most fertile grounds in the county of Lincoln, but never could arrive at such a state of perfection as by this method. It may not be amiss to observe, that in two different instances I have so well fattened two Scotch cows, that they had as much tallow within them, as they weighed per quarter, though they had been milked within six weeks of their being killed, the one weighed four stone per quarter, and had four stone
of

of fat in her: the other nine stone per quarter, and had nine stone of fat in her.

Now suppose to the New Method we allow one man and one boy extra to look after the cattle, horses, &c. We will estimate the man at 12s. per week, and the boy at 6s. per week. Though these wages may appear at first sight rather extravagant, yet, as Sunday's attendance will be required for a part of the day at least, we will be liberal in our pay: therefore, throwing away the odd day, the hours and minutes, and reckoning fifty-two weeks for the year, we have the sum of 46*l.* 16*s.* to deduct, which will leave a balance of 405*l.* 14*s.* Now the profit by the Old System is 130*l.* 8*s.* 6*d.* which taken from 405*l.* 14*s.* leaves a net difference in profit in favour of the New System of 275*l.* 5*s.* 6*d.*

In the Old System we reckoned the profit of a horse in two years sixteen pounds, the half of which, taking only one year's, will be 8*l.* and of pigs, as before, 5*l.* These sums added to 275*l.* 5*s.* 6*d.* will make in the aggregate 288*l.* 5*s.* 6*d.*

The 8*l.* for the potatoes only have been brought

brought to account : but the net profit from the ten acres in green crops, being 140*l.* 1*s.* 6*d.* will make the aggregate sum 348*l.* 7*s.* 0*d.* which appears a very large sum : but by this method of cultivation and feeding of cattle, it will be found that manure will be made of so much better quality, and in such plenty, and at so much cheaper rate than by buying, which has been the general practice in this neighbourhood, that a farmer who lives four or six miles from a port or manufacturing town, will scarcely be at the trouble of fetching it ; and manure, being the master-piece of all agriculture, will raise every crop to be so abundant as to give astonishment to the beholders of them.

There are several advantages in respect to situation attending this farm in the vicinity of Doncaster, which from their locality will not apply to the other two farms I mean to treat of. I have from experience learned that garden-peas of the early sort, set in the month of January as here before described, will be more productive than any field-peas, and always sell at a better price, even if you harvest them. But you have a chance of selling a
part

part in the pods green, which may fetch twenty guineas per acre at the least, and you may have a crop of turnips after with ease : but this crop of turnips has not been taken into the account. It may be said the profit on the beasts is laid too high ; but I deny that to be the case, for the following reasons. When you feed cattle on grass, it is possible that the seasons may vary so much that the same pasture might keep double the number of cattle at one time to what it may be capable of at another. Therefore as it is usual to put in the same number every year, should the season prove dry, you probably will be overloaded with stock : if, on the contrary, it should prove wet, you will be deficient in stock ; and in either of these cases you will be disappointed. But with food provided in the manner described above, your green crops get so forward before the dry season probably arrives, that they receive no injury ; and by fold or stable-feeding the animal, if chosen of the right sort, to a certainty speedily becomes fat. His food, his work, his rest is regular, every day is the same ; and every day will he
 increase

increase, to the emolument of his owner. And as Rotherham market is within six miles, the farmer has an opportunity to sell his own beasts; and if the price offered for them proves not to his satisfaction, he can drive them home, and take them another day to market. A sort of jobbing business may be carried on by attending such a market, to sell in dear markets, and buy in cheap ones; and likewise the business of selling cows and calves, by buying in cows with calf, and keeping them to calve, to make fat the calves, and milk the cows a sufficient time, and then fatten them. A crop of early potatoes may be raised on some part of the land intended for turnips, and sold in time to have a crop of turnips after; and should he be short of his green crop, he has a crop of clover continually on the land, in summer, which secures him food for his cattle on a certainty. His farm is within the compass, that an industrious man may see that every part of his business is executed properly; and he does not require so strong a team to carry his corn to market; nor need his servant be so long absent from his home employ; and he can scarcely go to any

Vol. I. F f market

market with his corn but he may bring coals back.

It is to be observed that in the foregoing calculations I have supposed all the ploughing, and sowing, and leading, should be hired and paid for. These accounts, as drawn out, lean much in favour of the Old System, as the expences are fewer in number than will really be found in following that method. The calculations are made for the purpose of shewing at one view the great disparity which will actually be found to exist in the practice of the two different methods, on similar farms. As to ascertaining the profits exactly, that is impossible; as the markets fluctuate in so great a degree, that no one can be correct in the valuation of cattle or corn for six months forward. I have constantly estimated the expences at a higher rate than I know they may be done at, that I might not be supposed to deal unfairly with the Old Method.

The second farm I mean to treat of is, of the grazing, breeding, and ploughing kind. It is situated in Lincolnshire, and consists of three hundred and fourteen acres. Part of it
is

is at present divided into four plats for ploughing, each plat consisting of twenty-four acres. There is an additional plat of the same kind of land, containing sixteen acres ;* and about fourteen acres of clay-land, which is also ploughed. These, added together, make one hundred and twenty-six acres, all under plough according to the old management. If you subtract the one hundred and twenty-six acres from three hundred and fourteen, there will be a residue of one hundred and eighty-eight acres, which are all in grass, and used for the purpose of raising one hundred and forty lambs, or tupping one hundred and forty ewes (as the hogs are sold off in spring, and the drape ewes at Michaelmas,) and keeping twelve horses, and thirty beasts. The rotation of crops here made use of is according to the old system, as before observed, viz. turnips, barley, clover and wheat : and probably the method here followed may be as good as any other ; as the
farm

* The four plats consisting of twenty-four acres each, and the plat of sixteen acres, are of limestone: the rest clay, and liable to rot sheep.

farm is applied to the breeding of sheep, the most lucrative business the farmer can pursue. I will now state a debtor and creditor account of the expences and produce of the farm, as now managed.

The present Rotation of Crops in a Year,

<i>Dr. to EXPENCES.</i>		<i>Cr. by PRODUCE.</i>	
FIRST PLAT.			
	£. s. d.		£. s. d.
To fallowing 24 acres for turnips; 4 times ploughing, harrowing, &c. at 6s. per acre each	28 16 0	By 24 acres turnips, at 3l. 10s. per acre	84 0 0
12 Loads manure per acre, at 8s.	115 4 0	24 Acres barley, 4 quarters per acre, at 25s per quarter	120 0 0
Seed and hoeing, 6s. per acre	7 4 0	24 Acres clover, 1½ ton per acre, 1l. per ton	36 0 0
SECOND.		24 Acres clover eaten off, at 10s. 6d. per acre	12 12 0
Ploughing 24 acres for barley, 7s. per acre	8 8 0	24 Acres wheat, 3 quarters per acre at 2l. per quarter	144 0 0
Seed, four bushels per acre, at 25s. per quarter	15 0 0	16 Acres of cliff-land, which appear to be carried on in the same manner, but do not seem to be regular in any crop. Therefore	
Clover-feed, 14 lb. per acre, 6d. per lb.	8 8 0		
Reaping and leading 6s. per acre	7 4 0		
Trashing, &c. 96 quarters, at 1s. 4d. per quarter	6 8 0		
	£. 196 12 0		£. 396 12 0

Dr. to EXPENCE.			Cr. by PRODUCE.		
	£.	s. d.		£.	s. d.
Brt. over.	196	12 0	Brt. over	396	12 0
THIRD.			I will take the		
Clover, mowing			average of its		
&c. 24 acres, 3s.			produce from the		
per acre	3	12 0	produce of the		
FOURTH.			96 acres above,		
24 Acres ploughing			which are regu-		
for wheat, 7s per			larly cropped		
acre	8	8 0	(as the land is		
Seed, 3 bushels per			of [the same		
acre, at 5s. per			kind); but be-		
bushel	18	0 0	ing rather bet-		
Reaping and lead-			ter, will say 4l.		
ing, 10s. per acre	12	0 0	10s. per acre	72	0 0
Thrashing, &c. 72			7 Acres of wheat		
quarters, 1s. 8d.			on clay land, at		
per quarter	6	0 0	3 quarters per		
Stubble mowing,			acre, at 2l. per		
3s. per acre	3	12 0	quarter	42	0 0
Average expence			7 Acres beans on		
upon the 16 acres			ditto, 3 quarters		
of cliff land	43	1 0	per acre, 1l. 4s.		
Fallowing $\frac{1}{4}$ of 14			per quarter	25	4 0
acres of clay land	6	10 8	65 Hogs (feeders)		
Manure once in 3			at 1l. 8s. each	91	0 0
years	10	16 0	50 Ewes (drape)		
Rent and affes-			at 1l. 8s. each	70	0 0
ments	316	4 4 $\frac{1}{2}$	230 Fleeces of		
Profit	318	9 11 $\frac{1}{2}$	wool, 1l. 1s. per		
			tod, 4 fleeces		
			to a tod	52	10 0
			6 Fat beafts, 25l.		
			each	150	0 0
			2 Horses, at 20l.		
			each	40	0 0
			Pigs	10	0 0
				£.949	6 0
	£.949	6 0			
			Profit brt. down	318	9 11 $\frac{1}{2}$

The New System on the Four Plats of Twenty-four Acres each, and Sixteen Acres,

<i>Dr. to EXPENCES.</i>			<i>Cr. by PRODUCE.</i>		
	<i>£.</i>	<i>s. d.</i>		<i>£.</i>	<i>s. d.</i>
FIRST PLAT.			By 24 acres of turnips, 3l. 10s. per acre		
Toploughing &c. twice for turnips on 24 acres				84	00
twitch &c. raking off, at 6s. per acre	14	8 0	24 Acres barley, 4 quarters per acre, 1l. 5s. per quarter	120	00
Drilling and sowing, 2s. 6d. per acre	3	0 0	Clover eat by sheep carried to General Account		
Seed 1s. per acre	1	4 0	24 Acres wheat, 3 quarters per acre, 2l. per quarter	144	00
Hoeing and 3 times ploughing, 1s. 6d. per acre	5	8 0	16 Acres saintfoin, 2 ton per acre, 2l. per ton	64	00
6 Loads manure per ac. 8s. per load	57	12 0			
SECOND.					
Ploughing &c. and sowing 24 acres for barley, 7s. per acre	8	8 0			
Seed, four bushels, at 25s. per quarter	15	0 0			
Red clover 14 lb. per acre, at 6d. per lb: trefoil 6 lb. per acre, at 3d. per lb: white clover 6 lb. per acre, at 8d. per lb.	15	0 0			
Reaping and leading, 6s. per acre	7	4 0			
	<u>£. 127</u>	<u>4 0</u>		<u>£. 412</u>	<u>0 0</u>

*Cr. to EXPENCES.**Cr. by PRODUCE.*

	£. s. d.		£. s. d.
Brt. over	127 4 0	Brt. over	412 0 0
Thrashing 96 quarters, at 2s. 4d. per quarter	6 8 6		
THIRD.			
To clover 24 acres eaten by sheep			
FOURTH.			
24 Acres wheat, ploughing &c. 7s. per acre	8 8 0		
Seed, 3 bushels per acre, at 5s. per bushel	18 0 0		
Reaping &c. 10s. per acre	12 0 0		
72 Quarters wheat thrashing, &c. 1s. 8d. per quarter	9 0 0		
Stubble mowing, 3s. per acre	3 12 0		
FIFTH.			
16 Acres saintfoin mowing, 3s. per acre	2 8 0		
Profit	228 0 0		
	<u>£.412 0 0</u>		<u>£.412 0 0</u>
		Profit brt. down	<u>£.228 0 0</u>

*The General Account of Expence and Produce on
the New System on the Lincolnshire Farm, of
Eighty-four Acres, which at present rears Sheep.*

Dr. to EXPENCES. | Cr. by PRODUCE.

		£. s. d.			£. s. d.
FIRST.					
14 Acres wheat,			By 14 acres of wheat,		
ploughing, &c.			3½ quarters per		
7s. per acre	4	18 0	acre, at 2 l. per		
Seed 3 bushels per			quarter	98	0 0
acre, 5s. per			14 Acres peas or		
bushel	10	10 0	beans, 4 quarters		
Reaping, &c. 10s.			per acre, 1l. 4s.		
per acre	7	0 0	per quarter	67	4 0
Thrashing, &c. 49			14 Acres barley, 4		
quarters, 1s. 8d.			quarters per acre,		
per quarter	4	1 8	at 1l. 5s. per qr.	70	0 0
Stubble mowing, 3s.			14 Acres clover, 2½		
per acre	2	2 0	tons per acre, at		
SECOND.			2l. per ton	70	0 0
14 Acres beans or			14 Acres wheat, 4		
peas ploughing,			quarters per acre,		
&c. 7s. per acre	4	18 0	2l. per quarter	112	0 0
Drilling, 2s. 6d. per			14 Acres beans, 4		
acre	1	15 0	quarters per acre,		
4 Loads manure per			1l. 4s. per quarter	67	4 0
acre, 8s. per load	22	8 0	Profit brought from		
3 Times ploughing,			the 4 plats	228	0 0
1s. 4d. each per			Profit on beasts,		
acre	2	16 0	horses, sheep,		
Reaping &c. 6s. per			wool, pigs &c.		
acre	4	4 0	brought from Ac-		
Thrashing &c. 56			count in Old Sys-		
quarters, 1s. per			tem, being the		
quarter	2	16 0	same in New	413	10 0
		£. 67 8 8			£. 1125 18 0

<i>Dr. to EXPENCES.</i>			<i>Cr. by PRODUCE.</i>		
	<i>£.</i>	<i>s. d.</i>		<i>£.</i>	<i>s. d.</i>
Brt. over	67	8 8	Brt. over	1125	18 0
THIRD:					
14 Acres barley, ploughing, 7 <i>s.</i> per acre	4	18 0			
Seed, 4 bushels per acre, 1 <i>l.</i> 5 <i>s.</i> per quarter	8	15 0			
Clover-feed, 14 lb. per acre, at 6 <i>d.</i> per lb. : 6 lb. tre- foil, 3 <i>d.</i> per lb.	5	19 0			
Reaping and lead- ing, 8 <i>s.</i> per acre	5	12 0			
Thrashing 56 quar- ters. 1 <i>s.</i> 2 <i>d.</i> per quarter	3	5 4			
FOURTH.					
14 Acres clover, mowing, &c. 6 <i>s.</i> per acre	4	4 0			
6 Loads manure per acre, 8 <i>s.</i> per load	33	12 0			
FIFTH.					
14 Acres wheat, ploughing, &c. 7 <i>s.</i> per acre	4	18 0			
Seed, 3 bushels per acre, 5 <i>s.</i> per bushel	10	10 0			
Reaping, &c. 10 <i>s.</i> per acre	7	0 0			
Thrashing, &c. 56 quarters, 1 <i>s.</i> 8 <i>d.</i> per quarter	4	13 4			
Stubble mowing, 3 <i>s.</i> per acre	2	2 0			
	<hr/>			<hr/>	
	£.162	17 4		£.1125	18 0

<i>Dr. to EXPENCES.</i>			<i>Cr. by PRODUCE.</i>		
	£.	s. d.		£.	s. d.
Brt. over	162	17 4	Brt. over	1125	18 0
SIXTH.					
14 Acres beans,					
ploughing, &c.					
7s. per acre	4	18 0			
Drilling 2s. 6d. per					
acre	1	15 0			
6 loads manure per					
acre, 8s. per ld.	33	12 0			
3 times plough-					
ing 1s. 6d. each					
per acre	3	3 0			
Reaping, thrashing,					
&c.	7	0 0			
Rent and assessment					
as in the Old Sys-					
tem Account	316	4 4½			
Profit	596	8 3½			
	<u>£.1125 18 0</u>			<u>£1125 18 0</u>	

ERRORS EXCEPTED.

Having thus stated the management of the Lincolnshire farm according to the New Method ; it is now necessary to give such an elucidation as that the reader may perfectly understand it. What I propose is the following.

100 Acres of grafs, 3 sheep to every two acres	150 <i>sheep</i>
10 ditto for feeding beafts, and a few tups	4 <i>tups</i>
72 ditto for ploughing (in 3 plats) as before described. Including	
24 ditto fown with graffes to keep sheep upon, five to an acre	120 <i>sheep</i>
	<hr/>
	274

84 ditto clay foil under rotation of crops.

16 ditto of saintfoin for hay.

8 ditto of meadow to cut green, for the pur-

— pose of foiling horfes in the fold or
314 *acres*. ftale :

Which, as we have fhown, is the moft benefi-
cial method of keeping them, and beyond
comparifon preferable to letting them run o-
ver the grafs, if only for the benefit of the
manure, which will be found of fuch infinite
value to the farm.

I fhould keep on this farm at leaft forty
head of beafts and horfes in the ftale and fold,
winter and fummer; but on fuch a farm as
this

this twice that number might be kept, and the manure made in summer with green food by this method would be found to be much better than the manure made in winter in the usual way. Mixing straw intimately in summer with grass, clover, or any other green food, as before described, will certainly be applying the straw to a much more profitable purpose than the present method of using it will admit of; and the cattle, instead of being poor and pining, would be kept in a thriving state, and the manure be better in quality in proportion to their good condition. In winter an equal quantity of nutritious food should be mixed with the straw, such as saintfoin or clover hay, potatoes or cabbages, which will preserve the animals in a healthy state, and cause them to increase in bulk and value.

It does not absolutely follow that the farmer's cattle must be poor and pining, because he has not immediately on his farm clover, tares, potatoes or cabbages, carrots, &c.; though alike necessary and pleasant, as well for his own use as that of his cattle. If, at his first entrance on a farm, he should find it destitute of these
 necessary

necessary articles; by attention and a little art they may all be soon raised at a small expence: and stall-feeding would be attended with much less expence than is generally apprehended, if a little care were taken in the management; for I am firmly of opinion that one man and a boy are sufficient to look after forty head of cattle, to cut the straw and mix it with their green food in summer, and with their hay in winter. But, supposing the cattle double that number, a machine worked by a horse might be erected in some proper place, which might perform various operations, such as thrashing of corn, cutting of straw, &c. Such a machine would at first cost money; and the farmer must have a capital to spare to enable him to erect it: but he will still have but *one* rent to pay for his farm, the produce will be doubled; his business will be near him, and his stock in a thriving state; he feels himself comfortable, and is the admiration of his neighbours.

The disagreeable circumstance of the land rotting sheep, the reader will observe, is done away by ploughing the eighty-four acres of clay-land, and eating the feeds, saintfoin, ed-
dish

dish, &c. By stall-feeding the greatest part of horses will be kept up; for nothing is so hurtful in rotting of sheep on land, as horses going upon it, or in fact any other land, except perhaps when you turn a small number of them into a close; as horses will eat some kinds of grass which no other animals will touch: such, for example, as grows against fences and by the sides of footpaths. It will nevertheless be found a much better and cheaper method to keep them in folds, as before directed, than in pastures, where they do more harm with their feet than with their mouths.

The number of sheep will be increased seventy. Therefore, if my calculation is right, instead of selling the hogs, they may be kept for wethers. Should any danger be apprehended of the rot, add to the number of beasts (which perhaps may turn out as profitable by having a greater quantity in the fold), and keep only the old number of sheep, viz. two hundred to clip: and the seeds in the spring should be eaten up by four sheep to an acre. I mean those twenty-four acres, part of the ninety-six in the foregoing estimate, and which

we

we calculated to maintain five sheep by being sown with feeds : but we will put the even number of one hundred upon these twenty-four acres ; fifty of the best sheeder hogs ; and fifty of the best shearling ewes : only one hundred sheep then remain, for one hundred acres of grass-land : of course, there would be an opportunity of keeping many beasts, or of mowing some of the land.

It is the general custom to sell off the drapewees. Now, by taking the lambs from them very early in the month of June, or in July at farthest, the ewes would have sufficient time to get fat before winter, and then be sold as fat ewes ; and the sixteen acres of saintfoin eddish would insure a net profit on the sheep superior to what is generally made. The lambs might be taken to the saintfoin, which would preserve them sound while the ewes are getting fat.

The third farm alluded to.

We shall now give a Dr. and Cr. Statement of a Rotation of Crops for six years on the Old System

System, used in a great many parts of Yorkshire as the best. This is taken from an acre of land from an extensive estate in the North Riding, consisting of several hundred acres of open tillage land.

Course of Husbandry—One fallow and two crops, viz. 1st year fallow, manured—2nd year, barley—3d year, beans—4th year, fallow—5th year, wheat—6th year, oats.

Rotation of Crops for Six Years on the Old System.

<i>Dr. to EXPENCES.</i>			<i>Cr. by PRODUCE.</i>
1st YEAR FALLOW.			
	£. s. d.		
To 4 ploughings and harrowings, &c. at 7s.	1 8 C		By no crop
12 Loads of ma- nure, at 8s. per load	4 15 C		
One year's rent	0 15 C		
Assessments	0 10 C		
Tythe	0 6 C		
	£ 7 15 0		

*Dr. to EXPENCES.**Cr. by PRODUCE**£. s. d.**£. s. d.*

2d YEAR, BARLEY.

To ploughing and harrowing	0	6	6
Seed, 4 bushels	0	12	6
Reaping & thrashing	0	12	6
Rent	0	15	0
Assessment	0	10	0
Tythe	0	6	0

£ 3 2 6By 4 quarters of barley, at 1*l*. 5*s*.

	5	0	0
Straw	1	0	0

£ 6 0 0

3d YEAR, BEANS.

To ploughing and harrowing	0	6	6
Seed, 4 bushels	0	16	0
Reaping & thrashing	0	12	0
Rent	0	15	0
Assessments	0	10	0
Tythe	0	6	0

£ 3 5 6By 3 quarters of beans, at 1*l*. 12*s*,

per quarter	4	16	0
Straw	1	0	0

£ 5 16 0

4th YEAR FALLOW.

To ploughing, three times harrowing, &c.	1	1	0
Rent	0	15	0
Assessments	0	10	0
Tythe	0	6	0

£ 2 12 0

By no crop

Dr. to EXPENCES.			Cr. by PRODUCE.		
	£.	s. d.		£.	s. d.
5th YEAR WHEAT.					
To ploughing	0	5 0	By 3 quarters of wheat, at 2 <i>l</i> . 10 <i>s</i> .		
Seed-wheat, three bushels	0	18 9	per quarter	7	10 0
Rent	0	15 0	Straw	1	0 0
Assessments	0	10 0			
Tythe	0	6 0			
Reaping & thrashing	0	15 0			
<hr/>			<hr/>		
£ 3 9 9			£ 8 10 0		
6th YEAR OATS.					
To ploughing and harrowing	0	6 6	By 4 quarters of oats, at 16 <i>s</i> . per quarter	3	4 0
Seed, 4 bushels	0	8 0	Straw	1	0 0
Rent	0	15 0			
Assessments	0	10 0			
'Tythe	0	6 0			
Reaping and leading	0	6 6			
Thrashing	0	4 0			
<hr/>			<hr/>		
£ 2 16 0			£ 4 4 0		
			Total of the Cr. side £ 24 10 0		
			Total of the Dr. ditto 23 0 9		
			<hr/>		
			Profit on one acre of land for six years £. 1 9 3		

A Rotation of Crops for six years, upon the same land as above, by the New System, as follows :—1st year, turnip fallow—2nd year, barley—3d year, peas fallow—4th year, wheat or oats—5th year, clover—6th year, wheat.

Rotation of Crops for six Years by the New System.

<i>Dr. to EXPENCES.</i>				<i>Cr. by PRODUCE.</i>			
1st YEAR, TURNIPS.							
	£.	s.	d.		£.	s.	d.
To ploughing 1½				By turnips	4	0	0
inch deep	0	4	0				
Harrowing and							
raking	0	3	6				
Ploughing, harrow-							
ing and raking	0	7	6				
Ploughing and har-							
rowing	0	5	0				
Making drills	0	2	6				
Leading refuse	0	2	6				
Manure, 6 loads,							
at 8s. per load	2	8	0				
Rent & assessments	1	5	0				
Tythe	0	6	0				
Seed, and bush har-							
rowing	0	1	6				
Hoeing	0	1	0				
Ploughing 3 times	0	4	6				
<hr/>				<hr/>			
£ 5 11 0				£ 4 0 0			

Dr. to EXPENCES.*Cr. by* PRODUCE.

2d YEAR, BARLEY.

	£.	s.	d.
To ploughing and harrowing	0	7	6
Seed, 4 bushels	0	12	6
Rent & assessments	1	5	0
Tythe	0	6	0
Reaping and thrashing	0	12	0

£ 3 3 0

3d YEAR PEAS.

To ploughing, harrowing and raking	0	7	6
Ploughing, harrowing and raking	0	7	6
Making drills	0	2	6
Manure, 4 loads, at 8s. per load	1	12	0
Bush-harrowing	0	0	3
Seed, 4 bushels	0	16	0
3 times ploughing	0	4	6
Reaping and thrashing	0	12	0
Rent & assessments	1	5	0
Tythe	0	6	0

£ 5 13 3

4th YEAR, WHEAT.

To scarifying and harrowing	0	3	0
Ploughing and sowing	0	5	0
Seed-wheat, 3 bushels	0	18	9
Rent & assessments	1	5	0
Tythe	0	6	0
Reaping & thrashing	0	15	0
Clover-feed 10b.	0	10	0

£ 4 2 9

	£.	s.	d.
By barley, 4 quarters, at 1l. 5s. per quarter	5	0	0
Straw	1	0	0

£ 6 0 0

By 4 quarters of peas at 1l. 12s. per quarter	6	8	0
Straw	1	0	0

£ 7 8 0

By 3 quarters of wheat, 2l. 10s. per quarter	7	10	0
Straw	1	0	0

£ 8 10 0

*Dr. to EXPENCES.**Cr. by PRODUCE.*

5th YEAR, CLOVER.

	£.	s.	d.
To mowing and reaping	0	5	0
Rent and assessments	1	5	0
Tythe	0	6	0
4 Loads manure, 8s. per load	1	12	0

£ 3 8 0

	£.	s.	d.
By 1½ ton of clover	6	0	0

£ 6 0 0

6th YEAR, WHEAT.

To ploughing and sowing	0	6	6
Seed, 3 bushels	0	18	9
Reaping & thrashing	0	17	0
Rent and assessments	1	5	0
Tythe	0	6	0

£ 3 13 3

By 4 quarters of wheat, at 2l. 10s. per quarter	10	0	0
Straw	1	0	0

£ 11 0 0

Total of the Cr.

fide £ 42 18 0

Total of the Dr.

ditto 25 11 3

Profit on one acre

of land for six

years £ 17 6 9

From the above calculations the reader will find, that by the old system the farmer gets no more by his farm than 1*l.* 9*s.* 3*d.* profit upon one acre of land in six years, or 4*s.* and 10½*d.* per acre yearly. The expence of labour is calculated higher in the above statement than it actually costs him, or he could not pay his rent and maintain his family. Now the profit by the new system is, in the same space of time, 17*l.* 6*s.* 9*d.* which makes 2*l.* 17*s.* 9½*d.* yearly per acre, in the six years rotation of crops—more than 100 per cent. in favour of the new system.

There is in the above estate an open pasture called the Horse-car, which is let at 2*s.* 6*d.* per acre; and the tenants say it is of no service to them: but, under proper cultivation, 5*l.* per acre yearly profit might be derived from it.—Then the tenant may well be surprised when he is charged a new rent of 1*l.* 8*s.* per acre, though he now pays only 15*s.*; and indeed he is very high-rented according to the system of agriculture he follows.

The loss sustained over two thousand acres of land is 29,625*l.* in six years. If that number

ber of acres were let at 1*l.* 8*s.* per acre, there would be an advance of 13*s.* per acre, which would raise the sum of 7800*l.* for the tenants to pay in six years. That sum deducted from 29,625*l.* will leave them a profit of 21,825*l.* These calculations may stagger the reader; but they are founded on facts. By a proper rotation of crops, the above profits would arise to landlord and tenant, even without the advantage of green fodder in summer.

By a judicious management the farmers in East Lothian are enabled to pay 3*l.* and 4*l.* per acre. If a man who lives by gardening, were to dig his land one year in three, and in the third year raise no crop, he would be considered as a madman. But the two crops and a fallow are still worse; as it robs the land of one third of its manure. This may be called opening the eyes of the landlord: but it is likewise greatly to the tenant's advantage.

SECTION

SECTION XLVI.

The Author's Opinion upon a General Inclosure of Commons ; proving Commons in their present State to be Nuisances, and a great Injury to the Community at large.

SOME knowledge of commons will most probably be allowed me. The reader may recollect that in the Introduction to this Work I informed him of my having lived at Asgasby in Lincolnshire : in consequence of the farm I there occupied, I enjoyed a right of common on the *East* and *West-Fen*; and I had ample opportunity of informing myself both as to the use and abuse of commons, from being one of the land-jury at a court held twice in every year, once for the purpose of hearing complaints, and once for imposing a fine for abuses, such as stocking without right, &c.

About Lady-day I sent into the *West-Fen* three hundred hogs (that is, sheep one year old, which have never been shorn). I hired a shepherd to attend them, and put them on the same walk the farmer used who occupied the farm prior to my coming to it. In less than a week,

in spite of the care my own shepherd certainly took, my sheep were dispersed over a fen consisting of twelve thousand acres.

Their dispersion is easily accounted for. There always are near commons an industrious ingenious set of men, whose business it is to look after stock for hire, and often for men who have no right of common. But, be that as it may, the better the stock do under their care, the more employ they get. Therefore it becomes the interest of these shepherds to disturb every neighbouring flock, to make more room for such as are committed to them; and as they all have an interest to do the same thing, it becomes a combination of unjust doers. Men of this description are awake while others of an opposite disposition sleep. Call upon any of these fellows in the day time; if you find them at all, it must be in bed. They rise with the owl, and, like that bird, seek their prey by night. Late in the evening, one of these men mounts his horse, and, accompanied by three or four dogs, goes amongst your sheep. He generally takes a few of those under his care, by way of excuse, and will drive half a dozen of them
into

into the middle of your flock, when they have lain down to rest for the night : he then sets the dogs a-barking ; your pasture sheep, unused to such alarms, rise in a fright and run different ways. Having effectually dispersed the flock, he collects his own sheep, with the addition of as many of yours as he can drive away with them ; and he takes care to remove them some miles from the spot. When your shepherd comes to the ground in the morning, expecting to find the sheep where he left them over night, he is most sadly disappointed ; scarce any of the flock being to be found. He enquires of other shepherds for his lost sheep. They, who are for the most part what is termed *up to the business*, in return ask him the marks upon your sheep ; and, having received from him sufficient information to know them, will direct him any way but the right. The man probably rides about the whole day without meeting with the objects of his search : both he and his horse are sorely fatigued by fruitlessly wandering many miles. The peregrination is recommenced the next day, to as little purpose ; for by that time it is most probable some
part

part of the flock has been driven many miles another way: but in the course of a week more your sheep will be so completely scattered, that you will have the satisfaction, ride which way you will, of seeing some of them.

Your shepherd may be one of whose honesty and capacity you before have had sufficient proofs, and in this respect no more to be blamed than yourself. He has only been a dupe to those fellows who practise the trade of sheep-herding for several masters.

He tells you (which is most probably true) that he has taken every means in his power to keep your sheep together; but they range so much that he must have another horse, and he must be allowed corn. By this time expences run high: the horse, if sold, would fetch less by four pounds from the violent exercise he has undergone; and you may add the shepherd's wages, and the keep of the horse. But the mischief does not end here. In June the sheep are to be washed, and, when brought upon the farm, are found to have the scab: twenty are dead, and ten are missing. You have two hundred and seventy sheep remaining of the three hundred

hundred. Several extra expences are incurred from many of your sheep having been pounded, &c. Of those which died the skins are nearly destroyed by dogs.

Now, we will suppose these sheep to have been regularly joisted on good grafs at 3*d.* per head per week, from Lady-day to the beginning of June—a period of ten weeks: that would amount to 3*l.* 10*s.* The shepherd's wages, at 12*s.* per week, comes to 6*l.* On the other hand, let us see what loss we may have suffered by the sheep put on the common during the same space of time.

	£.	s.	d.
The shepherd's wages, at 12 <i>s.</i> per week, will be - - -	6	0	0
Corn for two horses, each 8 <i>s.</i> per week - - - -	8	0	0
Twenty sheep dead, at 25 <i>s.</i> each	25	0	0
Loss on two horses decreased in value - - - -	8	0	0
276 sheep curing of scab, at 3 <i>d.</i> per sheep - - - -	3	9	0
276 ditto decreased in value from common keep, 5 <i>s.</i> -	69	0	0
Fines for sheep pounded, &c. only estimated at 5 <i>s.</i> - -	0	5	0
Losses and Expences -	£ 119	14	0
The			

The whole expence of joisting,
 or properly keeping the sheep
 will be 37*l.* 10*s.* at 3*d.* per head
 per week : and adding the ex-
 pence of the shepherd, which
 is certainly over rated at 6*l.*

you have a total of 43 10 0

We will allow two sheep lost by
 death or accident, at 25*s.* 2 10 0

Suppose twenty-two skins, as they
 must have been torn by dogs,
 or otherwise damaged, sold for 3 10 0

£ 49 10 0

By subtracting the 49*l.* 10*s.* from 119*l.* 14*s.*
 you will have a balance of 70*l.* 4*s.* which is the
 least profit you will reap from the difference of
 keeping three hundred sheep in a proper man-
 ner instead of turning them upon the common.
 I have chosen the ten best weeks in the whole
 year for the purpose of stocking the commons
 mentioned ; for, if you send sheep there later,
 you will be still a greater loser. The commons
 will then be covered with innumerable flocks
 of geese.

In

In June numbers of cattle and horses are turned loose upon them ; by which as much is lost as by sheep. The horses get full of bots, or the small needle worms, or, in dry summers, of sand. A horse of mine, which had run upon the common in summer, died, and I was desirous of knowing what occasioned his death.— On opening him, upwards of a peck of sand was found in his great stomach or bag. In mild winters, horses which have run the summer in the fens do best there in winter ; for, as all horses feeding on low grounds get the bots or grubs, which are natives of such grounds ; so, while the horses continue there eating green food, the bots and worms do him little mischief, as they will prefer that kind of nutriment to what they might get by preying upon the animal. But when the horse quits grass, and is taken to dry meat, the bots and worms begin to devour his viscera. They gnaw his intestines, they consume the chyle, and prevent the proper supply to the blood, which assumes much the same appearance as the blood of rotten sheep. His head begins to swell ; and so do
his

his legs, and some get what is called the *felteric*. The greater the quantity of corn and dry meat you give him, the worse he becomes ; and the only method left to save him is to keep him on grass. If you have carrots or potatoes, they would answer much better than corn or any dry food. I have lost several horses by this sort of disorder : from the desire of collecting manure, I have put them into a straw-fold, which I now know to be a certain method of despatching them quickly. Chopped straw, which I have hitherto so strongly recommended as the most wholesome and cheapest food, is here rank poison—a proof that there is no rule without an exception, I have felt it to my cost. When any of my horses died of this distemper, or, in fact, of any other, I generally opened them by way of practice ; and I have frequently found the principal stomach or *bag*, as the farriers term it, nearly eaten through by these destructive vermin : none which died of the bots but had the coat of the stomach nearly destroyed. If you turn beasts upon a common, at a year old, and give them straw in the winter, they will increase in age, but very little in
size

fize when three years old: consequently there is little gain.

If I wanted to stock the Fen, I should prefer doing so without having a right; for, by applying to one of the Fen shepherds, he would take a decent number at a cheap rate. I have known men have stock in the Fen who had neither house nor land in the county. A Fen shepherd will render the qualified man's right of little value; and, whilst he will assist in driving away stock legally put on the common, he will, if properly fee'd, be particularly careful of the property of strangers. Now, were this common inclosed, it would produce an incredible quantity of corn, to the great benefit of the country at large: it would feed a vast number of cattle; and it would also afford employment for a number of persons who now follow little business but that of thieving.

The draining of the swamps in so large a tract of flat country is a matter of the utmost importance in respect to the health of the inhabitants: and the necessary dividing of the land (supposing the whole to be inclosed) would by ditches nearly effect the purpose, and do it effectually

effectually with the assistance of a main drain and an outfall.

I have mentioned the best common in England : and even that common, I insist upon it, is no better than a nuisance. Commons are harbours and nurseries for thieves. I was on the jury when three men were indicted at York assizes for stealing some sheep from commons in Craven : and it came out in proof upon trial, that these men had dealt largely, though not possessed of a capital. Their trade was thieving : and they were ingenious men in their way, all of one family, father and two sons. The eldest son passed for a jobber in sheep : and the father, with the youngest son, lived nine miles distant from him. The eldest son collected a tolerable flock by stealing a single sheep from those he was disposed to favour ; two or three from other people, and so on. He would likewise buy a few, then mix them all together, and drive them to the old man's farm. These sheep were but of small value, worth from five to seven shillings each ; which deterred the owners from incurring the expence of a prosecution : although many of the sufferers

ers knew where to find their property. These men therefore followed the trade of sheep-stealing with impunity. When one of the owners was asked by the Judge, "why he did not swear to a certain sheep when first he discovered it in the possession of the old man;" he answered, "he was afraid of the consequences." On the Judge's enquiring what were the consequences he meant; he replied, "that he was afraid of incurring a heavy expence." They were all convicted.

Now, were these commons inclosed, such men as have been just described could make no excuse for trespassing upon a person's property; it would be more difficult to get amongst another man's flock of sheep, and they would be much more easily detected after a robbery. Prevention is allowed to be better than punishment: the breed of thieves—a breed with which this country is overstocked—would be diminished by inclosures: by inclosures would the national wealth be augmented, and of course benefit accrue to the community at large.

SECTION

SECTION XLVII.

*Experiments in Agriculture, according to the
New System.*

IT will be remembered, that I have before recommended sowing the garden peas in preference to the field peas. They are more likely to produce a good crop, because they are more hardy than field peas. I put the early Charlton pearls, and the dwarf marrow-fats in the ground nearly at one time, and in the same manner in every respect as the Hasting pea, which I have found to get forward faster than any other field pea. Garden-peas of all sorts will, like turnips, thrive much better in the open field than in a garden ; and the method laid down under the head *Pea Fallow* is much superior to what is generally practised by the gardeners.

I have had cabbages much more forward, and better in every respect, than what are to be found in gardens: at the same time they were treated, as explained under *Cabbage-Fallow*.—
Were this mode of culture attended to, it
would

would create a greater plenty of vegetables, and in all probability reduce the price.

What has been said of peas and cabbages, is equally applicable to beans. But the rooks are so fond of them, and destroy such quantities, that the farmer may sometimes be disappointed of a good crop—a circumstance which has happened to me ; for I have found it impossible to keep these voracious birds off, although I had a woman constantly in the field for the purpose.

I had an excellent crop of onions, sown broadcast, entirely managed by the plough and harrows.

The greatest produce of wheat I have had has been upon fallow, from sowing under furrow as near $1\frac{1}{2}$ inch deep as it was possible to plough. The method is as follows : Harrow the land very fine, and then make a mark with the plough upon the place where the ridge is intended to be. Then sow the wheat, and turn a furrow over it. Then continue sowing down the furrow after the plough. A boy or a girl is much better than a man or a woman for any of this sort of work. By being nearer to the
ground

ground they are less liable to scatter the seed to one side of the furrow; for, if the wind blows, it is apt to miss the part intended. A boy or girl will sow an acre for 6*d.*; and if the ploughman be attentive, they may be made to do it in a very regular manner. It is easy to ascertain the proper quantity for one furrow. Knowing the length of the lands and the width of the furrow intended to be ploughed, you may calculate the number of furrows in each acre. Then dividing by the number of furrows the quantity of wheat intended for each acre, the quotient will be the exact quantity for each furrow. There is a drill for this sort of sowing, but I have not seen it act. There is only one thing I dislike in this method, viz. the danger of the ploughman's covering the wheat too deep; which is a very great fault. For the wheat either rots in the land and never gets up, or is liable to canker during the winter, in the same manner as you will see celery in a garden. The wire-worm often bears the blame. I have very minutely examined those plants that are eaten in two: and in the winter I have very seldom found the worm; but very frequently

quently the plant cut in two by the frost and wet weather : and it may be observed that it is mostly in very severe winters that wheat is destroyed by what is called wire-worms. Last winter I had nine acres all sown with the same sort of wheat ; but the land differently treated. Of the nine acres there had been one acre and a half of peas for podding ; with four loads of manure on it. In the midst of these, half an acre of beans, with four loads of manure.— There had been four acres of potatoes, with eighteen loads upon each acre—two acres and a half of peas, with four loads of manure per acre—and half an acre sown broad-cast with field peas, and six loads of manure on it. The wire-worm, so called, was more or less destructive in proportion, as more or less manure was laid on each part of the field. Where the beans had grown in the middle of the peas, there was a remarkably fine crop ; but on both sides, in some places, where the land was the most wet by nature, although very well griped and drained, more than half of the wheat was destroyed from want of a sufficient quantity of manure to give vigour to the plants. Beans are generally
supposed

supposed to impoverish land more than peas; yet, in the above experiment, the bean-land, although potatoes, another impoverisher, had grown among the beans, produced by the assistance of the manure the best wheat. Indeed, on tillage land, I have always found good manure properly applied to bear crops accordingly.

Experiments on a Farm at Sprodborough.

In the year 1791 I had only nine acres of land, on which I kept nine horses, two cows, fourteen sheep, and one hundred and thirty pigs; all fed with grains, except the sheep. The sheep, notwithstanding their being intermixed with the rest of the stock, became very fat. The lambs I sold at 21s. per head; and some of them were afterwards sold for breeding at 2l. 12s. 6d. a piece. One of the cows cost 11l. with her calf in May: I sold her in October for 13l. after taking her milk:

In the year 1792 I took a farm consisting of twenty-eight acres of pasture, at 4l. per acre—eighteen acres of tillage-land laid down with clover, at 28s. per acre—ten acres in grass, at

26s.

26s. per acre—two acres in wheat, at 26s. per acre. The rent of the new farm was 152*l.* 6s. per year: that of the nine acres of grass 3*l.* per acre. The whole was tytheable, except the twenty-eight acres of pasture. My method of grazing and cropping was as follows: The pasture of twenty-eight acres used to be regularly stocked by my predecessor with nineteen beasts and four horses, but no sheep. I put into it twenty beasts, fourteen horses, twenty ewes, and twenty-seven lambs. Finding it overstocked, I took in the nine acres of meadows. I fattened forty beasts in that summer. The twenty ewes and twenty-seven lambs paid 50*l.* 16s.—See the Agricultural Reports of Yorkshire. The eighteen acres of clover were mown once—the ten acres of sward ploughed up and sown with oats—Clover bad—oats middling. Two acres of wheat, bad.

In the year 1793—In the feeding-pasture fourteen cows, thirty ewes, forty-six lambs, and fourteen horses, which all did well as before.—The eighteen acres, wheat; bad, only 210 bushels—ten acres peas, good; two acres of turnips good; sold at five guineas per acre.

In

In 1794—In the feeding-pasture fourteen cows, fourteen horses, fifty ewes, and sixty-four lambs. All did well—the lambs uncommonly good. In the eighteen acres, six acres of potatoes in drills three feet asunder—the sorts set, the kidney, ox-noble, manly, champion, red-apple, white-apple, and lemon, which produced a good crop—the ox-noble, ninety sacks per acre ; the manly, eighty ditto ; the red-apple, eighty ditto ; the white, seventy ditto ; the kidney, fifty ditto ; the lemon, forty ditto. At one corner of the six acres was a piece of sward I took from the high road, dug by the spade, and set with potatoes. Ten square yards were planted in the lazy-bed method, and ten yards square by digging the land and setting in drills, as is usual ; the land being all manured. The lazy-bed method raised sixteen stone four pounds : the drills at eighteen inches asunder, seven stone five pounds. From this experiment I have improved much in the manner of setting potatoes. The other twelve acres oats, bad ; The ten acres and two acres being put into one field ; six acres of wheat, good : six acres barley, middling. The nine acres remained meadow.

In the year 1795 the usual flock in the feeding-pasture. In this year I had a lamb that weighed twenty pounds per quarter when six months old—all the rest uncommonly fat. Nine acres, meadow. Of the eighteen-acres-field, six acres (where potatoes had grown the preceding year) wheat good. The wheat was sown under furrow an inch and half deep; except one acre, two inches and a half deep, which yielded less by nine bushels per acre—the quantity sown four bushels on part of the five acres; on the other part, three bushels—the latter the best wheat; but not much difference in yield—the quantity thirty bushels per acre. In 1795 the small worm did much damage in the wheat crops in the ear: mine was much affected. Six acres potatoes, set every furrow, as directed in this Work—four acres of the six sown with rape among the potatoes. The ox-noble potatoe was planted on five of the acres; and the black-apple on one of them—these bad: the ox-noble, where the rape was not sown, as good as ever I saw; one hundred and ninety sacks per acre—where the rape was sown with them, only fifty sacks. The
black

black apple, although no rape was sown among them, produced only thirty sacks. The black-apples suit wet land, being remarkably hard. I found, that by sowing rape among them I had lost one hundred and forty sacks per acre; and I received only 2*l.* 10*s.* from feeding sheep with the rape. The other six acres wheat, with the same quantity of manure as the six acres of potatoes, and three ploughings after the oats—produce eight bushels less than on the six acres where potatoes had preceded the wheat. The twelve-acre field, oats—eight bushels per acre sown—the best crop I ever saw of the Tartarian sort—six feet high regularly, and the thickest on the ground perhaps ever seen.

In the year 1796 I had in the feeding-pasture fourteen cows, fourteen horses, fifty ewes, and sixty-seven lambs. The superfluous grass was mown the greatest part of summer, and given to the horses in the stable. I found the cows and sheep do much better. There was a Scotch cow amongst them, which the May twelve months before cost five guineas. She was with calf—sold her calf for seventeen shillings

shillings when fat. The cow was a good milk-
 er, and was milked within six weeks of her be-
 ing killed—weighed thirty-six stone, nine stone
 of fat—sold for sixteen guineas. I have found,
 from repeated trials, that the small Scotch
 cows consume, on an average, one fifth less than
 a large cow of the Tees-water kind. This
 year I had a calf, which at the age of thirteen
 weeks weighed nineteen stone twelve pounds
 and a half, and had sucked no other cow but
 its own mother.—I increased my farm by nine
 acres, which had had oats the year before up-
 on flag-land or sward ploughed up. I raised
 on these nine acres the following crops : one
 acre and half of Charlton peas, very good—
 one rood of Windsor beans, bad—one rood of
 long-podded beans ; bad crop, the rooks had
 eaten the seed. The long-pods yielded fifteen
 bushels and a half ; the Windsor, nine bushels
 and a half. Potatoes under them, twenty-five
 sacks—Two acres and an half of Hasting peas
 drilled ; very good, forty bushels per acre.
 Half an acre of field-peas sown broad-cast :
 good, produce fifteen bushels. Four acres of
 potatoes ; produce one hundred and ninety
 sacks

sacks per acre. In the eighteen-acres field, six acres wheat, where potatoes grew the year before; good, forty-eight bushels per acre—twelve acres of oats, middling. The twelve-acre field, wheat, good; thirty-two bushels per acre. These crops (except the oats, which were kept to cut for horses, cows, &c.) were sold on the ground for ten guineas per acre, and paid the purchaser well. I had all the straw, chaff, &c.

In 1797, in the month of May, I quitted this farm. At that time the nine acres, where potatoes, beans, &c. had grown the preceding year, were in wheat: every other land drilled by Mr. Cook himself, with one bushel per acre; the rest sown broad-cast with three bushels per acre—the produce of that sown broad-cast about three to one more than that of the drilled. There was a very great crop of wheat by the broad-cast. Of the eighteen acres, one acre and a half in cabbages, and potatoes under them—two acres in early potatoes—five acres and a half in garden peas—two acres in Hasting peas—six acres of potatoes, ox-nobles—one acre of long-podded beans, with potatoes

tatoes under them. The crop was sold at 200*l.* in the month of May.

The greatest part of the above experiments being treated of separately in other parts of this Work, I have here only concisely stated the rotation of crops. It may not be unnecessary to observe, that, at the time I quitted the farm, the eighteen acres field was a perfect garden, with scarcely a weed in it : but in the month of July a perfect wilderness ; and I may venture to assert that, for want of bestowing from 5*l.* to 10*l.* on the different crops, there was 100*l.* less profit derived from the field, than might have been expected if proper management had not been wanting. Moreover the land is in a rude improper state for wheat ; and in the old mode of agriculture will require a fallow. Therefore it will make the difference of the following sum, in eighteen acres of land, in two years.

Loss

Loss for want of proper management this year 100l. and expences of four ploughings to make the land ready for wheat next year, 24l. 12s.

£ 124 12 0

Loss of eighteen acres of wheat, at six quarters per acre, at 56s. per quarter, which might have grown on the land next summer, without fallow; deducting for seed and sowing 18l. 18s. for ploughing, 5l. 6s. and for reaping 9l.

179 10 0

304 2 0

10 10 0

Deduct the sum saved

Loss in two years by an improper method of managing, on eighteen acres

£ 293 12 0

The above statement plainly shews how plans of improvement may be rendered abortive by neglect. It is something like building a house and never finishing it. I have known the late Mr. Bakewell's sheep bought by different people; and for want of care and management they have soon degenerated.

SECTION

SECTION XLVIII.

The proper Sort of Pigs ; and the best Method of Breeding them.

PIGS are of various kinds ; and the choice of the sort should be regulated by the treatment they are to receive. The Chinese breed with short ears are most profitable, when suffered to range at full liberty in woods : and even in pastures, they will not only live, but get fat with grass ; but they will not thrive in the sty or fold with grains or inferior food.

I tried some experiments on the Chinese pigs. I had a most remarkably fat one of that breed. A gentleman who saw it, and who was famous for breeding that kind, sent me a boar and two gelts. I kept the sows for some time in a fold, with from fifty to a hundred of a sort, which will be described hereafter : they were larger than the Chinese, and weighed from twenty to twenty-five stone each. Mine, though so much larger than the Chinese breed, became fat, whilst they remained lean. I then moved them, and gave them better food ; when they soon became nice pigs, and paid well for the meat they

they ate. But although one was killed at the age of three years, she weighed only ten stone : the other was killed when four years old, and she weighed only twelve stone. It is to be observed, that the last-mentioned one was always the largest : it was not its being one year older than the other that gave it the advantage in weight ; for these sort of pigs soon arrive at their full growth, and the increase of weight is then according as the animal is more or less fat.

I have always found the Berkshire pigs with a cross of the Chinese the best for all uses — Such pigs, when full grown, will weigh thirty stone with a moderate quantity of food. I put up a very poor sow, taken from her first litter of pigs, and which had been suffered to remain so long as to leave her scarce any thing but skin and bone : however, I determined to fatten her, because she had got a trick of killing fowls.— The highest price bid me for her in this condition was one guinea and a half. I gave her nine bushels of peas at 3*s.* 6*d.* per bushel. When killed, she weighed seventeen stone, and at that time pork fit for bacon was worth from 7*s.* to 7*s.* 6*d.* per stone : therefore, at 7*s.* per

stone only, there was a clear profit of 2*l.* 16*s.* for the trouble of feeding. I have had many more proofs of the extraordinary thrift of pigs of this sort, which I originally bred from a Berkshire sow and a Chinese boar. The first of them, a sow fed and killed at Burton-upon-Trent, was twenty four inches wide upon the back, and weighed forty-seven stone. They may be said to grow until they are two years old : but the growth of pigs, like that of other animals, depends upon the manner in which they are kept.

It will be found that, although pigs in some cases are the most profitable animals, yet they seldom will pay for corn or any other kind of food which the farmer can dispose of at a good market. They eat what no other animals will touch : therefore, with a trifling addition of better food, they will thrive very well. To keep them on corn, the expence would soon exceed the profit expected. In fact, I know of no animal except a horse that will pay for corn.— See Section XXXI. page 144. and Section XXXVIII. page 178.

SECTION

SECTION XLIX.

Great Use of Pigs in Fold-yards.

PIGS not only pick up the refuse of the fold-yard, and thrive upon it ; but, besides depositing their own dung, they rout the litter about in such a manner as to break and shorten the straw, from which, by chewing it, they derive nourishment. By routing and trampling over the yard, they mingle the materials, and cause the manure to imbibe an equal quantity of moisture, in such a manner as could scarcely be done by any other means ; thus bringing it speedily to perfection. I do not now speak of the Chinese breed : they are of little use in this respect, as they rout very little. Strong or large pigs of the Berkshire or of the long-eared kind are the fittest for making manure in the fold-yard : And to cause them to do this properly, they ought to be kept in good condition, and one day in every week nothing given them to eat, by which means they would effectually turn the manure ; for in a short time pigs will be so fed in the folds, the thrashing machine will leave nothing in the straw for them to eat.