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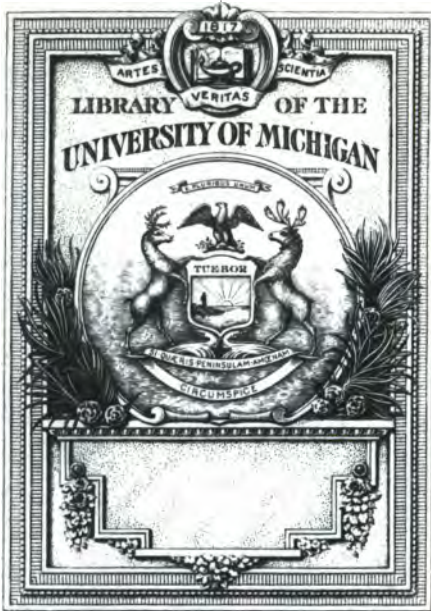
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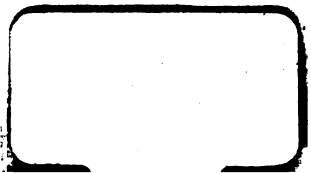
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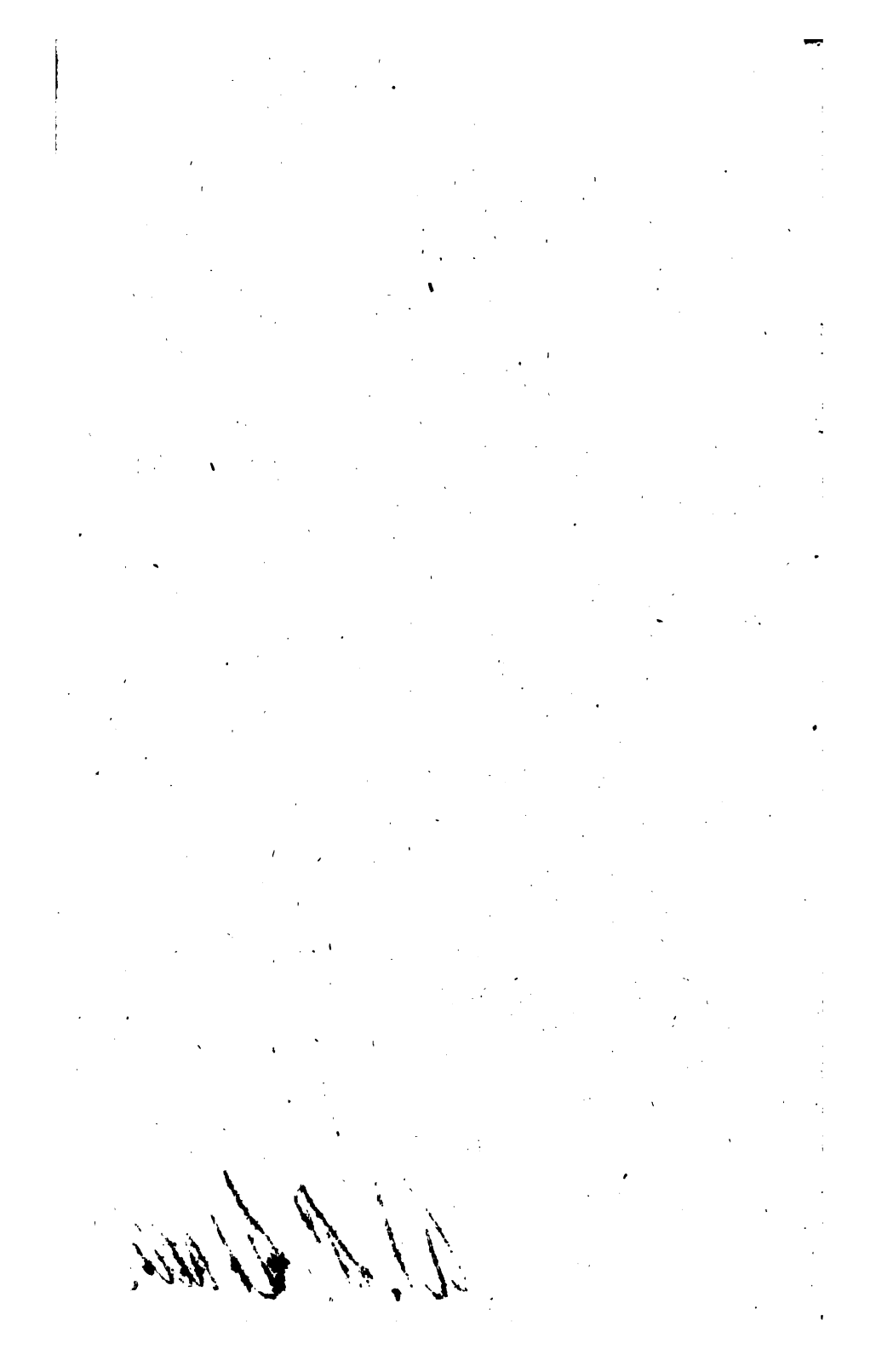
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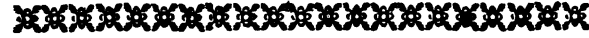
PRINTED FOR THE AUTHOR,

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W. Glatta
9-25-37

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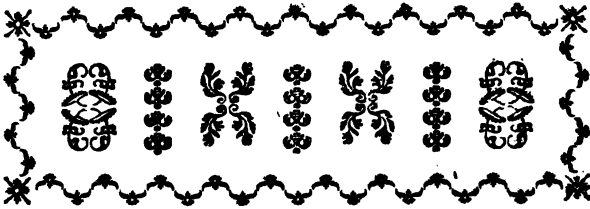
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A
 New S Y S T E M
 O F
 HUSBANDRY.



C H A P. I.

The Author's opinion on smutty-
 wheat, and from whence it pro-
 ceeds, and its cure.

SMUT is a black substance, in-
 closed by a tough skin, when
 broke falls to powder; and
 though many authors have warmly and
 learnedly handled this subject, yet I
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humbly conceive, they have dropped short of the real cause from whence this misfortune proceeds.

I have turned over most authors on this subject, and find several have stumbled on part of a cure, though none have hit upon the right cause. The strength of every argument is known by the reasons quoted therein; neither can any argument be good or well grounded, that will not bear sifting or trying to the bottom.

In order to open the ideas of my reader as much as possible, I shall give mine, together with a few quotations, as follows.

In 1764, a paragraph appeared in the Dublin Journal, of a farmer in Cheshire that sowed a field with wheat, one half of which was marled, and the other dunged; the dunged part was smutty, but that which was marled, was not. The said paragraph also desired an an-

swer from any one who could solve this mysterious point, but was not answered.

In the summer of the last year, 1769, I saw a piece of wheat belonging to one Mr. Clarke, a farmer, near Bungey, in Suffolk, which contained about seven acres, four of which were the smuttieft I had ever seen; upon an average, it was computed that the third part was smutty, but the remaining three acres were very clear of smut.

This was a curiosity which brought many people to see it, and staggered many who pretended to be connoisseurs in this mysterious point.

I told Clarke, that I believed I could guess the reason; so can I, says a by-standing farmer, which is, he did not pickle his seed; for I always steep mine, says he, in strong salt and water, and lime it, by which means, I never am troubled with this malady.

Yes, answered Clarke, I pickled the seed all alike in salt and water, strong enough to swim an egg, and limed it till I brought it to a consistence proper for sowing, and sowed it all within the space of three days, which proved dry weather; the field likewise was summer fallowed, and all got plowing alike.

I told him, that I imagined he threw the disease into the ground by his manure; for that I apprehended he dunged the smutty part, and either left the other undunged, or manured it with some sort of compost.

Upon my word, answered Clarke, that is just the case, for I dunged the smutty part, but the other I manured with a black mud or sludge, I raised out of the bottom of a pond and other ditches.

This immediately corresponded with all the concurring circumstances I had ever seen of the sort.

Upon this, we went to look at the wheat, and by pulling up many roots of the smutty corn, found innumerable worm-holes into them; but as the weather was very hot, and the ground dry and sandy, the worms had retired deeper into the ground for moisture, therefore could not come at them, having no spade in the field.

The above is a convincing proof, that the disease came into the ground by the way of the dung, as both the land, seeds, and management, were all alike.

It was also evident, that the pickle of salt and water (though strong enough to bear an egg, in which the seed was steeped a winter's night) had not efficacy enough to prevent the vermin brought in by the dung, from preying upon the roots of the corn.

I must also observe, that Clarke told me, he laid the dung on when in the state

of fermentation, smoking hot out of the fold-yard, at which period, the flies or insects were in their greatest vigor, and their eggs most likely to come to perfection.

This also shews the great mistake in farmers not laying their dung in heaps, and giving it time to ferment, rot, and cool, before they lay it on the land, that these vermin may be smothered in their infancy, and not taken out in the dung, to prey upon the fruits of their labour.

I have read some authors, who assert, that smut proceeds from the ground being wet, but the above accident quite destroys such an argument, as this was remarkable dry sandy ground.

A similar case once happened to myself. I sowed a field of wheat, the seed of which I bought at a distance; I pickled it in the common way, with salt and water only; I dunged the said field as far as

my dung went, the rest I lined as far as that went, but was still short of manure for two ridges, which I spread over with foot and ashes.

The consequence was, that the wheat as far as the dung reached was smutty, the rest of the field was quite clear. This naturally led me to try to find out the reason thereof; and in examining the dunged part, by pulling up the stubble, &c. I found the ground particularly full of grubs or worms of several shapes and sorts; which I make no doubt, but were the offspring of the usual inhabitants of dunghills, such as flies or insects of diverse sorts, which drop their eggs therein, and by the heat, fermentation, and putrefaction of the dung, these vermin are brought to life and mischief.

The nicest observations I can make, and concurring circumstances herein quoted, leave me no room to doubt, but smut proceeds from a worm or grub; and if

it be not the red or cut worm, it is of that nature. I have taken a small grub of that likeness, out of a root of smutty wheat, and have very often found rusty cankered traces of worms in the roots of corn.

About the last of May and beginning of June, wheat is shooting into ear; and the ear is no sooner out of the stem or straw, but the skin of the grain is formed, and filled with a soft, pulpy, milky substance.

At this crisis, the worm or grub seizes upon the root of the plant, and feeds upon the fine particles or juices thereof, which ought to ascend to nourish or feed the grain. And though so small a worm may not take in all the juices belonging to an ear of wheat, yet, by making an orifice to feed out of, it wounds the plant, and gives vent to the sap, so that it bleeds (as it were) itself to death.

A root of corn (by branching or stooling) may produce thirty or forty stalks or ears, and each ear takes in its nourishment from the main root, by a vein or leader purposely placed to feed through.

Now, if the worm or grub should seize upon said vein, and feed upon what should supply nature, doubtless the milky substance already inclosed in the skin, would dry up, and become a black powder, or dead substance, for want of farther nourishment; nay, in short, I believe it very possible for one grain in the middle of an ear to be smutty, and the rest not hurt; as doubtless each grain has a vein leading from the root peculiar to itself, through which it takes in its nourishment; but I believe it impossible to account for this in any other way, than by a worm or some such insect seizing the vein peculiar or belonging to each grain.

I look upon it that there are three sta-
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ges or period in which corn may be spoiled by these vermin, viz.

First, when they prey upon it, after it is in the ear, but before the grain is formed. When it is caught in this state, all the ear or chaff strips or falls off, and leaves standing a naked stalk; this we have seen often happen even in all sorts of grain.

Secondly, (as above observed) when the skin or bran-part of the grain is formed, and tough enough to hold the soft milky substance, but before it is formed into a solid body, then the vein is wounded, and nature stopped from fulfilling her office; therefore, what was already in the skin, for want of farther supply, dries, and becomes a black, light and lifeless powder, much like lamp-black; but as the skin or bran is tough, it is confined therein like or in the form of a ball; and when it comes under the flail, it is burst and let at liberty, like dust among the corn, and hangs at the downy end thereof, so that

when it comes to be ground, the flour and bread is made black, and disagreeable to the eye, but indeed not to the taste, as the palate cannot perceive any disagreeable taste it has: and, if the wheat could be threshed or got out without bursting these balls, it would not be of much ill consequence, as the balls are so light, that they might be easily separated from the heavy corn by several methods.

Therefore it is best for a farmer who is troubled with this malady not to thresh, but lash such corn, and winnow the seed, with as little mixture or treading on as possible.

Another good method is, to leave or pick the smut out before it is threshed, but it must be a nice discerning eye that does this, as some ears of smut are much like the good corn; and if one ear or two be left in a sheaf, it will spoil the colour of the bread.

The third stage in which wheat is seized, or obstructed in its feeding or filling, is when the grain is about half ripe; then the worm seizes it, and being deprived of farther nourishment, it dries and shrivels up to a small weakened flinty grain; and though it is small, yet, by its firm texture, one might expect it to produce a little meal; but upon inspection it is found to be almost as hard as a flint, and of no use. This is called by some of the English farmers, flints, and by others trucks.

The above considerations are more than a probability, that a worm is the cause of smut; yet I hope what is to follow will make it appear much stronger in its favour: I say, I hope, because if we be acquainted with the disease, the cure is more certain.

It is allowed by most writers on this subject, that pickling wheat will prevent smut: this I readily admit, but however believe, that some pickles commonly

made use of, will scarcely prevent it; and as firmly believe some others to be effectual.

But give me leave to ask such authors, how they propose these pickles to operate? Do these authors, who believe that smut comes by a blast, imagine, that pickle could prevent the wind from having any power over the plant? And was it not both a very partial pickle and wind, that would not prevent all the Cheshire and Norfolk farmer's fields from being smutty, as well as that part which was marled; likewise mine and several others which have had the like trials, and met with the like impartial winds?

Again, does the author who places the reason of smut to the account of not changing the seed, believe, that if the pickle had power to prevent the seed, bought three or four miles off from being smutty, that it should not have the same power over seed grown in his own land? Or does

such an author really think, that it is any more possible for smut to grow and taint any other corn than lamp-black; seeing it is as utterly divested of every vegetating quality?

I have sown very smutty wheat, variously prepared, both with and without pickling, but never saw that it was attended with any bad consequences arising from smut; and if I liked the seed otherwise, I should never be deterred from sowing it, as it is clear to me, smut is not the occasion of smut, it being as possible for a bit of dry powder, out of a rotten stick, to grow, or taint others as smut.

Very often have I started the subject amongst a club of farmers, who perhaps would be of as many opinions as there were people in the company, one asserting that steeping in salt water would prevent smut, another that it would not, a third vouches smut to grow smut, a fourth that it will not; and so on.

But now again, if we turn our eyes on the worms, we shall find it as clear as the noon day, where the pickles operate to prevent them from feeding upon, or wounding the plant as above; we shall also find, that the more nauseous or poisonous the pickle is made, the more likely it is to be effectual in its purpose.

Wheat being put into a tub of pickle, the skin or bran is the first that imbibes the liquor, and the thick glutinous part thereof sticks, clings, or gathers to the skin; and when the lime comes to be added, it incloses, coats, or candies the grain, by which there remains a kind of a crust, which retains its nauseous quality for a long time.

Now we are to consider, that the skin or bran never grows or leaves the ground, but remains encircled with the root, which grows and spreads round it: this is a plain truth, which may be immediately proved

by pulling up a root of stubble, and upon examination, it will be found, that the husk is quite uniform, and nearly resembling a blown egg, having a hole at each end, one to let out the root, and the other the top; and though the grain be buried deep, yet in a general way it will rise to, or near the surface, and generally stands perpendicular.

The inside or floury part of the wheat, being all fled, changed, or grown into root and branch, we might expect, that as the bran is left a dead lifeless body, it would putrefy, rot and fall to dust; but, on the contrary, it will (if the stubble be not trod or molested) preserve its perfect shape for several years.

This is easily accounted for, as it is the pickle which preserves it, and the stronger the pickle, the longer it will maintain its strength, both of smell, taste, and texture; which stinking quality is perceptible to these delicate, diminutive creatures,

whose sense of smell is the main guide they are possessed of, to conduct them to their food; and I apprehend it would be impossible for one of these worms to live in, and feed upon, a root of wheat that contains this stinking pickled bran or husk.

If a farmer do not dung his land, but enrich it by often ploughing, as hinted in several parts of this work, it is a very great chance if he will have a grain of smut in his wheat.

This is also easily accounted for, and makes good my assertion of worms being the cause thereof, as another reason may help to evince, as follows.

A farmer of my acquaintance had a field that was always subject to smut. I examined the land, and found it had been much dunged, was very rich, and crouded with many sorts of worms.

At this time indeed I was not acquaint-

ed with the pickle that will prevent it ; and he had used the salt and water pickles to little purpose.

I therefore advised him to plough his field every month in the year, both winter and summer, when under fallow, which he did, and soon cleared it of vermin. The crows, and birds of all sorts, followed the plough, and picked up every insect they could find.

The plough coming so often in a place disturbs and breaks up their nests or dens, so that they are prevented from breeding, and the old ones being exposed to the fowls of the air, their race is soon extinct.

It is well known to most farmers, that red worms are most predominant in fresh or new land, (that is) such as has laid a long time in grass, which has given time for these inhabitants of the earth to breed; but upon the ground being turned and the grass which used to be their food being

destroyed, and corn substituted in its place, they feed greedily upon it, and destroy many a good crop of corn.

Upon old going land they are seldom found, or at least, so thin as not to do much mischief. And how can this be accounted for, otherwise than that, as long as the land lieth in grass, the worms can breed and feed unmolested; but when disturbed, they meet with the above consequences of being destroyed by the feathered creation.

This again shews the value of tillage, and how assiduous and active every one ought to be to promote it.

I hope the above reasons are sufficient to shew, that worms are the cause of smut, and that fallow, and proper pickle, will prevent it. (See pickle.)

C H A P. II.

Nature of the soil, and price of the land, with many other interesting subjects, necessary for a farmer to know, through England, Ireland, Scotland, and Wales.

I Thought it might not be disagreeable to my reader to give him an idea of the different sorts of land, rent, manure, management, &c. in different parts of England, Ireland, Scotland, and Wales, which by comparing one part with another, may both be useful and amusing to him. I shall begin in Ireland, as my memorandum book takes its rise from thence.

From Dublin to Drogheda, in Fingale, near the sea side, the land is a strong clay soil, consequently good wheat land, and in general as clear from smut as most

countries, which I impute to the farmers tilling better than in some other places, and also manuring with short rotten Dublin dung and lime; but notwithstanding, I have seen a very smutty piece of wheat within five miles of Dublin.

In this country, cut, or, by some called red worms, (which destroys green corn) is very little known.

Land lets at about eighteen shillings an Irish acre, at seven yards to the perch.

From Kells across the country to Trim, there is a great deal of smutty wheat; and I have seen many crops both of oats, barley, and wheat, destroyed when in grass corn with red worms.

The land in this country is very rich corn soil; and in the year 1767, it let in a general way for about twenty-one shillings an Irish acre, or fourteen shillings for an English one.

From Trim to Longford and Mullingar, there is a great deal of smutty wheat; and it, as well as other green corn, is damaged by red worms. The land is good strong deep wheat soil, and lets for about twenty-three shillings an Irish acre.

From Mullingar to Ballymahan and Lanesborough, the land is not so good, lets only for about fifteen shillings an Irish acre. They do not sow much wheat, neither did I ever see any smutty, but was told they have a little sometimes; neither are they much troubled with red worms.

From Lanesborough to Roscommon, Elphin, Boyle, Castlerea, Ballinasloe, and Loughrea, the land is very good, lets in a general way, for about twenty-five shillings or twenty-six shillings an Irish acre. It is a deep loomy soil; at about three feet deep is a rich limestone gravel, which they raise, and lay on as manure.

They make little dung, as they seldom house their cattle. This country may be a circumference of a hundred miles, and, I believe, there is not a spot in our king's dominions, of the size, which is clearer from black or smutty wheat, and red worms, than this, which may perhaps be owing to their making little use of dung, as it cannot be by good tillage, they being great flovens in husbandry, except a few gentlemen here and there; indeed their land is so good that it makes them idle, for turn it up in any fashion, and corn must grow.

In the Queen's county, about Portarlinton, Tullamore, Muntrath, and Maryborough, the land is a light corn soil, of an inferior value, lets for about twelve shillings an Irish acre. I have seen here a great deal of smutty wheat, also a great deal of corn destroyed by red worms.

In the county of Kildare, about Kil-

dare, Naas, Newbridge, and Killculling, the land is light and sandy in a general way, and kept much in tillage, lets at about fourteen shillings an acre. In this country they till pretty well; they have sometimes smutty wheat, but seldom troubled with red worms, except when they break up a piece of fresh land.

The county of Carlow, the land is something stronger than in the county of Kildare, and it in a general way holds so all the way to Kilkenny.

It lets for about eighteen shillings an acre. They have plenty of lime hereabouts, and in spots limestone gravel.

This country is not exempt from smutty wheat, and red worms, which destroy their green corn, though they grow as good wheat in this, as in any part of Ireland.

In Kilkenny there are very consider-

able flour mills, which grind a great deal of wheat, and send the flour to Dublin, though it is fifty Irish miles land carriage. Their miles, as well as land, are measured with seven yards to the perch.

What encourages farmers to carry their corn and flour so far by land to Dublin, is a bounty which they have paid them by the government, viz. a halfpeny for every twenty stone of corn for every mile they carry it above ten from Dublin; but all within ten miles of Dublin, are exempted from the bounty.

Every eight stone of flour receives a bounty of twopence for every five miles, except the last ten miles next Dublin.

There is very little inland navigation in Ireland, which makes this encouragement of land carriage of great moment to that city, in keeping down the markets; and it also encourages farmers to sow more corn in the interior parts of the kingdom,

which would otherwise be neglected ; and certainly no country can be more proper for corn than every part of Ireland.

I know the kingdom well, and verily believe, there is not a space of ten miles together in the whole kingdom, where there is not plenty of good manure to be raised out of the ground at a small expence.

The island in general abounds with limestone gravel, which is a sort of rich blue soapy marle, intermixed with small cobbles, or paving stones, but of a very rich limestone nature, and when thrown on the ground with the marle, they act also as a manure, as the weather tempers them, and makes them throw off a coat, or crust, every year. It is amazing what tufts of sweet grass are to be seen near these stones.

Where limestone gravel fails, there is generally a greety sand, which is a very

rich manure; in other places white marle, which lies under bogs; and in most places of the kingdom, there is limestone and plenty of turf to burn it with; so that, in fact, Ireland is a very rich country in this respect.

Though the county of Wicklow is a mountainous country, yet there is some very good spots of land in it; but in respect to good tillage, we can say very little for it.

They chiefly pay their rent by fat calves and lambs, for which they are famous, and bring them the distance of forty or fifty miles from Dublin, viz. from Wicklow, Gorey, and about Castlebridge.

This county is a compound of various sorts of land; in the hollows or valleys it is chiefly a good rich loomy corn soil, inclined to clay.

And on the hills it is sandy, mixed with

small stones; and in some places you see white marble stones of a small size. A great extent of mountain, covered with heath, or ling, is to be found here, and which is very improveable, both as to the nature of the soil, and cheapness of manure, as limestone is to be found in great plenty, and lime is very proper for this sort of land; I have seen it work miracles on land of the like kind, of which I shall speak more fully in its proper place.

Land (for this heathy mountain, in its present state, cannot be deemed as such) lets, from Dublin till you come near Wicklow, for about twenty shillings an acre; but as you go farther off, it lowers to about sixteen shillings an acre. I do not strictly mean all the way from the very city of Dublin, because it is to be expected, that land near such a capital, so far as two or three miles, must be very dear, perhaps four or five pounds an acre.

The county of Waxford is a great corn

country, and particularly in the barony of Fort and Bargy, they grow a great deal of barley. The land is of a sandy nature for about five inches deep, and under that a bed of clay; in other places, a red, hard, obdurate, rusty, bad earth, by some called ramell; in short, a great part of the barony of Fort and Bargy, is much such land as they have in several parts of Cheshire.

At about five or six feet deep, in many places, there is both marle and limestone gravel to be found, but they are little sought after.

They make a great deal of use of lime and sea-weed, particularly near the sea-side.

In one particular spot in the barony of Bargy they tell you, that every acre maintains a christian, a horse, a cow, a pig, and a dog. How true this may be I know not, but it is a common report in the adjoining neighbourhood; but be that

as it will, the place is extremely populous and well stocked, and the land as rich as it is possible to be made, and with no other manure than sea-weed, which they make use of in great abundance, and which produces the greatest crops of corn I ever saw.

The middling price of land is about fifteen shillings an acre. The farms are not so large in this as in many other counties in Ireland.

Here is a great deal of smutty wheat; but they are not much troubled with red worms.

The barony of Fort, gentlemen are the most hospitable, disinterested, facetious set of people I ever met with.

They are a good neighbourhood, and live in unanimity, and joyously with each other; they keep a good table, which is always open to their friend or neighbour: one can scarce travel above a mile or two

in this country, without falling in with a gentleman's house, the proprietor of which is worth from five to two thousand pounds a year, and every gentleman is a farmer; what corn he does not use himself he sells; therefore they are neither too little or too great; they are nowise flashy, but live within their fortune, and yet quite generous.

The common people are all Romans, like the rest of the kingdom, but not so bigotted in their religion, and seem to be well attached to the present government. They talk English well, and also speak Irish one to another, but their Irish differs something from the rest of the kingdom.

They call themselves Strongbowyons; that is, they came over from England in Strongbows time, and settled in this barony, where their offspring has remained ever since.

This is a very plentiful cheap place to live in, and particularly for wild fowl and fish; their wild fowl chiefly consist of duck, teal, widgeon, barnacle, and winyard.

Widgeon and barnacle, though scarce eatable in any other part of the world, that I know of, are here the most delicious morsel I ever tasted, and remarkably fat. The winyard is a species of fowl peculiar to this place, I believe, for I never saw them elsewhere; they are not much unlike a widgeon, though something smaller but fatter, for if they be shot flying, they generally burst in the fall, by being so immoderately fat.

These three sorts of fowl are nearly of one taste, owing certainly to their feeding all upon one sort of food, which is a sort of sea-weed peculiar to this coast, and which is thrown up, and left by the tide at high-water-mark, twice in twenty-four

hours; so that they are regularly fed, which makes them resort here in such abundance.

They can only be killed at night; for all day, they either remain on the water, or on some small islands, that are six or seven miles within the sea.

At night the fowler is prepared with a long wide gun and a water-dog; he places himself so as to command the lengthwise of their train of meat; this he can easily do, as he sees where the water has left it the tide before, which is in a long narrow stripe for several miles together; as soon as it is duskish, the fowls come up in very great flocks to feed, so that they cover the ground as close as they can stand; a fowler has nothing to do but to level his piece, and shoot into the lump; he needs only one shot to load his horse home. It is almost incredible what a great number they will kill at a shot. They are

generally sold for four-pence or six-pence a pair.

Kilkenny is about fifty-six miles from Dublin ; the direct road to it is through a very fine country, viz. part of Kildare, Carlow, and part of Kilkenny ; the towns you go through are Naas, Kilcullen, Timolin, Carlow, and Leighlinbridge.

This is the finest ride in Ireland, for so far together, as it is all an inclosed country, without interception of commons, or any waste land ; and fifty-six miles in Ireland is a long way, as they measure with seven yards to the perch.

But indeed there is not to be found so fine a ride for so far together in his Majesty's dominions, as in Ireland ; for if you begin behind Kells, which is to the north of Dublin, and go to Kilkenny, which is to the south of Dublin, you ride for about a hundred Irish miles through five coun-

tics, namely, the county of Meath, Dublin, Kildare, Carlow, and Kilkenny.

You have all the road, a good quick-set hedge at each side of you, and all an inclosed country; you do not go over an acre of either bog, heath, mountain, common, or any sort of waste land; you are also accompanied part of the way with fine rivers, and all the way, with either gentlemen's seats, or towns, at the end of every two or three miles.

The city of Kilkenny is famed for four rarities, air without fog, water without mud, coals without smoke, and the streets paved with marble.

How this old tradition arose into a proverb, I know not, but they can in strictness only claim two of the four; which is the two last.

They have marble quarries near the town, from which they both build their

houses, and pave their streets with, but neither the houses or streets cut any better a figure, or scarce so good, as other good towns in Ireland; for every one knows that marble is a very rough stone, without great labour of polishing.

The Kilkenny coals do not in the least smoke, for which reason they are made use of all over Ireland, to dry malt with, and in Kilkenny as common firing.

It is true, as they have no smoke, there is not so gross an air, or heavy clouds over the city, as is over other great cities or towns, where the coals have a smoke, which ascends to the clouds; but the air is not exempted from fog for all that, as there is no commanding the clouds, fogs, or mists of other countries, but they will blow over it, just as the winds set.

Through the city runs a fine river, over which there are two new bridges, built of marble, just finished; the old bridges were

broken down with a great flood, about five years ago. The bottom of the river is gravel, therefore the water is for the most part clear, but I have seen it muddy more than once.

In the city, and near the river-side, stands a fine Gothic building, belonging to the Butler family, which was erected in Queen Anne's time, by the famous Duke of Ormond.

And about two miles up the river, stand the ruins of another of his buildings, which was ornamented about with a large plantation of ash, which is still growing and healthy, but very large.

The city Kilkenny is not very large, or by any means handsome or regular built ; but it is rich, and populous, and carries on a good trade in the manufactory of blankets.

For about fifteen miles across the coun-

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try to Waterford, the land is mountainous, barren, and bad ; a good deal of it covered with ling or heath. Rents at about ten shillings an acre, except in some rich valleys which is higher priced.

Waterford lies about twenty-four miles from Kilkenny ; it is a town of a pretty smart trade, and really now deserves to drop that odium that has formerly been cast upon it, of very busy, and nothing to do, like Waterford merchants : as they have now something to do, both in the Newfoundland fishery, and exportation of beef, butter, and pork, in great abundance ; they also manufacture a great deal of frize.

Waterford is not large, but a populous rich town, and improving every day.

The land in this county is not good ; in general about two thirds is a mountainous, thin, weak land ; and any good veins there are, are kept under dairies, so that agricul-

ture is neglected, and the poor also in a starving condition.

A great many men ship themselves off from Waterford, to serve the season in the Newfoundland fishery, for which they will get perhaps fifteen or sixteen pounds wage for six or seven months.

Being great help to this neighbourhood, for they generally spend it in the winter half-year.

Land lets here at about twenty shillings an acre, such as is fit for dairies, and lies in valleys, but a great deal of high land lets for about eight shillings an acre.

In about thirty or forty miles ride, viz. from Dorrow to Limerick, through most part of the county of Tipperary, the country is almost run wild, one would think, with sheep and bullocks; for it is hard to see a corn-stack, or a plough at work.

It was in this county the White Boys have been so troublesome. The land, in most parts, particularly Cashel, Tipperary, Clonmel, and down from that to Limerick, is very fertile, would bring great crops of corn, but the great possessors of it are blind to every thing but bullocks and sheep, so that agriculture and every sort of trade are banished; which makes a fine country look very naked, and its poor inhabitants meagre and ragged.

There is some of the richest land that ever I saw in all my travels in this county, and the county of Limerick, called the golden vein; and yet it cuts the poorest aspect as to its poor inhabitants, owing to its being kept under stock.

The staple of the land consists of a deep loomy clay or corn soil, will bring either wheat or any other sort of grain, without fallow, dung, or any other ma-

nure; in short, it is rich beyond expression.

Land lets here for thirty and thirty-five shillings an acre, great farms together.

As they seldom make use of dung, except for setting potatoes, they are little troubled with smutty wheat; but they are visited with red worms sometimes when they turn up fresh ground.

The grazers are gentlemen, who eat and wear well, and drink plenty of punch and claret, an easy sufficiency seems to dance among them; but the poor are miserably so, and they are mostly Roman Catholics, for there is scarce any poor in Ireland of any other religion; and I have often heard the poor say, that they believed there was a curse entailed upon the Catholics of Ireland, and that it appeared in this particular.

In short they are a very numerous body, that wade through a sea of troubles. I think, if I had it in my power to enact two or three laws, I could make Ireland one of the strongest and richest islands his Majesty has, as its situation is good for trade both by sea and land, the surface of the earth, by nature, is in general very rich, but where it is not, it is easily made so ; for all over Ireland the interior parts of the earth abound with rich manures, such as lime-stone gravel, marle, and limestone.

The kingdom is also variegated with variety of loughs, rivulets, and bogs ; so that there is no want of fire or water.

Likewise the kingdom is very populous, therefore must, with the above advantages, add both strength and riches, were they made useful members of society, and all to stand by the Protestant cause.

The gravel-act, indeed, has done wonders in bringing over the rich ; but nothing has yet transpired to change the poor Catholics ; they are a set of poor deluded creatures, and it is a pity but an act would pass (which might be easily pointed out) to relieve them.

Mostly all over Ireland the fairs for cattle are very large ; but particularly in Connaught ; the fair of Ballinasloe is incredibly so for wool, horned cattle, sheep and horses. I am credibly informed, that the customs amount to seven hundred pounds sterling a year ; which shews its immense value, as the toll for a score of sheep, perhaps worth thirty pounds, is only threepence, and threepence each for a cow, or any other cattle.

The poor generally sow a little flaxseed, which they buy from a sort of petty merchant, at an extravagant price, perhaps for five or six shillings a Winche-

ster peck, for which they get a years credit, till they spin it into thread in consideration of which they pay about two hundred per cent.

If they run in debt for half a peck or a peck of flax-seed, they give a note payable before the summer-affizes in the ensuing year; if they miss payment they are sure to be proceessed at the affizes.

And here the merchant or creditor has another apothecary's profit, of about eleven pence to the shilling; for he will buy a blank process for a penny, and fill it up himself; he charges for the process an English shilling, which is thirteen-pence Irish, and perhaps the original debt will not be above two or three shillings.

If the creditor do not pay it before the affizes, he is decreed, which is eight shillings and four pence expence. An honest man would abhor the oppression.

It is generally Roman Catholics that are those Jewish like merchants, for there are few Protestants in that trade, and there is none in Ireland more oppressive to Romans, than Romans themselves.

The county of Cork is very large, so consequently consists of various sorts of soil, but the major part is mountainous, and lets perhaps at about eight shillings an acre; but in the valleys it is high priced, perhaps twenty shillings an acre.

The favourite manure of Ireland, viz. limestone gravel, is scarce to be found here; but they have plenty of limestone, which they burn with whins, and comes pretty cheap; it is common to see a lime-kiln that will contain four or five hundred bushels of lime.

Though we cannot say much for the neat husbandry of these farmers, yet I cannot pass by them without taking no-

tice of a piece of invention, I think very very praise-worthy, and interesting to every one situated as they are.

I observed above, that they have plenty of limestone, which they make into lime by burning it with whins, other firing being scarce; and as they make use of a great deal of lime, they consume great quantities of this sort of fuel, therefore it requires contrivance to keep up a proper fund for that purpose.

This is done by raising large ditches for fence; and as their land lies high, and the country scarce of shelter, being thin of woods or hedges, they sow each side of the bank, which they raise by making the ditch, with whin-seed; and when the whins are ready to cut for fuel at three years old, they cut only one side of the ditch, and leave the other for shelter and fence till the cut side grows to fulfill that office, then they cut the oldest side for fuel; so they go on alter-

nately, cutting the oldest side from generation to generation.

And thus they are supplied with fuel, fence, and shelter, from the same ditch, which perhaps takes not up more ground than two yards, though by measuring round the top of the bank, we shall find a surface for the whins to grow on of near four yards.

How many places are there in England, Scotland, and Wales, that are scarce both of fire, fence, and shelter, that would be glad of whins to burn instead of straw and cow dung? and how easy and cheap would it be for them to raise these three valuable articles of fire, fence, and shelter, by the above method?

But though this simple method is very praise-worthy, yet it falls much short of the great œconomy they practice, by breaking limestone to powder, and ap-

plying it as manure for land instead of lime.

It answers the same end, comes much cheaper, and lasts longer than lime; it answers for any sort of land, but best for strong, as its angular points cut through and opens it, and the weather softens the little stones, so that it keeps peeling and discharging a crust, which acts as a perpetual manure till the last bit be wasted.

I happened in company with a gentleman farmer who first tried it, and he assured me that it answered full as well as lime, and that it did not cost half so much breaking.

I viewed a piece of grass ground covered with this bruised limestone, which astonished me with surprise, at seeing such a fine verdure in the middle of a very barren field, mostly grown over with heath; but as far as the limestone

had been laid on, it had quite changed the nature of the soil, killed the heath, and substituted honeysuckles and wild clover in its place.

Several more gentlemen about Mal-low were following this practice, and doubt not but it will in time be universally used there, instead of burning lime, particularly where firing comes high.

I am satisfied that limestone bruised to powder and laid on grass ground, is better than lime or even any other manure, particularly if the ground be strong, coarse, and sour, or inclined to heath or ling; and it is far the best manure I know of for suppressing moss.

A man may break a chaldern or four quarters in three days, or in less, if the stone be of a soft nature.

The smaller it is broke and the sooner it will take effect; none ought to be left larger than a haffle nut.

A great improvement might be made by a horse-mill, to grind limestone in, in the nature of a bark-mill or an oil-mill.

The city of Cork is a very rich flourishing place, and drives on a considerable trade in the exportation of beef, pork, and butter.

It is also improving very much in its buildings; it is a ready market for a farmer to vend the product of his land in. It is well situated for trade; and should there ever be a union between England and Ireland, it would soon be a far richer city than Dublin.

The upper part of the county of Sligo, Mayo, and Galway, leading to the western sea, the land is only good in spots; in all these counties there is a great deal of gravelly, rocky, heathy, shallow land, intermixed with bogs; however in the worst of it there is every material necessary for improvement.

In these counties land varies much in price, according to its value; but, upon a medium, it may be rated at about twelve shillings an acre.

There is no part in Ireland where land varies so much as in the county of Leitrim. In order to give my reader an idea of it, I shall just mention, that in the year 1759, I let about five hundred acres of land, in four different farms, all lying within one ring fence, one for six shillings, another for twelve shillings, another for eighteen shillings, and another for a guinea, being one pound two shillings and nine-pence Irish currency, per acre.

And indeed the land varies accordingly through the county, in some places fine rich limestone soil, in others strong cold clay soil, all grown over with rushes, and in others thin gravelly soil, grown over with heath.

But this county, like most others in Ireland, abounds with all sorts of manure for improvement, such as limestone gravel, white rich marl, a fine rich sand mixed with shells, and limestone in abundance, together with turf in plenty to burn it with.

I have had extreme good wheat and corn of all sorts here. I seldom see them troubled with smutty wheat, or red worms, which is perhaps owing to their sweet method of manuring.

Their method of farming is very bad, and their way of yoking horses is barbarous; they draw their ploughs and harrows with their horses tied by their tails. I have very often seen a mare and her offspring, viz. a three years old, two years old, and one year old colts, ploughing all in a-breast, two going upon the ploughed land and two upon the unploughed land, with neither hemp or iron about them; their whole gearing con-

fisted of a wythy, or twisted stick, tied to the hair of each horse tail, and so through a hole made in a long pole or stick, which reached the breadth of the four horses, and served by the way of a swingle-tree, which pole is fastened in the middle by another wythy to a hole bored in the end of the plough beam.

The man that drives, or more properly speaking, leads the horses, has a long stick, to which each horse head is tied with a wythy halter; the man by holding the stick has all the horses at his command; he walks backwards before the horses heads all the day; when he wants them to follow him, he pricks them with a long stick he has in the other hand, in the end of which a sharp nail is fixed. Thus we see them equipt in the plough way.

They harrow in the same wooden manner, having a wythy fastened to the hair of each horse tail, and to a harrow which each horse drags; the harrow

teeth are made of whin flints instead of iron; so that in fact there is neither hemp, leather, or iron, except the coulter and sock, about their teams; and yet I have seen as good corn grow there as I ever saw in England, which is all owing to the natural goodness of their land, and maiden manure they raise out of the interior parts of the earth.

Was not better ploughing or management used in England, we should grow nothing but weeds instead of corn.

The greatest misfortune which generally attends their crops, is that of their being too rank, so that the corn is small and lean, as the richness of the soil, and the softness of the climate, together with the double portion of seed they throw into the ground, forces it too much into straw.

But as I have described their barbarous method of drawing their horses by their tails, I must also do justice to the legisla-

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tor, by telling my reader, that they have made a law to put a stop to this cruelty of drawing the horses by the tail, which has in a great measure contracted it to the most distant or remotest parts of the country at present, but formerly it was general all over the kingdom.

The counties of Monaghan, Tyrone, Londonderry, Fermanagh, Donegal, Down, Caven, Armagh, and Antrim, are in the north of Ireland.

Most of these counties flourish much in the manufacturing of linen cloth, particularly towards the sea-coast opposite Scotland.

The most considerable manufactories begin at Dundalk, and so on to Newry, Loughbruckland, Hillsborough, Liffburn, Belfast, Langan, and Armagh: through all these places the land is very good, except some mountains interspersed here and there.

The lands here are in general better inclosed, and divided into smaller farms, than in the rest of Ireland, which is a great blessing to the inhabitants, and adds much to the beauty and richness of the country; because when a man is not over-burdened with land, he can, as it were, make his farm into a garden, by attending to and beautifying every part of it; and he certainly can make one acre, well cultivated, produce as much as five in its wild barren state.

What pity it is that the worthy gentlemen of Ireland will not open their eyes to such plain facts, and curtail these unmerciful farms, that ruin the best part of this fine, healthful, and easy to be made, a very rich kingdom.

The land within the ride of the last mentioned towns, lets at about eighteen shillings an acre. It is in general, strong wheat soil; but however their chief crops are oats, beans, and potatoes.

Here are many little bogs lying between the hills, under which is a good white marl; there is also plenty of limestone, and lime is much used as manure.

The right honourable lord chief baron Foster has an estate at Colon, in the county of Louth, which he has improved by lime to an amazing degree, to the amount of about two thousand acres, which formerly let at half a crown an acre, to that pitch, that it now lets from eighteen to twenty-three shillings an acre; an immense rise indeed: and what is more, the first crop generally paid the expence of liming, though he had the limestone to carry four miles, which is a distance that seldom happens in Ireland.

The coals that burn it he gets from England. He told me, that he can lime well for four pounds an acre, at seven yards to the perch; and he lets the land the first year to break up to set potatoes

in, at four pounds an acre, the next year he lets the same land where the potatoes grew, to sow oats in, at three pounds an acre, and the third year to sow again with oats, at fifty shillings an acre.

In all this, he is at no other expence, but just laying the lime on.

Sometimes instead of oats after potatoes, they sow flax-seed or bare; but they may sow what they will, as they are sure of good crops.

The lime generally lies on the sod about a year before it is broke up, and as it lies pretty thick, it presses down any grass, heath, or other rubbish that may be on the land, and turns it to dung, by which means it fements and unites the lime to the sod and particles of earth, which otherwise would not incorporate and unite so kindly.

The original state of this land was a heathy wild mountain, without hedges,

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ditch, tree, or bush of any sort, and had as wild a look as the highlands of Scotland.

The staple of the ground is inclined to a clay gravel of a redish cast, intermixed with thin flaty gritty stones.

The situation of the ground is not to be called very high, or is it level, but in waying hills, takes a good pull for a carriage to attain the top.

They generally plough in all this country with four horses, two before two, except in breaking up grais ground, then they generally use six.

They grow a great deal of oats and round eared barley in the counties of Louth and Down till you come to Donaghadee.

Farther north towards the county of Antrim, Donegale, and Londonderry, the land lowers in its value, having a

great deal of strong, cold, spewy, rushy, and heathy land interspersed all over the country; and the country is also uneven, rising very much into hills, sometimes to a disagreeable height.

They grow little else here but potatoes, flax, and oats, the oats mostly of the black sort; not but the land will grow both wheat and beans, as I have seen good of both raised by gentlemen, but the farmers do not care to venture out of their old track of husbandry.

The land here varies much in rent; in good spots and near towns, it lets for about twenty shillings an acre; but in the high and more open country, it does not let perhaps for more than ten shillings an acre.

C H A P. III.

The price of labour and victuals in several counties in Ireland, as they rated in 1769, in order to give an idea of the different state of the two kingdoms in these particulars.

DUBLIN, beef by the quarter at two-pence half-penny a pound, from Michaelmas to Christmas, but is very dear in spring, which is chiefly owing to the scarceness of winter feeding, as the people of Ireland sow very little turnep-feed.

Good beef in April perhaps will give four-pence a pound by the quarter. Mutton keeps at a much more equal price; for as their land is good, and their winters moderate, fat sheep will keep their flesh through the winter, so that the markets seldom vary above a penny a

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pound; it sells at Michaelmas at two-pence half-penny a pound, and in spring at three-pence half-penny a pound. Pork and bacon bears an equal moderate price, which is owing to plenty of potatoes for feed, for they seldom feed swine with beans.

Pork at two-pence and two-pence half-penny a pound; bacon at three-pence half-penny a pound.

Veal in winter is five-pence and six-pence a pound, but in May and June at two-pence a pound.

There is as good and as bad veal in Dublin as in any part of the world. Calves sell here from two shillings to four pounds a piece.

All the dairies near Dublin sell their calves as soon as they drop for two or three shillings a piece, which is a barbarous custom: but the county of Wicklow which chiefly supplies Dublin mar-

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ket, keep their calves three or four months old; nay, I am told, some will keep them five months old. In fiore, they make very good veal, and they are also famous for early lambs in this country, by which Dublin market is supplied.

In Dublin, a good goose for two shillings, a good fowl for eight-pence, rabbits are dear, as there are few warratts in the kingdom, the land being too good for them, so that there are scarce any to be got, except tame rabbits bred in houses.

Fresh butter in Dublin is high in winter, eight-pence and ten-pence a pound, and in summer at five-pence and six-pence a pound.

Wheat this year from twenty to thirty-two shillings a barrel, or four bushels Winchester measure, in the same market the same day.

The quality of wheat varies much, ac-

According to its cleanness or dryness. They are very often obliged to dry it on malt-kilns.

English wheat generally bears a higher price than the best Irish by two shillings the barrel in the same market.

They import from England a great deal of malt, which is superior to the Irish made malt by three shillings a barrel. In short, the Irish maltster cannot be content with moderate profit, for if he cannot profit other ways, he will have it in weight or measure.

Formerly they used to sell by measure, then they grew it out so much, that it had no strength in it; and as they never sift it, but sell cums and all together, it was so long one might almost fill the bushel with a dung fork.

The legislator saw the cheat, so made an act to sell by weight, and now the extrem is full as much the other way,

for they do not above half grow it, so that the thick end of each grain does not turn to malt, but dries and becomes a hard flinty substance, which weighs heavy in the bushel, but yields no spirit to strengthen the ale. Thus the public are imposed upon by the maltsters being too avaricious, and not doing the fair thing.

Malt sells at about sixteen shillings a barrel.

Oats being so general a crop in Ireland, one might expect them to be very cheap; but however, though a great many are grown, there is also a great consumption, as all the poor in general eat no sort of bread except that made of oats; and the time of the year when potatoes are out of season, their whole living is oat-bread and butter-milk; but so long as potatoes are good they supply the place of bread; therefore oats bear a better price than could be expected, being so general a crop.

Potatoes in the year 1759, was a failing crop, which made oats and oat-meal very dear.

Good oats sold this year in the interior parts of the kingdom at fourteen and fifteen shillings a barrel, which is at the rate of thirty shillings a quarter. The year after, being a good potatoe year, I bought good oats at five shillings a barrel. This shews the great dependance there is upon potatoes.

In the year 1769, good oats sold at twelve shillings a barrel in Dublin, grey pease at eighteen shillings a barrel, and a large field bean at twenty shillings a barrel.

The round black magazine field bean scarce any to be got, being little sown in Ireland. White boiling pease at thirty shillings a barrel. Very little rye made use of.

All sorts of artificial grass feeds are imported hither from England.

Bricklayers, masons, and house-carpenters or joiners, are two shillings a day. Labourers in Dublin a shilling a day; but farmers labourers in the country round Dublin, is eight-pence in winter without meat, and a shilling in summer.

In the counties of Waxford, Killdare, Carlow, Westmeath, and Queen's County, labourers are six-pence a day in winter, and eight-pence in summer, without meat. Beef and mutton two-pence and two-pence half-penny per pound in the cheapest season of the year.

Most country gentlemen kill their own meat, and the country labourers and farmers seldom eat any; so that the chief consumption is by the tradesmen and shop-keepers in market towns.

Eggs and fowls are cheap. Good chickens at three half-pence and two-pence a piece, lean geese at eight-pence a piece, lean turkeys at ten-pence a piece, and a roasting pig for a shilling or fifteen pence, eggs at seven or eight a penny.

In the counties of Kilkenny, Cork, Kerry, Tipperary, Limerick, Waterford, Galway, Leitrim, Mayo, Roscommon, Sligo, Clare, Londonderry, Tyrone and Farmanagh, being distant from Dublin, and partly destitute of trade, but subsisting chiefly by grazing, the living and labour is cheap, and partly bears an equal rate in all these counties.

Beef and mutton at the cheapest season from three half-pence to two-pence a pound, lean geese at four-pence a piece, lean turkeys at six-pence a piece, chickens at a penny a piece, eggs at ten a penny, roasting pigs at six-pence a piece, butter at three-pence a pound. Day-labourers at four-pence a day in winter,

and six-pence in summer, no meat, ploughwrights a shilling a day and meat, housecarpenters or joiners two shillings a day, no meat, masons two shillings a day, no meat.

The reader is to take notice, that in speaking of labourers, I speak in general terms, such as are employed by gentlemen and farmers all the year round; but in market and great towns, at times, particularly in March and April, when the shopkeepers and tradesmen are setting their potatoes, labourers are perhaps six-pence or eight-pence a day and meat. However this is a matter of little consequence in the farming way, but I thought proper to take notice of it, lest some unthinking readers, not making proper allowances for these things, might think my account erroneous.

Corn is at a more equal price, since a bounty was given by the government for land carriage, so that there is not above four or five per cent. difference between

the country and Dublin prices; and when a mis year in the potatoe crop happens, Dublin is the lowest market, they being obliged to send corn and meal into the country to supply the deficiency of potatoes.

The counties of Downe, Louth, Donegal, and Armagh, being manufacturing countries, labour and victuals bears a higher price then in the grazing countries. Beef and mutton at two-pence half-penny and three-pence a pound, geese at eight-pence a piece lean, turkeys at ten-pence or a shilling a piece, chickens at two-pence or three-pence a piece, pork two-pence a pound, a roasting pig a shilling, oat-meal at sixteen pence a peck, best wheat twenty-eight shillings a barrel, malt fourteen shillings a barrel.

Labourers at six-pence a day in winter, without meat, and eight-pence in summer, without meat; house carpenters

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two shillings a day, and masons two shillings a day.

A farmer's man servant six pounds a year, a strong boy three pounds a year, a woman servant three pounds a year, a lusty girl thirty shillings a year.

There is little difference in the wages of yearly servants in any part of the kingdom.

The gentlemen of Ireland give good encouragement to English servants and stewards, with good characters.

Ireland is two hundred and seventy-five miles long, one hundred and fifty-nine miles wide, and fourteen hundred miles in circumference.

Their land and mile measure is by seven yards to the perch.

Their weight and measure are all Winchester.

As to the currency of the English coin, every shilling goes for thirteen pence, so consequently one guinea is worth one pound two shillings and ninepence in Ireland.



C H A P. IV.

A cure for wet and cold land, by laying it in broad high ridges, &c.

ONE of the greatest misfortunes that can attend a crop in Ireland, Scotland, and the north as well as many other clay parts of England, is too much wet; this sometimes happens from the particularity of the season, but much oftener from the nature of the land; but from both these a farmer may guard himself against.

It may be asked indeed, can a farmer alter seasons? can he cause sun-shine, or call down rain? it is true he cannot, nor do I expect impossibilities of him; but there is nothing more easy than for him to guard against this general evil; for though he cannot prevent rain, yet he may effectually prevent his land or crop from being hurt or damaged thereby.

But before I begin to direct my brother farmer how to keep his land dry by draining or raising in high ridges, let me caution him to give me an impartial hearing; let him view what sort of land he is master of, and if it be a sandy or gravelly bottom that will give admittance to the water as it comes to descend through it, such land is to be laid as flat as possible; therefore it is only the reverse sort of soil that will not permit the water to leave it by any other road but the surface, which this chapter is intended for.

How unreasonable then would it be for my reader to begin of Blood-and-ounzing, because the chapter does not suit himself (a circumstance I have often heard); let him consider that above one half of these kingdoms wants the cure I herein prescribe.

Let him again consider that an author must write for every body, not knowing in whose hands his work may fall, but a reader only reads for himself, and he seeing what land he is master of, if the chapter does not suit him, can easily drop the book. As to the method of laying land for lawns, &c. before gentlemen's houses, I shall treat of in a chapter by itself.

If a farmer be possessed of cold wet clay land, let him lay it in high ridges, as will be hereafter described, and it is impossible for water to stand thereon ten minutes before it tumbles into the furrows, and the furrows immediately con-

vey it into the drains: and by a person keeping his land thus dry, it consequently adds to its heat, nourishment, and fertility.

As to a farmer's crop suffering by wet, the general case is, because he is not beforehand with the season, so as to have his crop ready for harvest early, before the days grow short, and weather bad or broken.

One great article in fertilizing land, is by breaking and dividing it into small particles; whether this be done mechanically by the plough, manure, or laying it dry and warm, so as to cause a fermentation, it matters not; but essential it is (it is very plain) to break and divide the soil into small particles, for the free growth of plants, because it gives the roots a free passage to search for nourishment, and it is from the smallest particles, of this matter that they are nourished.

Laying cold, wet, strong clay-land in

these high ridges, is the best method a farmer can devise, to cause a fermentation, and to make his land warm, free, open, and mellow: strong, heavy, sour, cold clay land, chiefly wants to be laid thus dry, and often ploughed, to make it a very fertile soil.

Whereas, on the other hand, while it lies in its flat wet state, (as I see it mostly does all over Ireland, and a great many parts of England) it is rendered more than half useless; for in this condition its chief crop or product is moss, rushes, and a bad, coarse, three-edged grass, by some called spear-grass; indeed it perishes every kind of sweet herbage, none such will grow on it, on account of its cold close nature, and retaining the water amongst it.

This is the evil that attends a strong clay surface: but there is still a worse sort of land than this, and that is, when the surface or upper-stratum, for four or five inches deep, is of a loose, open, black

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earth, inclined to moor or bog, or of a loose sand, and under that a bed of clay or close earth, which will not admit any water to enter it.

Such land, I say, is worse than a clay-surface; for this upper-stratum being loose and open, it immediately admits the rain to enter, which sinks till it comes at the under-stratum, or bed of clay, but can get no farther, so lodges between the two stratum at the roots of the grass or corn, &c. which consequently perishes any plant that is of a tenderer nature than rushes, moss, spear-grass, or heath.

This is the consequence with more than one half of all the lands in Ireland, as well as some parts of England and Scotland, but more abundantly on the north or north-west side of Dublin; the most of such land lies on eminences or hills, which situation, one that does not understand it, might imagine to be dry, but it is very

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deceitful, though nothing is more easily accounted for, and cured too.

How can that be? says my reader, perhaps, and also say a great many that have answered me by word of mouth; Does not our land lie in hills? has it not a descent or sneed enough for water? does it not already represent a ridge, having as great a fall? do we not lay our lands in ridges too? &c. All these suggestions will prompt such farmers to give a ready answer, tho' perhaps not a truly digested one.

My variable answers to the questions that have been asked me, through the many parts of the two kingdoms that I have travelled, concerning wet land, &c. were in general as above, and my advice was to lay it in broad high ridges: but as such variable directions might slip the memory, I am glad to have here an opportunity to give a more lasting memorandum, which may always be the farmer's guide upon recourse thereto.

Above, my reader has the real cause of wet land, with its ill consequences of perishing the plants, encourageing moss, rushes, &c. but if he lay his land in high ridges, as the following lines will direct, he may depend upon a real cure for all these his grievances.

Some farmers have no idea or notion of what we call sole of ground, or by some called under-stratum; this lies next the corn-mold, under the sole of the plough, at about four, or five inches deep.

This ought to be nicely inspected into, upon all occasions, and for several reasons, as it is upon the goodness or badness of the sole that the farmer's success in his crop, in a great measure depends: as also, the sole ought to be his guide, how to vary his crop, or management; neither can a man be a true judge in land, if he do not make himself truly acquainted with the under-stratum.

A penetrating sensible farmer, upon entering into any country or field, without digging, may give a near guess what sort of a sole or earth lay under as a second stratum.

The sole or under-stratum of lands in the three kingdoms varies greatly, and particular regard ought to be had to the following sorts, viz.

First, is clay, which keeps out the water, and causes a wet surface, the water swimming above ground. Such ought to be raised in high broad ridges, in order to give a ready conveyance for the water.

Secondly, a red fox-land, which loses the manure, as it is of a dry, open, loose nature (such land will bear lying flat); and ought never to be manured, but on the grass, as the sod will hold it up, so consequently the benefit of the manure will be the greater, as it will drain

through the roots of the grass, and be longer before it get out of the reach of the plough to turn it up again, or the plants to feed upon.

Thirdly, a spewing, loose, running earth, between a loam and a sand; which is always wet and cold: it is generally about a foot thick, and under it lies a bed of clay, perhaps four or five feet deep; in some places it has a firm thin shell of solid earth, between it and the corn-mold: this is a very bad sort to build, or make ditches upon, as they seldom stand long, for it gives way, runs, and lets them fall; this also should not be manured, but on the grass or surface, by top-dressings, as the manure would sink, run off, and be lost immediately, if laid on when in tillage.

Fourthly, a firm, red, hard, caliced, rusty earth, which will melt neither with rain nor frost; this is a very bad, dangerous sort, and is very productive of weeds: a farmer ought to be afraid of

disturbing it with the plough, though it lies, in some places, within a little of the surface, and mostly covered with about three or four inches of strong corn soil.

Fifthly, a lime-stone gravel; this is a good sort, where it lies near the surface; the plough may turn it up to the benefit of the land, as it is a rich manure, and by mixing it with the upper-stratum, improves the land; however, this is rare to be met with in England, but common in Ireland.

Sixthly, hard road gravel; this lies generally on mountains, under black heathy or moory soil, and lies near the surface, when there is not sufficient of corn-mold; it may be turned up with safety, and indeed advantage, as there are no bad consequences attending it, but poverty, which will be helped by mixing among the upper surface; it will also bring the upper surface to a better consistency, which before was too light and fuzzy; this gravel-soil is generally very hard to

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plough; it makes good roads. In Ireland it is very plentiful, being under most of the high heathy lands in the Kingdom; which is the reason that their roads are so generally good, having only the sod to strip and the road is made; but in England, it is very scarce, except on the wolds.

The above six sorts are the under-stratum.

Now we see through all these various sorts of land, and not one of them will bear to be laid flat, except the second and the last, which are both of a sandy nature; all the rest must be raised in ridges, so as to give the sole, as well as the surface a proper speed; and this is impossible to be done by any other, or better method, than by gathering, or taking up the ridges, three or four times together as need requires.

The method to raise high ridges, is to begin every ploughing at the middle of

the ridge, and turn the right hand about till you raise them as high as you intend; harrow across between each ploughing, and it will give the ridge a more agreeable round in the middle.

This is apt to strip the furrow of the rich and best soil; to remedy which, throw a little more manure on the furrows than common, the first and second year.

Being thus got into form, never alter them after, but alternately take them up one time, and put them down another.

I do not remember ever to have seen in Ireland, a ridge taken up above once together, consequently the sole or stratum under their ridges is flat or level, having no speed for water; and though the surface of their ridge looks dry, yet the wet lies upon the sole, at the roots of their crop.

If the nature or situation of the land

will admit, lay the ends of your ridges east and west; and when on hills, never let them run straight up and down, or yet quite across, but a little diagonally. There are two ways for the water that falls upon a hill to run off; the one is on the surface; and the other between the upper and under stratum, or bed of clay; but when the upper stratum is loose and open, if it be on ever so steep a hill, it seldom runs off without entering it, except after a sharp shower of rain; and even in this case, there is not much of it gets to the bottom of the hill, but sinks through the loose surface to the under-stratum, or bed of clay; and when it gets there, its motion is very slow, as it has to drain through the loose earth, insomuch that before it arrives at the bottom of the hill, perhaps more rain falls, which keeps it perpetually wet, and in mortar.

Now the improver's art must be, to make the run or course of all waters as short as possible, before it comes into a

drain; and this is effected best, by laying it ridge-wise; for, suppose the ridge be thirty feet broad, the top of a ridge is within fifteen feet of a drain or furrow, as there is one at each side of the ridge; but though the run of water from the top of the ridge into the furrow, is only fifteen feet, yet a great deal will sink till it comes to the under-stratum or clay, because that direction is perpendicular, and it has only five or six inches to go; this is all as certain as that a man's coat will be wet through, which is not above five or six feet long, and hangs perpendicular.

By this the farmer sees how necessary it is to give the under-stratum a speed also, that the subterraneous water may have a short passage into its furrow; every time the land is taken up or gathered, the plough touches the clay, it makes a furrow deeper and deeper therein; thus every furrow is a drain to the ridge it belongs, and the water will find the shortest road into it; but you must always be

circumpect, that you give the side of the ridge, both upper and under stratum, a greater slope or sheed, than there is in the side of the hill, lest the water run down the ridge, instead of turning into the furrow, as it certainly will follow the greatest declivity; it is for this reason I have ordered the ridges to be made a little obliquely, and this obliquity or slanting should be more or less, according to the form or declivity of the hill.

These are easy and plain directions, and the success of them is not doubtful, but certain, and vouched by experience; and yet a great deal of land that might be made fruitful, is left to produce little or nothing.

Moreover, the farmer has a great increase in the quantity of the surface of his ground: it is certain, the surface of a field measures more in quantity when in ridges than when flat, and it is equally certain, that all its surface is capable of bearing corn.

The success and quantity of a crop does not depend upon the space there is for the corn to stand in, but on the quantity of earth there is for its roots to spread in, in search of its nourishment.

This is a short state of the case; no sophistry can get the better of so plain a fact; and it is upon all these evident advantages that I recommend the farmer to lay his cold, wet, strong land in ridges, &c.



C H A P. V.

A short account of the lands, labour, and price of victuals, in Scotland, from Port Patrick to Berwick.

THough I cannot say so much for the fertility, richness, and beauty of Scotland as I have done for Ireland, yet

She is not without her perfections, and her land is really very improveable.

Port Patrick is the nearest sea-port from the north of Ireland, and lies opposite Donaghadee, across a sea of twenty-seven miles broad. It is a poor little town of no trade, subsists chiefly by travellers, and the packet boats passing and repassing.

There is little agriculture carried on here; the land round it is very bad, inclined to mountain and heath, great tracts of it lying in its wild original state.

Their method of agriculture and improvement is very rustick and bad; they have no notion of sowing any thing but black oats, though they have plenty of limestone, and can burn lime at a moderate expence, which would improve their land, so that it would produce wheat or any other valuable crop; for though the land is mountainous, yet it

is of a good kind, and depth enough of soil to cultivate any crop in

Land lets here for various prices, according to its situation and goodness, and indeed it is very hard to ascertain the real price of land in Scotland, because in a hollow or valley, perhaps a farm may let at twenty shillings an acre, and on the highland, not for four-pence an acre. I may properly divide them into three denominations, viz.

The first is good land, lying in valleys, or near great towns, or river sides, lets at about twenty shillings an acre of eight yards to the perch.

The second is such as lies high, and is ploughing or greengrassing ground, without heath or ling; such lets at about fourteen shillings an acre.

The third is high mountain, all covered with heath or ling, which bears its original aspect, perhaps ever since Great

Britain, was inhabited; and though it has the appearance of commons, yet are mostly private property, and lets in great tracts together to rear young cattle on, perhaps at not more than two-pence an acre.

At Stranraen the land is pretty good near the towns, lets for about sixteen shillings an acre, and indeed it bears that price mostly through Gallaway to Dumfrees and Carlisle, particularly near the sea side.

The great north road to Ireland lying through this country, makes things wear a better face than in some other parts, and particularly within these few years, since the road was improved by the army.

I passed this road twenty-five years ago, and again last year, and was surprized to see the great change of things for the better. Improvement of every sort gets on

apace, agriculture in particular flourishes beyond description.

The Inns on this road are also tolerable good. Wages and victuals rise in proportion to other improvements. There is no greater sign of an improving country than the rise of labour and eatables.

In Dumfreesshire there is some strong land that grows good wheat, but I have seen some much spoiled by smut.

About Dumfrees a farmer's labourer has six-pence a day in winter, and eight-pence in summer, except in harvest, which is a shilling a day without meat, men servants at five or six pounds a year, women servants fifty shillings, and boys and girls in proportion to their age and abilities.

Beef and mutton at the lowest season of the year three half-pence and two-pence a pound, fowls and eggs cheap,

From Stranraen to within five or six miles of Air, the land is very barren and mountainous, generally covered with heath, and stocked with small black horned cattle of the dwarf kind.

The land here lets by bulk, perhaps not at above three or four-pence an acre, except in spots, where there is a sort of bad husbandry, of raising a few black oats, which perhaps may let for eight shillings an acre. Labour here is below par, having nothing to do but sleep. Oat-meal and milk is their chief living.

Round Air, and near Deonside, there is some good land, which lets at fourteen or sixteen shillings an acre in the farming way, at eight yards to the perch.

Near the sea side the land is sandy, but a few miles within the country it is strong clay, and in places loomy sand. In short land is a great deal of it naturally good in Airshire, and continues so to Glasgow.

Labourers at six-pence a day in winter and eight-pence in summer; but near and about Glasgow, wages rises two-pence a day. Men servants at six pounds a year, maid servants three pounds a year, boys and girls accordingly in proportion to their age and strength.

They import to Air and Glasgow much corn from Ireland, particularly oats and oat-meal. There is a great consumption here of those articles, as the common people's living is chiefly oat-bread and grewel porridge or soup.

The flesh meat in these markets is poor, and not wanting in price. Beef and mutton three-pence a pound, and sometimes four-pence; good veal very dear and very scarce. The most plentiful and best meat is kid and lamb in the season.

About Glasgow and Stirling, and so down the north side of the river Forth, the land is very good for many miles to-

gether, and capable of growing any sort of corn with good management; and to give the gentlemen of this country their due, they are improving their land equal, if not superior to any part of England; that is, I mean they have made the quickest progress since they began to improve, and particularly by inclosing, and planting fir timber, of which here are great plantations.

They make use of lime as manure, of which they have great plenty, and not over dear.

But before I leave this country, I shall take notice of a piece of husbandry which I believe is particular to this place, as I never saw it practised elsewhere, viz.

When they have a piece of ground wore out by tillage, so that it will not bring any more crops without manure, they trench it with a spade, sometimes two, and sometimes three spit deep; that

is, they begin and dig three spade grafts deep, and make a trench into the bottom, of which they throw the top sod, and over that the second sod or spade graft, and also the third, so that the bottom spade graft, taken up at three feet deep, becomes the upper stratum for corn to grow in.

If the farmer hire his land to be trenched by the acre, the price is set without varying, and is as follows.

For trenching two spit or spade-graft deep, (without shovelling the loose mould out after the spit) forty shillings an acre; for digging two spit, and shovelling the loose, forty-five shillings an acre; for digging three spit, without shovelling, fifty-five shillings an acre; for digging three spit deep, and shovelling, three pounds an acre.

They find by experience that it is better for the land, and they are more sure of a crop of any sort after trenching, then

if they lay on lime or any other manure to the amount of three pounds an acre; and what is more surprising, this is practising in a country where manure is plenty and easy to be got.

After such trenching, the land will bring five or six good crops before it need be trenched again, and it will grow corn from generation to generation, if it be again trenched to revive its exhausted spirits at proper periods.

I know some of my readers, who only cast a cursory view upon things, may think my account fabulous, but I assure them that what I have said is absolutely fact; for I saw the whole work performed with my own eyes; I saw also the crops grow, and I never saw better wheat, oats, and barley in my life; and I took particular notice of such trenched corn that happened in town-fields, and found that ridges laying a long side which were dunged and fallowed, were not so good by much, nor so clear of weeds;

that both the ear, grain, and straw was smaller.

When we consider the thing attentively, it is easily accounted for, particularly if the land be of a proper sort, viz. if loomy clay, or loomy sand, or sand itself; because if land be ever so poor, it is generally covered with a coat of some sort, either stubble, weeds, or grass, which being thrown into the bottom of a trench, and covered with earth two or three feet thick, it ferments, rots, and evaporates its volatile spirits, which penetrates through every particle of the body of earth over it.

In short the whole body thus mixed, must be in a state of ferment, besides the weeds and rubbish being buried too deep for vegetation, rots and becomes manure. Any reasonable man will allow that there must be a wide difference between the root of a weed growing and partaking of the strength of the ground, and the same root being rotted to feed the ground.

Suppose a thistle, for instance, takes up six inches of ground, it is natural to suppose it feeds upon what nourishment lies within its reach, but when said thistle is turned under ground and stopped of vegetation, it rots, and not only returns to its mother earth what she formerly gave it, but the ground it covered is at liberty to be fulfilled by a plant of corn.

But should the farmer believe he gains these advantages by common ploughing, he is mistaken, as that can neither stop vegetation, or rot the weeds so quickly, as burying them deep in the earth, because if the plough leaves any part of the root unturned up, it gathers strength and grows again, and so will what is turned up, should the weather prove wet.

We see hard it is to make a good fallow in a wet summer; there is nothing but the scorching hot sun can destroy grass and weed in the common method of farming, and this can never be so effec-

tual as to bury them all together, it being almost impossible to expose every root to the sun, by ploughing and harrowing, but some will be covered by a little earth, and retain its growing quality.

And suppose every sort of rubbish was shaken over the ground, so that the sun would kill it, yet whilst it is undergoing this operation, we loose the main substance of the manure; for instead of every stone weight of green weeds when dried to powder, perhaps we should not have a pound, the remainder being exhaled into the clouds by the heat of the sun. But as I have given a lecture of this sort more fully in another place, I shall drop it here, with begging the farmer will divest himself of all partiality, and open his eyes to plain reason, find it where he will.

Men by trenching make a shilling a day, and if good workmen more.

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About Edinburgh land is very good, and particularly in East Lowdon; here they are great corn farmers, they make use of a great deal of lime, and such as lies near the sea, manures with sea weeds.

I have seen very good crops of wheat and barley here. The land is a loomy sand, and lets for about twenty shillings an acre. Their farms run from fifty to three hundred pounds a year.

A good servant man will get seven or eight pounds a year, a good servant woman three pounds a year, a strong boy three pounds, and a strong girl two pounds a year; a labourer in winter eight-pence, and in summer ten-pence a day, without meat.

Markets for meat are much better in Edinburgh than Glasgow. Beef and mutton at the cheapest season two-pence and two-pence half-penny a pound, and in spring at three-pence half-penny a pound. They are scarce of winter feed-

ing, which makes their spring meat only poor.

They raise a few turnips in spots, but nothing to speak of, though the ground is capable of bringing very good, were they to cultivate properly for them.

I have seen a great deal of very smutty corn in this country. Farmers here are very rich, and a set of very intelligible people, having mostly a good education.

Their land is good also in Perthshire, but does not let so high as in Lowdon; their farmers are also rich, and have generally a good education. Their wages are lower, and one reason is they are farther from England, for the nearer England and the higher every thing rates.

The Highlands of Scotland as far as John-a-groats house are pretty much alike, mountainy, and mostly covered with heath, except in a valley here and

there. The land lets in large tracts together at a bulk rent, at a very low rate per acre, was it measured.

There are great quantities of small mountainy cattle reared here, but very little corn grown, except black oats, therefore their husbandry is not worth taking notice of, or spending time about, so beg my reader to accompany me to England in the next chapter, to see what they are doing there.



C H A P VI.

The nature and price of land, labour, &c. as it now bears in many different parts of England.

AS I brought my reader from Ireland through Scotland, I shall next take notice of the lands about the river Tweed, which parts England and Scotland.

They are much troubled with smut amongst their wheat, which is owing to their making use of dung upon fallows, and not giving a sufficient time to rot in the heap, before it is put on the land.

Their farms are large, from forty to five hundred pounds a year. Along Tweed-side, and near the sea-side, land lets at about eighteen shillings an acre, but farther up into the country it lowers to ten shillings an acre.

They do not mow their stubble, as is customary in some of the southermost countries, but whether they be right or no may appear in its proper place.

They have not as yet got into the cabbage husbandry, which, by the bye, would be of great advantage to them, as they keep much stock of the largest kind, and they have land proper enough for this valuable part of culture.

From Newcastle to Durham, and Gifford in Yorkshire, the country, particularly towards the sea-side, is a fine farming country. The farms are not so large as towards Berwick, which in fact are so best for the public.

The farms here are from twenty to two hundred pounds per annum, but the general size are about one hundred pounds per annum. The rents all run at about twelve shillings an acre, for such as we call good corn land.

Grass land, such as is proper for dairies, at sixteen shillings an acre. Men servants at nine and ten pounds a year, and head men twelve pounds a year; women servants at three pounds ten shillings to four pounds; labourers ten-pence and a shilling per day in winter, in summer fourteen-pence, without meat, in harvest eighteen-pence and meat. Here are turnips sown in many places, but few use

the method of hoeing ; they sell variously from two to six pounds an acre, according to the goodness of the crop.

The farmers here have some excuse for not hoeing their turnips, as the graziers and butchers prefer unhoed to hoed crops ; this may seem very strange to the Norfolk farmers, but the truth is unquestionable.

There are some gentlemen here and there, that have made experiments of the cabbage husbandry with great success.

But among none so much as those possessed of a deep strong clay soil.

I have heard from good authority, that several gentlemen have raised cabbages to the amount of fifty tons per acre upon clay land ; but upon a close and impartial inspection, and by weighing a cabbage which I have often done, and knowing how many were on an acre, the middle crop may be safely stated at forty

tons to the acre, of food for cattle, exclusive of the stalk.

In the north of Yorkshire there is no material difference in the price of land, labour, or living; but near the city of York, and towards Leeds, Doncaster, and Sheffield, labour and provisions are higher, land also is higher, and divided into smaller farms, which may chiefly be owing to the spirit of trade, which prevails in several of those parts.

In York market, beef and mutton at three-pence and three-pence half-penny a pound; good veal by the quarter comes at about three-pence a pound, but it is chiefly sold at so much a joint; pork at three-pence, and bacon five-pence a pound. Here is a good beast fair every second Thursday, and a good pig market every Wednesday.

There is a fine level rich farming country, for thirty or forty miles to the east and south-east of York.

The size of their farms is from twenty to a hundred pounds a year; it is true there may be some few greedy people that will not be content without laying three or four farms together; but, with happiness to this country, they are only thin sown. Farmers that rent from thirty to sixty pounds a year, bring up a family very decently and save money to portion four or five children, with perhaps two or three hundred pounds a piece.

Most part of this country is inclined to clay, though in spots there are sandy fields. There is a great deal of good wheat and beans sown in this country; but the wheat in spots is very smutty and black; but the red and cut worms which destroy green corn, they know nothing of.

As navigable rivers are twisting into every corner, this country is well situated for shipping of corn to London or other distant markets.

Servant men from eight to twelve pounds a year. Labourers in winter eight-pence and ten-pence a day without meat, and fourteen-pence in summer, without meat; in harvest eighteen-pence and meat.

Standing grafs mown at two shillings an acre; fair standing corn reaped at five shillings an acre.

They plough much here with single horses, one before another, and three or four in a team; in some places they draw two of a breast, and when the land is strong and hard three of a breast, which is a very saug, strong, favourite team of mine. In some places they plough with oxen, which is a very profitable team, as will appear more fully in its proper place.

Beef and mutton in a general way at three-pence a pound, butter in winter, at seven and eight-pence a pound.

The Yorkshire Wolds lie to the north-east and north of this flat country.

This is a very fine champain piece of ground, which extends in length perhaps thirty miles in one continued ridge, and mostly six or seven miles broad, and in some places more.

This and Lincolnshire Wolds are two of the finest pieces of ground of the sort I know in the world; they stretch south-west and north-east, and what is very extraordinary, these two Wolds seem as if they had formerly been joined or united together, but were broke or disunited by the river Humber, or more properly speaking, an arm of the sea. That all or most of the ground from Hull to Beverley, being nine miles, has been gained from the sea formerly, so that the distance from the two Wold hills is at present about fifteen miles, viz. the width of Humber five or six miles, and the low

ground from Hull to Beverley nine miles.

Though this great separation, and the present appearance of things, may make it seem very strange even to harbour such a thought; notwithstanding I am strongly of opinion that this ridge of land has been sometime united, perhaps before the general deluge; their uniformity, direction of the course, materials they are made upon, and in short every circumstance bespeaks a thing of the sort.

These hills are no more than an agreeable eminence, one may gallop up and down the sides without danger. The upper stratum or corn mould is only thin, but mostly good, and very proper for barley, of which they grow great quantities. The under stratum is of a chalky lime-stone nature; some places rather flinty, and in others soft chalk; but upon the whole, it produces a kindly sweet grass, very good for sheep, and they keep great flocks of a good kind upon it.

Formerly this land was thought little of; farms used to let at perhaps not more than a shilling an acre; in short they thought it not worth inclosing, for it lay open without hedge or ditch for many miles together; but now the case is altered, they are inclosing very fast, and let the farms perhaps at ten or twelve shillings an acre; and I would sooner take a farm there, than in any part of the kingdom, the land being fresh and really kind in nature, as all land is that has a limestone bottom.

The Wold land in general is very proper for saintfoin, I have seen it produce very good crops; a farmer told me that he made fifty shillings an acre of about twenty acres he sowed with saintfoin, of land that never before brought him five shillings worth of grass on an acre; he did nothing but sow the seed, at the same time he sowed barley and harrowed it in.

Burnet grows naturally all over the

Wolds; I have seen great quantities grow on the sides of the paths where I travelled. I saw about five or six acres sown with burnet, which appeared to be very good, but along-side of it, were sown about ten acres of faintfoin, which also was good, which proves the land to be proper for both; but the question is, which will turn out most to the farmers profit.

To prove this I weighed a square perch of each, and the faintfoin weighed just double the weight of the burnet; we had not weights, but weighed one against the other, therefore could not ascertain what each perch produced, but judged the faintfoin to be about sixteen stone, and the burnet eight stone. They were neither of them at their full growth, being only the ninth of June, but they were very forward.

The Wold farms run at about a hundred to a hundred and fifty pounds a year, though I know one of nine hundred

a year, but there are not many of this sort, it is a pity there should.

Labour used to be low, but since they began to inclose and turn more land into corn, it is risen almost equal to the low-land countries adjacent.

A servant man eight pounds, a servant woman three pounds, a shepherd ten pounds, a labourer eight-pence in winter, and a shilling in summer, without meat.

They plough all with four horses, two before two, and the same man drives that holds the plough, with two whipping strings that goes to each of the foremost horse heads; this method of ploughing with one man and four horses is peculiar to this country, and they are very dexterous at it; boys of about three pounds wages, will plough, upon occasion, two acres a day. Their horses are of a lightish kind, mostly half blood, as they breed a great many running horses here, being

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a good champain county, and very proper for the purpose.

Lincolnshire is noted for a large breed of sheep, of which they keep great flocks and are particularly clever in the management of them. Their land is mostly good and the farms large.

The Lincolnshire Wolds or high lands, as above observed, are of the same nature of Yorkshire Wolds, and they manage it the sameway, therefore what I have said on the subject may suffice.

The low lands, or fenny country, is of a rich deep loomy nature, inclined to clay; it is a very forcing soil, brings great crops of any thing that is sown on it, and is particularly good for pasture; I know a great deal, that will feed a large ox on an acre. There is a good deal of land not far from Boston, that lets in a farming way for forty shillings an acre.

There is also some exceeding good land

between Louth and Saltfleet, which lets as high.

About here they have the prettiest breed of sheep, in England; they are not very large, but are what we may call *multum in parva*, a great deal in a little.

Their legs are short, and wooll long; it is common to see the wooll of the hogrils, or year old sheep, trail on the ground, and it carries its length quite up to the eyes, so that they can scarcely see.

Their backs are so broad, that if they tumble on them, they very often cannot rise, particularly if it happen to be in a hollow place, but they generally keep their lands very level.

My new invented moving sheep-house would be extremely useful for this country stock masters, because the land being inclined to wet, it soon treads to dirt about the hay stacks and foddering places, and not only wastes the hay and abuses

and dirties the cattle, but cuts and spoils the sod. Besides as the land is all divided and fenced by ditches, there are very little hedges or shelter, but the moving houses would be proof against all these inconveniences, as appears more at large in its proper place.

This being a stock country, wages are lower than in a corn or manufacturing country; good men servants at eight pounds a year, labourers at eight-pence and a shilling a day.

Their farms from fifty to five hundred a year.

On the Wolds and other high lands, they raise a great many turnips, and get as good crops as any in Norfolk; the low-land graziers frequently winter their sheep on them; they give from two to four pounds an acre, according to the goodness of the crop, but they seldom hoe any.

The high-land farms let at about ten or twelve shillings an acre. There is very little light sandy land in Lincolnshire, it being generally of a strong loomy or clayey nature, consequently good corn soil.

The greatest hemp and flax country in England lies from Gainsbrough to Thorn, along Trent side, called the Isle of Axea. The land here is extremely good, though it does not let so high as in some other parts of the low countries near the sea. They are greatly pestered with smutty wheat in most parts of Lincolnshire.

The markets of Lincoln and Gainsbrough are moderately cheap, and the butchers meat good.

Beef and mutton at three-pence and two-pence half-penny a pound, butter at six-pence and seven-pence in the winter.

Rutlandshire is a small county, and only consists of two market towns, but it is rich and populous; the land a good wheat soil, and well inclosed. Farms from twenty to a hundred pounds a year, and runs at about twelve shillings an acre.

They mostly plough with four or five horses one before another. About one half of the county is under tillage, and they grow a great deal of wheat, which is sometimes smutty.

They grow some turnips, but seldom hoe them. They complain of their land being too strong and cold for them, and there is some reason for their assertion, but where it thus happens, I would advise them to follow the cabbage husbandry pointed out in this work, it being very proper for strong land.

Labour at eight-pence and ten-pence per day in winter, without meat, a shilling and fourteen-pence in summer. Ser-

vant men at ten pounds a year, women four pounds a year.

Cambridgeshire takes in a great deal of fenny or marshy low lands, but I do not think it of so good a quality as the low lands in Lincolnshire, neither are they so well drained, so consequently more subject to floods.

Their up-lands are lighter here than towards the north, and continues so through most part of Norfolk. It is very proper for turnips, and they sow a great deal, but they are not so good managers as the Norfolk farmers in this particular.

Their farms run large, from twenty to four or five hundred a year. Their sandy land lets from seven to nine shillings an acre, and higher where it is inclined to clay or loam. I have seen marl in this county, but the farmers make little use of it, as they have not half the idea they should have of its great value. They

make use of lime and dung as manure. They grow a great deal of barley in the light land countries, and great quantities of oats in the fen lands or marshy soils.

Labourers a shilling per day in winter, and sixteen-pence in summer, without meat, except the harvest month, which is forty and fifty shillings the month, and meat. Men servants from ten to fourteen pounds a year the head men; women three pounds ten shillings to four pounds.



C H A P VII.

The author's opinion of the nature of bog, and from whence it proceeds.

THere are many names to explain this matter by, as morasses, peat-bog, mois, and bog; every country has its own name.

Before I begin to treat of reclaiming bog, it may not be amiss to give my sentiments, from whence it proceeds, and the compound it consists of.

We are told, that imagination is one of the quickest and most extensive powers belonging to the human being: true it is; for whilst I am viewing and examining the many particles of sticks, straw, rushes, bones, &c. &c. that bog is composed of, and which seem to have been jumbled together in great confusion; I say, while thus I am beholding these marks and tokens of the wonderful cause, my mind is struck with wonder, and pity for those unhappy sufferers, that in reality saw and felt the great confusion, distress, and destruction of this sad catastrophe; as it is very clear to me, that the great deluge which destroyed the old world, gave birth or beginning (or what you please to call it) to the bogs.

But as some of my readers may not

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have had an opportunity to see a bog, or examine into the materials that compose it, I shall explain it as follows, viz.

Bog consists of a light, open, porous, soft body, and mostly full of water; which cover a great part of the earth.

Upon cutting the bog into square pieces, about the size of a brick, and letting it dry in the sun, it becomes calid, close, and hard; when in this state it is called turf, or peat, which is made use of for firing, and very good it makes, particularly when it is composed of black or hard solid bog.

If we break a turf in pieces, and inspect nicely, into its particles, we shall find it to be made up of straw, rushes, hay, moss, bits of sticks of many sorts and sizes, &c. &c.

These are the general compound of what makes a bog, that, in some places perhaps, is twenty or thirty feet deep;

I say this is what the bogs generally consists of; but however, in some there are a great many more particles than I can mention. There have been dug out of a bog at fifteen or twenty feet deep, human bones, wooden shoes, horns of cattle of several sorts and sizes; such as cows, deer, elks, &c. &c.

I once knew a human body to be found under a deep bog, which was quite entire, and as white as milk; but when it came to the open air, and to be stirred, it soon fell to dust.

Under most bogs there are timber-trees of all sorts and sizes; some will lie across each other, torn up by the roots; others broke off two or three feet from the roots, and the branches split from the trunk. Such disorder and irregularity plainly shews that it proceeded after this manner, viz.

At the general deluge, when the water arose so high as to overflow or cover

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the face of every thing in the old world, doubtless every light body, such as thatch of houses, ricks, or stacks of hay, rushes, straw, reeds, sticks, &c. &c. rose and swam on the surface of the water as wreck; and when the waters abated, the currents must be very great.

It is also very natural to suppose, that such wreck would stop and gather at any thing that would obstruct its course, such as tree-tops in great woods, and the like.

It is supposed that the wreck on this occasion must be very much; therefore when some of it stopped at those woods, it would soon gather immense heaps, and the more the water left it, the faster it was boundn thereo; and when the water left it resting on the tops of these woods, its immense weight crushed or broke them down under it, in such cross disorder as above described.

And it is further observed, that all the timber lies quite under the bog or

or wreck next the firm ground, and every tree that is thus broke off, lies as it fell, close to the root it belonged to or parted from. I profess upon consideration, these bogs prove the truth of a deluge so fully, that were there no other tokens or memorandums upon record, it would bear no manner of doubt with me.

As to what brought on the great deluge, whether by rain, or whether the earth gave way, and dropped into the great abyſs, is a point not finally agreed upon by the learned.

It is true, the scripture tells us, that God drowned the old world by forty days rain; indeed it might rain forty days at the same time; but I must be excused from being of opinion, that forty days rain alone drowned the world, since a calculation, that may be made with a tolerable degree of exactness, proves that forty days rain, in a great degree, would not raise the water a foot high, over all

the face of the earth, and much more raise it fifteen cubits (which is seven yards and an half) above the highest hill, as was the case at this catastrophe.

It is also true, if the great God pleased, he could destroy the world with a drop of water. But however, it is not very probable, that forty days rain overthrew the old world; but it is possible, and very probable, that the earth dropped or sunk into the main abyss; and it is also as possible that it would rise again in a proper space of time, being the lighter body, and interspersed with air.

If we may compare great things with small, drop a piece of wood into a tub of water, and it will perhaps go to the bottom, by the force of the fall; but it will immediately rebound, or rise again to the surface; this I apprehend was the case here.

As to what the scripture says concerning the old-world being drowned by rain, we

may put it on the same footing as when Joshua commanded the sun to stand still upon Gibeon, till he got his will upon his enemies.

Though we are sure that the sun is a fixed body, and that it is the earth which moves; yet however, Joshua spoke as he thought in the literal sense, and God knew his meaning, and granted his request in one sense; for he ordered the earth to stand still, which answered the same end to Joshua.

This, I suppose, was the like case with Noah; for God said he would overthrow the world by water, and as rain was the easiest to be understood by Noah, it was conveyed to him in that sense,

It availed nothing to Noah how it was to be effected, whether by rain, or the earth dropping into the main abyss, since God's will was fulfilled.

Besides as I observed, it might rain all

the time this great work was effecting; for as the earth was covered with water, the heat of the sun had more power over that element, to exhale it into the clouds; and when the air or the clouds were overloaded, it would then doubtless return in rain as usual.

There is a large book in folio, wrote upon this subject, by a very sensible author, wherein he proves very clearly, but having more room much more fully what I have here set forth, of the earth dropping into the main abyfs, and not drowned by rain, as is generally thought: and if the sensible reader has ever seen the said book, he must be of my opinion; at present I have forgot its title, or author's name, though I have read it through.

But however, be it it how it will, a general deluge there was; and that this deluge was the funder of the bogs, and that the materials of said bogs are made up of the wreck of the old world, is very easy to be conceived by a cool-headed

reader, that will give himself time to think, and digest the above observations.

Bog being a compound of hay, straw, sticks, &c. &c. intermixed, jumbled, or wove together (as it were) in great disorder, one might expect it to be a mass of dung, and so then it was, and would long ago have been melted into a solid body of earth, if the water had permitted the air to penetrate it, and cause a fermentation; then naturally would have followed a putrefaction; after this, it would have subsided, closed, fallen together, and become a solid body.

But as long as the water was permitted to lie thereon, it kept it always cold, not giving it time to heat or putrefy.

There is a fall (it is true) from all bogs, and the water continually keeps running off, and, in its passage, takes along with it many small nitrous or rich particles, as all bog-water is black; and what makes it so, but the discarded particles of the

bog being continually melting into it? for we are sure the rain that falls on the bog, is, at the time of falling, as clear as in other places; therefore the bog continually keeps purging itself of its richer particles by the redundance of water that falls from the clouds; thus it alternately keeps receiving and discharging, by which means both the bog and the water are kept cold, and free from putrefying.

And farther we are to observe, that the ground under bog is always clay, marle, or some such solid body, which holds water like a dish; therefore the bog is utterly deprived of any other means or passage to discharge its load of water, but through the surface; whereas, if the bottom was a sand, or sandy gravel, it would be immediately drained, and would long ago have become solid earth.

Therefore it is evident, that it is the water which keeps the bog alive; and if by ingenuity, œconomy, and industry, the downfalls of water were not admitted

to sink into the surface thereof, but immediately be conveyed into main drains, rivers, &c. the bog would soon become a consolidated body.

We see, that at the verge of almost every bog, there is a bottom, on which grows a coarse sort of grass, which is sometimes made meadow of; this has formerly been as rank a bog as the rest, as appears by the nature of the soil, and the bog-timber lying under it, &c. but the firm ground is a little higher situated than the middle of the bog, which gives it a sneed; therefore the water has left it, and retired to the lowest place: this shews that bog is losing ground and more particularly where people strive to assist nature, by making canals, drains, &c.

This shews the advantage England has over Ireland, by their early improvement; witness the fenny countries, levels, Holderness, &c. I know places in England where one may travel for ten

or twenty miles together, over improved bogs, which are now harrowable, pasturable, and good meadow-lands, though one may cut (perhaps) the height of a man, in turf, as may appear by their drains; and under it a bed of bog-timber; but then in such places, you see it well drained, laid out; and improved.

All these are manifest truths, which every bog, the materials it is made of, and the situation it is in, can witness, and which may be evident to a nice inspector.



C H A P. VIII.

How to reclaim bog, with proper seeds to sow thereon.

HAVING, in my last chapter, treated of the nature of Bog, and from whence it proceeds, in this I propose to shew how to reclaim it in a short, easy,

cheap method, as every thing loses its value that is too laborious and expensive.

A great many people think that the larger drains they make, the more effectually they will drain their bog, but here they are quite wrong; for if instead of a drain eight feet wide, they would make eight at one foot wide, and disperse them advantageously over the bog, to catch and convey the water as it falls into the main drains, before it has time to sink or penetrate into the surface, they would save a great part of their money, and the work would be more effectual.

Experience tells us, that a drain of a foot wide at the top, and carried sloping down till it comes to six inches wide at the bottom, is sufficient to drain the wettest piece of bog from any downfall of water; and there are seldom any ground-springs in bog; and if there should, this would be sufficient to take it off.

As to the depth, I can fix no certain standard: every man's reason and the nature of the land, must be his guide in this case; for it may happen that he may have hills or rising grounds to cut through; if so, he has his guide or level along with him, namely the water; for he must cut them to such a depth as the water will follow him, which must be his general direction, and there is no better leveller than the water.

I give a necessary width, only supposing the ground to be level; but if he have hills to cut through, he must vary his cut in width at top, to give him sufficient room to work, and bring it to a proper breadth at bottom.

Fence-drains, I likewise set no bounds to, as every one is the best judge what will turn his cattle.

First, cut a head drain at the edge of the bog, where you think the best fall

for water is ; make it three feet wide at top, and carry it down with a slope, till it come to half a foot at the bottom, which determines the depth, and this drain is sufficient to take off all the water.

Confine the water to as narrow a channel as possible, by which means it will keep its course clear, and a drain will last longer without scouring or cleaning out ; but on the contrary, if it be wide at bottom, the water will run with a thin sheet and a slow motion, so give the grass and weeds an opportunity to grow ; and when they once get a footing, the drain is soon choked up with the stoppage of every stone or stick, as well as the grass, that may happen to fall or grow therein.

The head-drain being thus made, lay out the fields as long as the bog will admit, but not above six or eight perches wide between each.

Make the side-drains two feet wide at the top, and bring them to nothing at the bottom; then look over the field, and find out all the low places and bog-holes where the water stands: from these cut small surface-drains eight or ten inches wide, the shortest way you can, into the head or side drains.

These small drains are cheaply and quickly made, and are quite sufficient to carry off the water, so that the men may stand dry to dig.

Being thus prepared, examine the bog whether or not it be firm, so that bullocks or horses can go on it to work.

In most bogs or bottoms there are little round hillocks or lumps, perhaps a foot high, and two or three in diameter; these obstruct the plough so much, that in some places it is impossible to plough at any rate, in others perhaps they may not be so plenty; yet if there be any, they

disturb the plough, and make the ploughman make bad work.

When this is the case, you must cut them off with a hilling plough; then men must go with forks, and throw them to a side, in order to clear a road for the plough to go; then cut it across with the cutting knives fixed in the roller, as directed for burn-beating. All these are necessary preparations, before the plough can go.

Your bog being thus prepared, you must have two ploughs, one to follow the other in the same furrow; the coulter and sock of that which goes foremost must be very sharp, that it may cut easy, as the heath and rush roots, are very tough.

The first plough must have a wider breech than that which follows, in order to throw the first furrow at a distance, that the following plough may turn the next furrow without touching it; thus

they follow one another, the first plough always throwing its furrow over the second, by which means the first sod being covered with heath or ling rushes, is kept uppermost, ready for burning.

The second furrow forms and raises the ridge in the middle: the horses must go on the uncut sod, close to the side of the furrow, for they cannot walk in the furrow when the sod is off, without sinking; and the intent of one plough following another in the same furrow, is to raise the ridges as high as possible, while the cattle have the sod to walk on; and it is very possible to plough three or four furrows deep, by the same rule of following another in the same trench or furrow, and the cattle walking on the uncut sod beside it.

But then as many ploughs as you intend to follow one another thus, must be differently prepared; as for instance, if you would plough two furrows deep, the first plough must have a breach sixteen

inches wide, by which means it will throw the sod sixteen inches from the uncut land, that is, it will leave an open furrow sixteen inches wide; by which means, the second plough which has a breech only twelve inches wide, will turn within four inches of the first furrow.

This last plough must be geared to go nine inches deep; that is, it must turn a furrow six inches thick, and the first furrow three; therefore the furrow will be nine inches deep from the surface or sod the cattle go on, and consequently the middle of the ridge would have nine inches rise.

But as the first three inches would be burnt for ashes, it would leave a rise only of six inches, which would be too little for so broad a ridge; therefore it is necessary either to make the ridge narrower, or have three ploughs to follow one another; the first to clear a furrow twenty inches wide by three deep; the

second to clear a furrow sixteen wide by six deep, the third to clear a furrow twelve wide by six deep.

By this the depth of the last furrows will be fifteen inches, and the ridge will have rise enough to give the water a fall into the furrow, and the furrow deep enough to take it into the drain.

As the second plough goes about five inches deeper than common, it is necessary that the cross and coulter be so much longer, in order that the beam may stand higher in proportion to the depth it has to go; and also, as the third plough must go about eleven inches deeper than the common plough; the cross and coulter must be so much longer, in order that the beam may stand eleven inches higher; this alteration in the perpendicular way is all that is wanted.

As to the horizontal way, there is nothing more wanted than to alter the breech of the first plough, by making the breech-

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pin, that goes between the mold-board and chip, as much longer than common, as you would have the furrow wider; it is also necessary that the mold-board be longer than usual, or else the turn-off will be too sharp.

Reason will point out to the ploughman or plough-wright, that the mold-board must be proportioned in length to the width he makes the breech; the sole or chip need be no longer than common.

The last plough will not want to be altered in the horizontal way, neither will the first plough want to be altered in the perpendicular direction.

The muzzle on the end of the beam, on which the swingle-tree is hooked, may alter the plough both perpendicularly and horizontally, therefore this will give the plough land sufficient to allow the horses to go on the sod; if not, the ploughs must have less land given in the make of them.

All this is plain and easy to be understood by any one who has the least knowledge of the plough.

Let me advise my reader, who would reclaim bog, first to lay out the field in ridges, and the first year, only plough or reclaim every second ridge; by this (as the phrase is) he is killing two birds with one stone; for by raising, or reclaiming one ridge, he opens a drain or furrow at each side of the unreclaimed ridge, so that the year following it will be firm and dry; besides the advantage he will have in keeping the skin unbroke, to draw manure to the reclaimed land, or to draw his crop off, &c.

Then the year following, when the second ridge is reclaimed, the first will be got pretty firm to fulfill the said convenience of passing and repassing.

If it should be a very soft wet bog, and full of bog-holes, &c. so that cattle can-

not go to plough it by the above directions; then you must attack it with spades in the following manner, but in this method only reclaim every second ridge the first year, by which means the remaining ridge will doubtless be dry enough to plough the succeeding year.

Make your ridges forty-two feet broad, which are two Irish perches, or the English improver two English perches broad; by this you can easily measure your mens day's work at night, and form a judgment what it will cost an acre, and how your men work, &c. and watch them the first day, and by this you will know what they can do, and insist upon the like every day: thus I have had good work done.

Cut your ridges straight with a line, for it looks very slovenly to have crooked furrows, and they are not easier made than straight ones; if they are once crooked, they will be always so.

Begin with spades, and throw the ridges high in the middle, let each side have a gradual descent, like a turnpike road.

Nine inches deep taken from each furrow, and half-way up the side of the ridge, thrown on the the middle, will give it a rise of about eighteen inches.

Bring the furrow to nothing, that is, with an even slope, having no sharp edge from the bottom of the furrow to the top of the ridge.

Land laid in this manner has no need of any but head-drains, for every furrow is a drain to the ridge it belongs; if it be a black bog, by no means bury the upper sod or turf that is covered with heath or any sort of rough grass, &c. as such are fuller of salts and sulphur than ten times the bulk of the under-turf; besides the wild nature of the bog, with any seeds of weeds, that has been shed or scattered there, ought to be destroyed by fire.

This upper-sod must be cut as thick as reason shews it will burn, in order to raise as much ashes as possible, the more the better. The ridges must be thrown up before they are burnt, the better to warm the bog, and to preserve the ashes from being any of them buried too.

But if you burn four inches of the sod, you must dig the furrow so much deeper, to throw on the middle of the ridge, in order to give it a rise in proportion.

About May, or as soon as you find the fods are dry, and will burn, make heaps of about a cart-load in each, at a proper distance; disperse them all over the ridge, in order to give the bog all the advantage of heat you can; for heat is of great benefit, as it sets the bog a working or fermenting, by which means the particles thereof are divided, and become a kind of manure to itself.

I look upon the heat of fire to be as

great an advantage to the soil almost, as the ashes; for I have observed in burn-beating, the places where heaps of sods had been burnt, that though all the ashes were taken off, and even some of the earth pared away, yet that place had the best corn on it; and it is plain it got no other advantage from the burning, but the heat of the fire, which brought it to a separation, and caused it to produce so plentiful a crop.

When thus burnt and the ashes spread, which ought to be finished by the twenty-fourth of June, sow turnip-seed very thin amongst the ashes; and as no horses can come on the bog for sinking, draw a light roller over it by men; the pressure of which, though the seed will not be well covered, yet it will strike root and grow very well, particularly if there happens to be a shower of rain soon after.

There is no need of hoeing turnips, as that would lighten the bog too much;

for the lighter it is, the worse, and this would add to the evil.

Eat the turnips on the bog with sheep, the urin of which greatly adds to the fertility thereof, and gives it a thorough dressing; besides, the trampling of the sheep will, in all probability, fadden it so much, that horses may go on it to plough for the succeeding crop.

It must be ploughed very thin in this ploughing, so as not to bury the ashes or sheeps dung, above two inches deep at most; also, take care not to turn up any bad or unimproved bog, and the aforesaid manure will have more advantage over three or four inches thick of soil, than twice the quantity.

About Midsummer following, sow your bog with rape or cole seed, at the rate of one peck to the English acre.

After sowing roll it in with men, if horses cannot go thereon without sinking.

If you find the crop of rape be forward and good, eat it with sheep, which will give it another dressing; besides bog will bear eating very well, for the rape will keep growing in the winter, bog being not so subject to freeze as upland.

The beginning of June, in the year following, when the rape is off, another crop of turnips may be sown.

This will make two crops of turnips and one of rape, which will pay a great deal more than for reclaiming the worst bog in Ireland or England, as these three crops, at a moderate computation, may be worth twelve pounds an acre, and, by chance, twice or three times that money.

Whereas digging, draining, and burning, by the above directions, would not cost above four pounds an acre; but if the bog be level, and free from bog-holes it will not cost near so much.

When the turnips are eaten off, which ought to be by the first of March, sow it either with rye or oats, but rye to chuse, as we may now suppose it to be very rich and well reclaimed,

Above all things sow the seed very thin, or it will be all straw, but little corn; four stone of rye on an English acre, or six of oats, are full sufficient.

About the first of April sow clover and rye-grass, or instead of the latter, white or common hay-feed, which may do as well if not better.

Sow eight pounds of clover-feed, and four bushels of hay-seeds, on an English acre, and so in proportion for an Irish one.

When sown, roll it in; and observe never to alter the ridges out of the form or position they were first laid in by dig-

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ing: always preserve the furrows in the same place:

Keep the furrows and drains open, to let no water stand thereon, which would soon wash the manure away, it having a ready passage out of this loose open soil.

It is a bad piece of husbandry to mow bog until it has been first grazed a year or two; but this I shall reserve for the next chapter.

The cabbage husbandry is very proper for bog or low land thus reclaimed, and would turn out to great advantage to the proprietor, particularly if he was to make use of my new-invented moving hedges, for eating them on the land with.

C H A P. IX.

Remarks on reclaiming bog.

I Hinted, under the article of reclaiming bog, in the foregoing chapter, that bog ought not to be mown for hay, the first year or two, after it is laid down with grass-seeds; the reasonableness of which will appear from the following observations.

Reduced bog (particularly before it has been eaten) throws up a long, slender, weak grass, the stalk of which is not able to support itself upright, but doubles, or, as it were, kneels upon the second or third joint, so that when it is mown, it turns up brown at the bottom, and looks as if it were dead; and indeed, it is far spent, for the nature of the soil is of such an open, porous, weak quality, that it gives the sun great advantage to exhale the nitre, or virtues of the earth, which nature

conveys through the verdure or blades of the vegetable creation.

I say, that bountiful nature, thus assisted by the nourishing rays of the sun, goes on at a vigorous rate, till she has exhausted her stores, by the first vigorous onset of growing, and has been so active in throwing her favours upward, that the fibrous parts of the roots, which ought to be equally nourished, to make them grow and incorporate with the earth, have been robbed of their supply, by throwing all the strength of the land into straw or top, before the roots are firmly established in the ground.

This is certainly the case also with corn that grows on this open loose earth; it never feeds or fills well, by reason it exhausts all its strength in the first onset of growing; the soil or mold being so loose about the roots, gives the nourishing particles too free a communication thereto.

It is not because there is more nitre or richness in a strong clayey soil, than such that makes the corn be bolder, or fill better; no, this cannot be; for certainly there are more rich qualities in a dunghill than in a strong clayey soil; yet the latter will produce corn, when the former will produce nothing but straw.

For the strong land is firm, close, and solid about the roots of plants; so that the fibres thereof take in their supply of nourishment more gradually, and do not let nature overshoot herself.

Without doubt, this weak, light, loose soil, throws up as much refined substance into the straw, as, were it proportionably divided betwixt straw and corn, would produce a good crop of both, and the grain as full a body as on other land.

But could it be so contrived, this dividend should be by gentle and proportionable checks in the growth.

This makes it necessary to eat reclaimed bog or light land with sheep; which by continual cropping the branch, as it springs, checks the growth, and makes the roots strike downwards, spread and incorporate with the earth, and also causes the stalks of the grass to stool and shoot out new fibres, which spread over the surface; besides, the trampling of these light cattle saddens the ground, and helps to bring it to a solid body.

This shews how assiduous we ought to be in employing all our industry and ingenuity to help the works of nature, by rolling and ploughing at a proper depth, in such land as reason points out to want our assistance, and also to suit the constitution of such lands with seeds, or grain, best fitted to their nature, in order to raise every crop to the best advantage.

As for instance, a good and profitable crop of either turnips, rape, or cole-seed, may be got or raised from such reclaim-

ed bog, and at the same time the soil improved to an amazing pitch of fertility; whereas, if instead of these you was to sow three crops of corn, it is a wonder if they would be worth reaping; straw it will produce, but very little corn, and what there was would be little better than what we call hen-corn, namely, small and bad. This I am convinced of from my own experience.

But if you do mow your bog-meadow, observe that it be cut before it has done growing, that is, before it dies, or turns brown at the root; in this case, the plants will strike out and stool just below the cut, and this also will cause it to strike into root; likewise the hay will have more substance or nourishment in it, and the after-grass or eddiss be better.

T A B L E I.

A table, shewing the expence and profit of reclaiming an acre of bog; if the first crop be turnips, the second rape, and the third turnips. These three crops I shall put into three seperate tables, that it may appear more clear to my reader, and suppose the first expence of improvement to take place as it were in April 1768.

If it be a black bog that will raise 1. s. d.
 plenty of ashes, it may bring a better crop of turnips than upland. I have frequently had better crops from such; however, I abate one fourth of the value of a good crop, supposing an acre only to feed ten sheep, which if cost, when bought in December, twelve shillings a-piece, they will sell when fat, in April, for twenty-four shillings each, by which they will leave a profit of

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If the bog be so wet and soft as
 horses cannot come on it to
 plough, it must be dug with
 spades, as directed: it will cost
 for digging and throwing in
 ridges - - - - 1 10 0

To turning and drying the fods,
 if wanted - - - - 0 3 0

To burning dit to in May or June 0 10 0

To spreading the ashes - 0 1 0

To turnip-seed, sowing and sow-
 ing - - - - 0 1 6

To forking up the turnips, and
 attending the sheep with hay,
 &c. - - - - 0 10 0

To hay - - - - 0 6 0

To market-expences, sales-ma-
 ster, &c. - - - - 0 5 0

To half a year's interest for nine
 pounds, which the sheep cost in
 December - - - - 0 4 0

To eighty perches of side-drains,
 at two feet wide, and at three
 halfpence a perch - - - - 0 10 0

4 0 6

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Brought over	-	-	4	0	6
To eight perches of head-drain,					
at three-pence halfpenny per					
perch	-	-	0	2	4
			<hr/>		
Total expence			4	2	10
Total produce			6	0	0
			<hr/>		
Clear profit			1	17	2

Note, I have charged this table as high in expence as possible; for there is an equal chance but the bog might be ploughed; if so, it would not cost above twenty shillings; which would leave a larger profit: besides, I have allowed for draining the acre quite round, which if there was more than one acre lay together, it would have a right to be charged only for two head-drains and one side-drain. However, I would make every allowance that is possible a farmer might be out of pocket, on purpose that he might not be teased into more expence than he expected; but all this I am clear in, as it is nothing more than what I myself have practised more than once.

TABLE II.

A table, shewing the expence and profit of an acre of rape, raised from bog after a crop of turnips.

I have known at the rate of thir- l. s. d.
ty barrels of rape raised from
one acre of bog, Irish measure;
but however, here I will only
allow the farmer sixty bushels at
3s. per

9 0 0
Though if his bog be good and he
manage well, he may be sure of
almost double the quantity.

To straw to burn for ashes 0 6 0

Total produce 9 6 0

It is a great chance whether or no
the bog will want any prepara-
tion for this crop, as the sheep
will tread and break it, by eat-
ing the turnips off, and we are
sure there will be no weed; but

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if it should want to be ploughed, it may be done with one bullock and one man, for which we will allow - 0 2 6

To feed and sowing - 0 2 6

To rolling (for it need not be harrowed) - - - 0 0 6

To a man to go round the furrows, and several times in the year, lest any lumps of earth should drop in to stop the current of the water, to throw it out, &c. - - - - 0 2 6

To a boy two months, at 3d. per day, to keep the birds from eating the rape - - - 0 13 0

To reaping and threshing, and market-expences, with carriage, &c. - - - - 0 15 0

Total expence 1 16 0

Clear profit 7 10 0

Note, this crop is off the ground, we suppose, about Midsummer.

T A B L E III.

A Table on an acre of Turnips, being the third crop after the bog is reclaimed.

I shall here again only suppose 1. s. d.
the turnips to feed ten sheep,
at twelve shillings profit each.

Total produce	6	0	0
<hr/>			
To once ploughing with one man and two horses - -	0	2	6
To gentle harrowing before the turnips are sown -	0	1	0
To seed, rolling and sowing	0	1	6
To forking up turnips, attending the sheep with hay, &c.	0	10	0
To four hundred weight of hay	0	8	0
To market-expences, sale-master's allowance, &c. -	0	6	0
To interest for six pounds, being the first cost of the ten sheep,			
	<hr/>		
	1	9	0

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Brought over	-	1	9	0
and lying out of it about half a				
year	-	0	3	0
		<hr style="width: 100%;"/>		
Total expence		1	12	0
		<hr style="width: 100%;"/>		
Clear profit		4	8	0

Note, the money is made of these crops in 36 months, three crops, the profit of which being added together, makes in all, clear profit

-	-	13	15	2
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A fine thing indeed, and still nothing but what might be reasonably expected, and may chance to be a great deal more; and what may encourage a reclamer yet more is, that while he is at work with his bog, he has no rent to pay for it.

And now that he has got these three crops, we may suppose the bog to be reduced to good land, and fit to receive a crop of corn, and sown with grass-seeds

as directed, and there is scarce any doubt but it will bring meadow worth at least 30 s. an acre. There is no deceit in all this; for we see as plain as two and two make four, that here is nothing but what the common course of things may bring about, if the farmer stick to the rules laid down under the head of reclaiming bog.

Then will not all this awaken him to that valuable and necessary piece of improvement, which will add fame to his memory, money to his pocket, and health and beauty to his country.

N. B. I forgot to tell the farmer, under the article of reclaiming bog, that when he has got it laid down with grass, he may then put what manure he pleases on it, but to chuse lime-stone gravel, or marle, which will turn it to shamrogs or fine grass, and the skin or sod will keep his manure from sinking; but if he lays it on whilst it is under tillage, in its loose open state, it will immediately sink be-

low the reach of the plough to turn up, or any plant to feed upon, therefore he will infallibly lose it to all intents and purposes.

There is low marshy land in England, in several parts, which this management will suit as well as in Ireland.

Also both bogs and deep mountains, in Scotland and Wales, which may be turned into agriculture, to great advantage by the above method.



C H A P X.

On reclaiming mountain or commons.

THere are several sorts of land that go by the name of mountain, though, in the strictest sense, mountain, is an eminence or a hill; and most hills are barren, heathy, or bad land. From

this I suppose, heathy land has derived the general name of mountain in Ireland, though the land be level.

In England, indeed, we have few mountains, though a great deal of heathy or liny commons, which have nearly the same surface as the Irish mountains; but the under-stratum, in most places, is quite different: the Scotch mountains are much like the Irish in every degree; and so is many in the north of England, as Cumberland, Northumberland, Bishoprick of Durham, and Yorkshire, likewise in Wales.

Most of these as well as in Ireland, the under-stratum is generally a hard, solid, binding gravel; but in England, the under-stratum is a free, black or red sand, which makes it easy to work in: the upper surface is nearly like it, of a black, open, light, loose, fuzzy, boggy sort of earth, on which grows heath or ling.

In England, it is pared thin in fods,

and made use of for firing; it is also made use of in some parts of Ireland, particularly in the county of Wicklow, and in Scotland for the same purpose.

In England, there are large tracts of this heathy land, and one that does not know the constitution of the country, might brand the inhabitants thereof with indolence and ignorance, because they do not improve them; but however here they are not blame-worthy, as no man dare inclose a single perch without an act of parliament for empowering him so to do; as the lands are all common, no man can claim a separate part; this makes improvement so backward in England.

But however, they shew the difference; for when once an act is passed for the dividing and inclosing a piece of ground, a common or the like, suppose it be several thousand acres, it is seldom more than a year or two before it is improved, and made good land of.

I mention these particulars, to take off the aspersions that some of the Irish gentlemen have unthinkingly cast upon them, for letting their lands lie waste, not considering the restraint they lie under, how hard it is to find a township of men in one mind, who will be at the expence and trouble to get an act of parliament to inclose and divide said lands.

But this is not the case in Ireland, as every man has his land to himself, therefore if he does not improve it, he has not that excuse to make.

This is the state of the case with mountains, between England and Ireland; but in Ireland, mountains vary greatly; in some the black soil that covers the gravel, is deep enough to admit a sod to be pared and burnt to raise ashes; when this is the case, there cannot be a better and cheaper improvement; and this is like killing two birds with one stone, as the phrase is, because the fire destroys at

once the heath, rubbish, and wild nature of the boggy part thereof, and converts them into a friendly manure.

The best and most suitable crops for such deep mountain as this, are rape, cole-feed, cabbage, or turnips, and treated much in the same way as you would bog; but indeed, it will never be so good for meadow; therefore it is best to lay it down with common grass-seeds and clover, or common grass-seeds alone, and keep it for grazing.

After it has lain a year, if you have lime-stone gravel, as there are few mountains in Ireland without, except in the county of Cork, lay it on, at the rate of two cart-loads to a square perch, and this will turn to shamrogs or fine grass; but do not lay it on before the roots of the grass are well established.

There is another sort of mountain, which is very thin of soil, therefore if it

was burnt, you would destroy it to all intents and purposes.

This fort is called green mountain; it is covered with a short, poor, spreading heath intermixed with moss and a coarse grass.

The only way to improve this is by fallow; begin to plough it for that purpose about Michaelmas, and let it lie exposed to the inclemency of the winter, by which the frost will kill the roots, and the sod will rot.

About April harrow it well, and then give it eight or ten ploughings before wheat-feed-time; then you may sow it with wheat, and there will be no doubt of a good crop, without any sort of manure,

I once produced as good wheat from a very poor mountain, as could grow; and I am clear, it will never fail of answering the expectation, if the farmer

plough well, and stick close to this rule.

He may convert this sort of mountain to the rule of tillage which I have laid down in the 71 acres farm, as this strong mountain will answer best to be kept in tillage.

And can a man turn his land to better account, or a greater advantage, as appears by the table on wheat, in said farm? Certainly no; and if he be not stupidly blind to his own interest, he will not delay putting it in practice in good earnest, without loss of time, after he reads this book.

Suppose he was to work one part of his mountain with the bullocks he is rearing on the other part from three till they were five years old; in this case he would have no loss in reclaiming such land but two men to each team, one to hold the plough, and the other to drive the bullocks; which, by moderate exercise,

would grow and thrive as well as if idle; and the only way would be to have fresh bullockstwicce on a day, viz. forenoon and afternoon.



C H A P. XI.

On making hay, to retain the juices in it though a wet season, and to recover bad hay.

VARIOUS are the methods of making hay; some people take much more labour about it than others, and perhaps do not make it so well, though they may have weather alike; it is true much depends upon weather, and so does very much depend upon a good method of doing things; reasonable occurrences, a good forecast, and a ready method of getting forward with business, may do more in one day, than the reverse would do in two. A man's wits should always be about him, to catch all opportunities in

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brittle weather, so should he be always provided, for fear of the worst.

I shall point out the method how I save hay, and let the season be ever so bad, I never have any damaged. I am sure if every hand would follow my directions, they would have good hay in the worst of seasons: and also in a dry scorching season, there is great pretention to be used in preserving the sap in it.

I see no reason (if hay be rightly made) why it should not feed a bullock in winter, as well as in summer, when it was in grass; but this can never be expected without all the real substance it contained in its grassy state be kept in it.

It is not filling the belly of an animal that avails much for feeding, if its food is not impregnated with such oily substances or juices, as are necessary to dilute the drier particles, and disperse them equally through the avenues of the body, in or-

der that every part may be supplied with proper nourishment to enlarge its premises.

It is my method generally to begin to cut my meadow in rainy weather, particularly if the summer be likely to be wet, that is, after it has rained a day or two; because the odds are above twenty to one that it will not rain above two or three days together, without an intermission of a dry day or two; and if the grass be cut in ever so dry a time, it ought to lie two days to shrink or wither before it is stirred out of the swarth, but not longer, lest it should turn yellow at the under-side.

But if it happen that you cannot get a dry blast the second or third day then go with rakes, and turn the swarth over, the under-side up, without spreading, because if you spread it, the ground is all covered, and consequently kept wet, so that you have no dry place to turn it into when a dry blast comes.

Whereas if the spaces between the swarths be kept uncovered half an hour, the sun or wind will dry the stubble, and then by turning the hay thereon, it will dry more in one hour, than in six if the ground be wet; and it avails nothing to spread till a fair blast is got to dry it.

As soon as it is dry after the first, or at farthest, second day after cutting (without spreading out of the swarth, if possible it can be avoided) make it into what we call a foot-ball cock.

That is, you must shake about half an arm-full of hay into a round heap, then smooth the top, and stroke down round the sides with your two hands, and gather all the ends and loose between your hands into a lump at the under-side of the cock, so that the cock will be round; and this lump is by way of a foot for it to stand on, in order to keep it from the ground, and to give liberty for the wind to circulate round it.

The cock stands as it were on one leg, and that leg kept dry by the over-hanging of the body, therefore not one bit is in the least danger by lying on the ground to be wet, or turned black, and being smoothed round about, it keeps out the rain-water; and being so small, there is no fear of its heating be it ever so green put together, because the wind blows through to dry it, and this without having the substance exhaled or fried out by the scorching heat.

Thus let it stand till it is well weathered and dry, ready to go into a large load-cock or a stack.

I never in my life had any happened bad that I took this method with; and it is also a cheap way, for it is never handled over, or any second trouble had with it, but to make it into these cocks out of swarth, and out of these cocks, into large ones.

Indeed, if the weather be very good, I only turn the swarth over over the third day, then let it lie, and so put it into a common hay-cock the fourth or fifth day, according to the weight of grafs that may happen to be on the ground, and according to the state the hay is in when cut; for if it be cut very green, it will be the softer, lie closer together, and take a longer time to wither.

It is a great mistake to let meadow be too long uncut; for first, you lower the value of the hay; secondly, the after-grafs; and thirdly, you spoil and perish the ground all winter.

It is prudence to put hay together as green as possible, into a stack to sweat, so as not to fire; and to prevent this, make a vent-hole, or two or three, according to the size of your stack; this is easily done by drawing up a sack stuffed with hay, as the stack rises.

Hay that gets a brown colour by sweating, is always sweet, rich, and fattening, because it is the sap or juices of itself only that caused the heat or sweat, and this colour.

But if hay have any water in it, when stacked, instead of turning brown, it turns a white mould, so putrefies and stinks, and is very unwholesome for cattle to eat.

When it is cut out of the stalk, it is as white and dusty, as if it had meal among it, such is of an unwholesome bad nature; the way to prevent this, make it wholesome, and also to lessen the danger in green hay of firing, to prevent sickness, and add strength and vigour to the cattle that eat it, is to mix salt among it when it is stacking, viz.

Every layer of hay, sprinkle thereupon a quantity of dry salt.

It is inconceivable the value that five bushels of salt would be of in a stack which contained ten waggon-load of hay, and so in proportion; or if a greater quantity of salt, it is so much the better, for you cannot put too much.

This would be like turning a hay-stack into a salt-marsh; and it is well known there is no ground more wholesome; for if you turn a poor, tore-down, surfeited horse into a salt-marsh, it not only purges and clears him of all disorders, but also fattens him very quickly.

In short, every farmer in an inland country, might nearly supply the place of salt-marsh, by giving his cattle salt amongst their food, and every now and then, a handful of dry salt in summer, or learn them to lick it out of a trough, which they will soon do, being naturally fond of it; and indeed every animal, if it had liberty to follow the dictates of nature, would find out its own medicine;

witness the monkeys, how they find out rhubarb, and eat it as a remedy in disorders, though they know it will make them sick. It is not natural for a dog to eat grass as food, yet we see how diligently he will find out the right sort for his use, and eat it as a medicine, by way of a preventive, though he knows it will make him sick: this we see with our eyes; and just so would every animal follow its own natural dictates, were it not subverted, prevented, and driven out of its bias, by the ingenuity of man.

When you have old hay spared over year, the way to enrich it still more, (let it be good or bad) is to mix it with dry grass.

What I mean by dry grass, is such as that is newly cut, but dry from dew or water.

Being provided with such, begin and make your old stack over again, and lay

a layer of grafs, and a layer of hay through all the ftack.

The abundant juices of the grafs will fweat out, and impregnate with the dry particles of the hay. If the hay was good before, it will ftill add to that goodnefs; if bad and ill faved, it will enrich and fweeten the poor, bitter, dry, husky, ftrawy nature, befides it faves labour of making grafs into hay.

If you have ftraw, it is very good alfo to mix grafs with fuch; for the drynefs thereof attracts and receives the fupera-bundant juices of the grafs by which it is enriched, and made as good, if not fuperior to middling hay. Indeed a great deal may be done to a farmer's advantage, if he pleafes to open his eyes and ears to plain reafon.

C H A P. XII.

The culture of madder described, with a state of the expence of cultivating one acre, and an account of an experiment made with respect to using the green root for the purposes of dying.

I Have been a practical grower of madder for several years, and have tried it upon lands of various kinds; and as I apprehend the cultivation of it in England is of great importance to our trade and commerce, I am willing to communicate the result of my experiments to the public.

My first trial was upon a small piece of ground near my house, of about forty perches of land, lying pretty low and moist, of a deep mellow soil, and rich black mold, a little inclining to sandy; and underneath about two feet and a half,

and in some places three feet of good earth, was a bed of loose sand with a mixture of gravel.

I have been the more particular in the description of the nature of this land, because it produced the best English madder I ever had, both as to quality and quantity.

In March I caused this plot to be dug a full spit deep; and as it was under natural grass for some years before, I took care in digging to throw the top-turf as low as possible, turning the mold uppermost, in order to prevent the grass from springing; which had the desired effect. I also took care to pick out all the roots of weeds, and other noxious plants, which were found therein.

In this state it remained about a month; then with a line I divided it into beds of five feet wide, and two feet interval between each bed, raising them a little in the middle with some of the earth in the

intervals; then with iron rakes the beds were reduced to a fine garden-mold, leaving them a little rounding, like asparagus-beds in order to shoot off the rain-water; and having procured some strong pack-thread, at every foot distance I tied a small piece of white woollen yarn, and thus continued the whole length of the line, which afterwards served as a rule where to fix the plants.

This line was extended the whole length upon the outermost bed, six inches from the side ridge of it; then with iron-shod dibbles a madder-plant was set strong in the ground, near every tuft of white yarn fixed along upon the line.

This row being thus planted, the line was removed two feet forwards, which brought it exactly to the middle of the bed: this being also finished, the line was again removed two feet, and planted as before; and this method I continued till the whole was planted. Thus there were three rows of plants in each bed, at

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two feet distance, and one foot apart in the rows; and the distance between the innermost row of one bed, and the outermost row of the next adjoining bed, was three feet.

During the first summer I kept the young madder quite clear from weeds by hand-hoeing, as soon as any appeared; and in October following I took the haulm that over-ran the intervals, and spread it over the beds, without cutting any off; then with a spade I covered the haulm with the earth from the intervals about two inches thick.

In this condition it remained during the winter, and in March following the young madder came up very thick and strong; and as fast as any weeds appeared, I kept them down by hoeing, as before; but in the second summer I found there was no necessity of repeating the hoeing after the middle of June, for the haulm was now grown so very luxuriant as entirely covered the surface of the

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ground, and thereby prevented the weeds from growing; and in October I again spread the haulm upon the beds, and covered it over with the earth in the inter-as before.

There are three good reasons for covering the madder in winter.

The first is the new dressing of the beds with fresh untried earth.

Secondly, by this method deep trenches are formed at proper distances throughout the whole plantation, and consequently the beds are kept dry and healthy, and thereby the roots are prevented from rotting, which otherwise they are apt to do, if the water continues too long soaking on the beds.

The third reason is still more efficacious; for by this means, the haulm is entirely rotted, and the volatile salts contained therein are washed down to the roots by the winter-rains, which tend

more to increase the vegetation of the plants than double the quantity of any other sort of manure whatsoever; and for this reason, because the salt, inherent in the haulm, is of the same kind with that which was before extracted out of the ground, by the growing of the madder, and is now returned into the earth again, in order to renew its former office of vegetation.

This, perhaps, may seem new doctrine to most of my readers; but experience convinces me of the truth of it, with regard to madder.

If this hint was duly attended to, it is my opinion, that both farmers and gardeners would find their account in it, in the production of most sorts of vegetables.

But to return more immediately to my subject.

In the third summer very little work

was required, only two flight hoeings in April and May, owing to the strength of the haulm, which covered the ground as in the preceeding summer; and in October following the roots were taken up, and this small piece of ground produced one thousand nine hundred and sixty-five pounds* of green roots, which were very large, and the madder, upon trial, was found to be exceeding good.

In cultivating madder, great care is to be taken to see that every set or plant has some small fibres at the root; and this ought particularly to be observed by those who are employed in taking them out of the ground; for unskilful persons, not used to the business, very often draw up such as have no fibres at all, and then they certainly miscarry.

* This is seventeen hundred two quarters and five pounds; and, in kind, at fifteen shillings per hundred, (which is a low price as madder now sells) comes to thirteen pounds three shillings and two pence, being the produce of a quarter of an acre only; which sum, multiplied by four, makes the produce of an acre fifty-two pounds twelve shillings and eight pence.

The best way is, to remove the earth from the mother plant with a small hand-hoe, or some such instrument; and then you may easily find which of the young plants has fibres, and which not.

In the second spring, you must be cautious not to take off above two or three sets from each root; but in the third spring when they are deeply rooted, you may take off almost as many as you please, without injury.

The sooner the young plants are set after they are taken up, the better; and if you are obliged to have them at a distance, so that they cannot be set again in less than three or four days after they are taken up, they must be well watered at first planting, and repeated, as often as you see occasion, till they have taken root.

In dry seasons, the young plants very often die for want of moisture soon after

they are planted; and in large plantations the expence of watering would be too great; therefore I always get my land ready early in the spring, and wait for some showers falling; and when I find them just at hand, and sometimes in the rain, I get a great many hands, and immediately go to work, some * taking up, and others raking and planting; so that the whole is soon finished, even in a large piece of ground; and when the plants are well watered at first, they soon take root, and afterwards they will stand a dry summer very well.

In the most favourable seasons, some few plants always die soon after they are set; therefore, about three weeks after planting, you must go over your madder-ground, and replace such as have failed, with the best and most likely plants; and if the season be dry, let them be well

* Women are generally employed in this work, and two men will plant as fast as six women can draw.

watered at first planting, but if, after all, you find any miscarry (which, in a dry summer, they sometimes will do) the best way is to fill up the vacancies * with winter-plants, in October following, just before you cover the haulm.

Madder may be successfully planted from the middle of March, to the end of May, according as the spring is either forward, or otherwise; but if showers should happen to fall in April, this is the best month in the year for planting madder. There should be no dung of any kind laid upon the ground during the time the madder is growing, because it has been found to give the madder a bad colour; and if the land is in good heart,

* In September, or October, when the madder is dug up for use, you may observe, near the crown of the root, several branches thick set with small buds, and some fibrous roots growing underneath: these, when cut into lengths of about three or four inches each, and planted any time during the winter, will grow very well.

N. B. They are called winter-plants, by way of distinction.

and proper for the purpose, there will be no need of it.

It cannot be expected, that any land, even the richest, should produce repeated crops of madder; for which reason I am told that the Dutch always allow an interval of six or seven years, in which time they manure the land very well, and sow it with corn or garden-vegetables, and have always large crops, owing to the deep stirring of the ground, and being clean from weeds; and I can, from my own experience, assert, that the best crops of corn always succeeded a madder-crop.

About five years ago, I planted an acre of madder on a light, dry, sandy soil, which produced a tolerable crop, but nothing equal to the other.

I likewise tried it upon an acre of land, of a loamy, mellow soil, somewhat sandy, about a foot deep in mold and underneath is a cold, stiff clay; from this

piece I had great expectations, as the plants thrived very well at first, but in the second summer, when the roots reached the clay, the plants died away, and came to nothing; therefore, I am well satisfied, a cold clay is by no means proper for madder.

I have also, at this time, two other acres of madder, which I intend to take up next winter; it will then have stood three summers. The soil is a deep hazel mold, worth about twenty shillings per acre. Instead of digging it with the spade, I plough-trenched it at least eighteen inches deep, but managed, in all other respects, like the former. From the appearance it made last summer, I have no great expectations from this plantation, though I fancy, it will be a saving crop.

Expences attending the culture of
an acre of madder, supposing the
land to be worth forty shillings
per acre.

	<i>l. s. d.</i>
Rent for three years -	6 0 0
Digging ditto at two pence per perch - - -	1 6 8
Dividing ditto into beds, two men one day, at one shilling each - - -	0 2 0
Raking ditto, two men one day, at one shilling each -	0 2 0
Planting ditto with two thou- sand plants, one day, at one shilling and six pence each -	0 3 0
Six women to take up two thou- sand ditto, at six pence each, one day - - -	0 3 0
Hoeing the first summer five times - - -	0 15 0
Covering ditto in autumn the first year - - -	0 6 0
	<hr/>
	8 17 8

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Brought over	8 17 8
Hoeing ditto the second summer three times - -	0 9 0
Covering ditto in autumn the se- cond year - - -	0 6 0
Hoeing ditto the third summer twice - - -	0 4 6
To be paid in lieu of tithe, at five shillings per acre per an- num - - -	0 15 0
Digging ditto out of the ground	5 0 0
	<hr/>
Total expence	15 12 2
As I always allow my people beer when they are about this business, I may add - - -	0 6 0
	<hr/>
Which brings the whole expence to - - -	15 18 2

In the above account I have not reckoned any thing for the plants; for though they cost considerably at first, yet it is then done once for all, to any person who continues to propagate madder,

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as he has always a constant supply from his own plantations.

	<i>l. s. d.</i>
Produce of an acre of madder	52 12 6
Expences - - -	15 18 2
	<hr/>
Clear profit - - -	36 14 4

IN the business of dying, a great deal of madder is used; and being of opinion that there are many useful discoveries now lying dormant, only for want of proper methods to bring them to light, I determined to try an experiment on madder; accordingly I took twenty pounds of the green root, and having washed it clean from dirt and filth, I bruised it in a large iron mortar just before using, and with other ingredients I dyed half a pack of wool of a dark, full drab: upon examining my colour, I found it full as good as though I had used four pounds of the best umbro madder, imported from Holland; so that, according to this calculation, which is founded on

experiment, five pounds of green madder-root are equal to one pound of dry manufactured madder; and as I have found this method to answer, I have continued to use the root in this condition ever since, and find it much the best and cheapest way; for the green root is bruised very easily in the mortar, and thereby saves a great expence in drying, pounding, &c.

Before I quit this subject, I would advise those persons who are inclined to cultivate madder, to be very cautious in the choice of land for this purpose; for hereon their success chiefly depends. Madder being a plant that draws a great deal of nourishment, consequently the richest and deepest lands are to be chosen.

If the English farmer should be excited to so laudable an attempt to cultivate this useful commodity, he will probably find the directions here laid down not only useful, but necessary, as being the result of many years experience.

To preserve green madder-root, cover it over with sand, or dry earth, till you have occasion to use it. And I have reason to believe it might be secured in this state for many years (without injury) on a dry earthen floor.

The above are experiments made by a sensible man; and as he is both a grower and consumer of this plant, he must be a more able instructor in the culture of this useful commodity, than I can pretend to. I am so far convinced by self-experience, that clay-ground is not good for madder, because its consolidated close nature confines the water about the root of the plant in winter, and chills or rots it; and in summer it will bake and bind it so fast that it cannot spread or grow; neither is light, hot sand good for it, because by its open, porous, loose nature, the sun quickly exhales the moisture from about the root of the plant, so consequently robs it of the supply of its life, or at least reduces it to a sickly weak condition.

A deep, black, loamy hazel earth is the best of all others; and a maiden-soil is better than old tilled land: the sod by trench-ploughing must be turned to the bottom of the furrow, about two feet deep, and there it rots, and becomes a mass of manure to nourish and feed the tap-root; and the nature of this plant is such, that the deeper the tap-root goes, the greater and better top it will produce: in short, there are few towns in England, Scotland or Ireland, but what have spots of land, belonging to them, suitable for this plant, and might be cultivated to great advantage to the farmer, dyer, and to the public in general, by keeping a great deal of money at home, which annually goes abroad for this commodity.

C H A P. XIII.

General remarks on stock-farms,
and the different state of the
English and Irish farmer, poor,
&c. &c.

AS this chapter is chiefly intended for my Irish readers, the English may disregard it if they please.

My long acquaintance with, and frequent travels through Ireland, have given me a knowledge of the lands, inhabitants, and constitution of the kingdom in general.

I must own my surprisè was great, at my first journey into the country, to see about three-fourths of the inhabitants living in little huts or cabins, built of sods and covered with rushes, flax-shoves, or the like, not sufficient to keep out a shower of rain, and that a man can scarce-

ly stand straight in; yet they are perhaps inhabited by eight or ten men, women and children, half naked, and whose chief support of life is potatoes and butter-milk; their bedding nothing but straw or rushes, and this sometimes in a sparing manner.

No wonder then that a scene like this should shock an Englishman, who had not before seen even the brute creation live and lie worse.

The high roads also are stocked with beggars, whose cant-prayers and cries are enough to shock the frame, and grate the ears of those who have in them any fellow-feeling.

Indeed I have read of such unhappy wretchedness subsisting amongst the savages or Hottentots, but did not expect to find it so near home.

Such an unexpected scene amongst my brother-Christians, naturally led me more

minutely to pry into the commerce or trade of the kingdom, in order to find out the source of their wretchedness, and found they were rather to be pitied than condemned, as the scarcity of work may be considered as a real misfortune, both to them and the kingdom in general. The poor, however, feel it most sensibly.

The above description of the Irish poor, is too truly their unhappy case: and although the gentlemen of Ireland (whose benevolence and charitable disposition is unquestionable) labour indefatigably to cure these grievances, by giving premiums, building large poor-houses, &c. &c. yet with humble submission, I apprehend the malady is every day growing worse; and it is to be feared, will continue till some method is taken to put a stop to these over-grown stock-farms.

These are the chief and real bars to the riches, prosperity, improvement, industry, good morals, regularity, cloathing, and feeding of the poor of Ireland.

I have travelled through the kingdom many times within these twenty years, and particularly within the last two or three years, have been very minute in my observations; and it appears to me, as clear as the noon-day, that these large over-grown grazing, or stock-farms, ever were, are, and will be the ruin of Ireland, or in short any other country, where they get footing, and I am sorry to say, England is coming too much into them.

They are a stagnation to trade and improvement; for what improvement do three or four thousand bullocks (which occupy more acres of land) create or require. In short, they in a manner, lay waste a country, as four or five families are sufficient to take care of this tract of land, and number of cattle.

It is a known truth, that the riches of every country depend upon the labouring part of its inhabitants.

On these every branch depends that is necessary for the use of man, whether for back or belly.

But in such waste-countries, the poor are deprived of all manner of means to be useful either to themselves or the public; they must either starve or turn out to beg or steal, or perhaps both.

This is too truly the state of the case, which I am sorry for, as it must affect every individual in one respect or other: and the very graziers themselves are not making the best use of either their land or time; they only live from hand to mouth.

It is true, they live well, and drink punch and claret, but few of them (though they hold from five hundred to five thousand acres: can portion five or six children with a thousand pounds a-piece.

Then is not this a shame, that a man shall take up such a tract of country, to so little utility, for his family, or the public good?

In short he has nothing to plead in his behalf, but that he gets his living in an indolent easy manner; for says he, corn is troublesome; and if you tell him how well the English farmers live by it, he again answers, that they have free exportation, better markets, &c. a cock and a bull, a story he knows nothing about.

Likewise, says he, land in Ireland is too dear to pay rent by corn; mere delusions and phantoms, to fright and keep him from pursuing his own interest; but I assure him these arguments are falsely grounded.

Can any man say, and prove that he can make ten pounds an acre by grazing; and will not land worth twenty shillings

an acre, by proper tillage, bring ten barrels or forty bushels of wheat, worth ten pounds?

Note an Irish acre is one third larger than an English one.

But if we make a comparison between the lowest crop in value (which is oats), we shall find it will have the advantage of grazing above two to one. As for instance, how common is it for a grazier in Ireland, to let his land in corn-acres for three or four years together, the first for grass-potatoes* at five pounds an acre, and for two or three crops following, at three pounds an acre for oats, and this to a poor man who has both ploughing, seed, and labour to find, and his family to maintain out of that acre?

Then certainly such an acre must make six or seven pounds at least, to

* Set on grass ground without dung, in the same method as I have pointed out in the foregoing part of this work, that the Irish set potatoes

pay all expences, and maintain his family.

If so, it must make more to the farmer who has teams or carriages, &c. without hiring: but here again he is pleading indolence; for, says he, it is easier to count three pounds in cash, than to manage an acre of oats.

Now suppose he sits down with the worst hand he can make of his land, namely, the three pounds an acre; yet it is double what he could make by grazing, for the grazier thinks himself well off, if he can make thirty shillings an acre throughout his farm.

There is no sophistry in this; it is all plain and clear to a weak understanding, that corn is the greatest profit.

Further, the Irish farmer is mistaken, when he says or argues, that the bounty for exportation gives the balance in favour of the English farmer.

How can this be? is not every commodity worth what it will bring? does not the corn-factor find out the highest market to send his cargo to? and does he not also find out the lowest market to lay in his cargo? and if he buy it in England, must not that be the lowest market? and if he brings it to Ireland, is not that the highest market?

If this reasoning will not stand good, a merchant could not trade; for the bounty-money will not pay the expence and freight, let alone profit and hazard.

But, suppose there was a great advantage in it, the farmer gets it not; he sells it at the lowest market, as there are several traders to get a living by it after it parts from him, such as the merchant, mariner, broker, &c.

Therefore it is plain his corn is going to a higher market; and if that be Ireland, certainly the Irish farmers have the

profit of all these branches, because he is at home in the highest market, where all those have a living to get by trading thereto.

Indeed, if Ireland was to raise more corn than she could consume, so as to reduce her market lower than any other, then she might cry out for a foreign trade with authority.

But however, this is not the case; for I have known Ireland for more than twenty years, and always found her markets higher, by ten or fifteen per cent. than in the corn countries of England. I do not mean Liverpool; for there corn generally bears the same price as in Dublin, as it is as easy to import corn from the interior parts of England to Dublin, as to Liverpool. For Lancashire and Cheshire are no corn-countries, their produce being chiefly cheese.

Now, we see by the above, that the Irish farmer has a great advantage over

the English, both in point of market and rent.

For by the nicest calculation I can make, I find the lands of Ireland are cheaper or lower than in England, considering their goodness and measure. For suppose the best and smoothest land in Ireland be upon a par, at twenty shillings an acre Irish measure; by the same rule, the best lands in England will only be at about twelve shillings an acre English measure.

Besides the taxes in England are higher, and labour nearly double the price: this is all on the Irish farmer's side.

Now perhaps my Irish readers may think I talk like a traveller, when I tell them that an English farmer who never farmed more than one hundred a-year, shall expend twice as much meat in his house, and save more money (in a general way of speaking) than an Irish grazier that pays from 1000 to 1500 l. a-year

rent. Nay, in short I know several fifty pounds a-year farmers that are worth more ready money than some Irish graziers of two or three thousand a-year rent. This I believe will be assented to by any gentleman that knows the two kingdoms.

Then certainly the Irish grazier will never pretend to say that grazing is able to pay the highest rent, or make the most money in any degree.

But however, that he may be the more clearly convinced, let him cast his eye over the different tables in this work, to see his folly.

He will likewise see, that the corn-farmer will not displenish himself or the the country from cattle, because he can breed and feed as many as will keep up a proper stock.

Nearly the same comparisons may be made between one part of England and

another, for really it is a very striking malady, and must concern and trouble any one who knows the constitution of his own country, to see farm laid to farm, and put into the hands of a grazier, who stocks it with bullocks and sheep, and turns out a great many small farmers, who used to maintain a large family, to work labouring work or starve.



C H A P. XIV.

On Flax.

THere are several denominations of flax, as follows.

1. White flax.
2. Seed flax, in imitation of white.
3. Black, or bunch-rate, in imitation of blo, or black Dutch.
4. Dew-rate flax.

These require each a different manage-

ment, therefore I shall treat of them separately, except what relates to land or sowing, which will be set forth in this chapter.

Though flax is a nice crop to bring to the hackle in full perfection, yet as to the growing part, there is nothing more easy; and as the climate and lands of England, Scotland, and Ireland, are really very good for this crop, together with the high price that flax and seed bears, and the great encouragement given by the government to the Honourable Linnen-boards of Ireland and Scotland, will I hope, with the assistance of the following hints, make this branch flourish in these two kingdoms.

Indeed, it must be allowed, that the linen-branch in Ireland (take it from the hackle to the bleach-yard) has arrived to a height almost to rival any other nation, thanks be to the worthy, honourable, and indefatigable gentlemen in trust thereof.

But as to the raising flax and feed, we may justly pronounce Ireland to be in her infancy, infomuch that she runs counter in every part that should make for this so valuable a branch.

However, she is rather to be pitied than blamed, as she has always been kept in the dark, not having either personal, or even theoretical lessons to go by. It is as clear as the noon-day, that no author has ever treated on this subject that really understood one half of it; for it is almost impossible for any person above a common labourer to be a true judge thereof.

If this be the case, (as it certainly is) how is it possible for a gentleman-writer, bred up, perhaps, in London, or some other great town, to give thorough lessons, himself knowing no more than what he gathers from this and that hearsay?

On the other hand, this branch was never likely to transpire by personal lessons, as I doubt whether there be a man in Ireland, that really knows how to bring a stone of flax to its full perfection fit for the hackle. I have travelled all Ireland over, but never as yet saw an instance of it.

What can we say then, is not this a heavy clog upon the main wheel? Are not we rowing on troubled waters, by fetching our materials from abroad, in a dear and hazardous manner?

Though I was brought up in the midst of a flax-country, where every farmer round me had, perhaps from five to twenty acres, and though I grew a great deal myself, and paid close attention thereto, yet I found myself greatly deficient, till I betook myself to the manual part thereof; and though I was as great a proficient as most of my neighbours, yet when I came to grow flax in other coun-

tries and make use of other waters, &c. I found I had more experience to gain, before I was thorough master of it, which cost me very dear, as will appear in the following sheets.

The thorough knowledge is not to be got without repeated experience, a close and even laborious application.

My experiments tell me that old lay-land answers best for flax, as it is generally free from weeds, and is least subject to lodge, and also produces a finer and thicker skin, likewise not so apt to have cankered rusty black spots in it; besides, flax on such land, is a good preparative for wheat, as it hardly ever makes of a good crop.

All sorts of fallow or stubbles, provided they be enriched with any kind of manure, will bring flax; but as lay-land (for the above reasons) is so much better, I would advise my reader to make it his choice if possible.

Avoid rating flax in limestone water. This piece of experience I paid very dear for, though it never fell in my way but twice, namely in Ireland and Wales; in the first I had my choice of two sorts of water, limestone and bog; the latter was inconvenient, but the limestone very near, being a fine standing pool under a limestone quarry.

As I had never heard any thing against such water for flax, I had well nigh determined with myself to water in it; but on second thoughts, as I was not necessitated, I thought my flax too good to be risked by experiments; therefore I escaped for that time.

In Wales, however, I had not the same good fortune, though I did not run into the trial designedly.

Through my land run a small rivulet, which traversed some low meadow-fields; in two of these fields, I made in each a

flax-pit by the side of the river, which I could fill at pleasure.

At a small distance was a limestone quarry, out of which came a spring, which helped to feed this rivulet; one of the pits was opposite to the spring, and the other above it: so that I could turn the spring below both the pits into the rivulet; which I accordingly did.

Thinking myself well provided with water, into each pit I put four acres of good flax, sodded and treaded as usual; but some person (whether for mischief or not, I cannot say) opened the dam that was opposite to one of the pits: thus they served me three nights successively. It had been seven days in the water when this happened, but scarce began to rot, as I tried it every day.

I immediately found the bad effect of the limestone-water: upon which I took it out the fourth day after this happened, being in the pit only eleven days; but

it was quite spoiled and rotten, except some bits in the middle of a sheaf, or in the corner of the pit where the lime-water had scarce reached; and this was green, and nothing better for going into the pit. In short, it was spoiled to such a degree, that I never made use of a handful of it.

The flax in the other pit that escaped the lime-water, lay there five weeks, and got no more than a sufficient rate, and was so good, that I sold some of it for sixty-four shillings a hundred weight in the rough.

The long time that this lay in the water, shews what difference there is in water: for I had some water in the same land that watered flax well in twelve days; and I have had water in other countries, that has rated flax well in six days.

My experience of deep water cost me yet dearer, as I lost upwards of two hun-

dred pounds worth by it in one year, for the quantity was very large.

This was in Cheshire, where marle-pits are very plenty, and some of them very large and deep.

I always knew that flax never rated kindly in deep water, but never so fatally experienced it as here. The surface is warmed by the sun, which will set the upper part of the flax a rating two or three days before that which lies four or five feet deep.

This is one great reason, why it is so necessary to tread the flax in the pit, in order to mix the water, that it may rate even, or in all parts alike.

The water in these marle-pits in Cheshire is very good for rating flax or hemp in, where they are of a moderate depth, but they are often from six to fifteen feet deep.

By a mistake in a direction, I had seventeen large waggon-loads of choice good flax put into one of these large pits; the consequence of which was, that I in a manner lost the whole. But indeed this was not the only time I suffered by deep water.

It is much the safest way to make pits to a proper size, if there be none by chance that are suitable.

In Lincolnshire, it is very common for labouring men to dig pits on the commons, and let them to farmers at so much a year, for rating flax in; not but the farmers have the same privilege of making pits, but they may buy them from a poor man cheaper, as he makes them at spare times when he has no other work.

It is common for a poor man to sell a pit that will hold seven or eight acres of flax, for three half-crowns, and so in proportion.

C H A P. XV.

Directions for ploughing, harrowing, sowing, pulling, watering, grassing, and full management of white flax till brought to the hackle.

THE ground for flax being fixed upon, you must begin to plough about first of March, with a furrow of about nine inches broad, and between four and five thick. Take care that all the land be clear cut and turned, and that it lie flat and even, with the grass-side downwards. If the ground be stony, or the ploughman bad, men with spades must follow the plough to turn what it misses.

By the middle of March the ploughing must be finished; and it must then be well harrowed to raise plenty of mold, and to scratch the roots of the grass, in

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order to kill and set them a-rotting. By this they will become a rich manure, for any other crop that may follow. When thus harrowed, gather all the sods and stones, and throw them into the furrows. When this is done, sow the seed at the rate of eight pecks to an English acre.

Lady-day, or as near it as the weather will permit, is the best season for sowing flax-seed. When sown, turn the harrow the wrong end foremost, and run the ground over once in a place.

When the seed has been about a month sown, roll it, and in about a fortnight more weed it; but if it be lay-land, there will not be many weeds: however, it must be gone over, and none left in, as they are very pernicious enemies to flax.

Being well cleared from weeds, the business is over till pulling-time, except it be a very strong crop, and a rainy season: in this case it will lie down or lodge,

and not feed well, but be apt to spoil before it is ready to pull.

The only help against this, is to send two men, one at each side of the ridge, with turning-rods, about the size of rake-shafts; they must put the rods under the top of the flax, raise it up, and turn it over.

This is not very expensive, and will prevent it from mildewing, and otherwise greatly help it, till it be ready for pulling, which must be as early as possible: for this sort, above all others, must be made into white flax, though indeed it will never be so good as that which stands upright, as it will not feed well; and the shove being soft, is apt to flat in the working, and not part freely from the harl: the skin of such flax always is thin and tender.

This sort generally grows on rich land, or under hedges in a warm situation, which draws it up tall and weak. This

makes it necessary to divide your crop into white and seed flax, as almost in every field there is a variation, which may be laid out for both sorts, in a profitable manner, provided it be done with judgment, and rightly timed.

As there are several sorts of flax that may be made, and that every sort requires a different management, I will first conduct my reader through the management of the white flax, from the pulling to the swingle-stock.

Your crop proper for white flax being fixed upon, if it answers the following tokens, it is ready to pull, viz.

If the seed be perfected in shape, but not half ripe; if the leaves begin to wither and fall off, about one third of the stalk from the bottom upwards; if the stalk turn a pale yellow; if the buttons or boles will strip, each seperately, and take them with a string of flax to the root without breaking.

The last experiment holding good, is a sure sign that nature has done her work by giving the flax a good skin, and that it continues all the way up to the top of the stalk; for sometimes it does not get so high. If these remarks concur, your crop is ready to pull, you may fall to work.

Make your sheaves to the size that a band of about eighteen inches long will reach round each. Make the bands of the small undergrowth of flax and weeds, in order to save the good flax, as the water renders it of little use if it be knotted when rating. Be mindful in pulling, that you do not place your hands too low down, so as to pull up any weeds, or undergrowth of flax, which will spoil the good both in watering and working. The smallest part of the flax is close under the boles; this is the place to take hold of for pulling.

Your hands being thus placed, what

does not reach so high as to be taken hold of, is of no use; leave it on the ground, rather than spoil the good with it. As much as is pulled one day, must be put into the water the next; for if it be too much dried or withered, the consequence is bad.

The water most proper for rating flax is that of the softest nature; bog-water is good, and so is that of a clay or marle bottom. But above all, take care the water does not come through or from limestone quarries.

You should make choice of no larger a pit than what will barely contain your flax; for the lesser the quantity of water, the better it will rate. The pit should not exceed three feet and an half deep, and about fifteen broad; the length to be proportioned according to the quantity you have to put therein.

It is further adviseable, to have three or four partitions across your pit by the

way of dams, (which partitions are easily left when the pit is making); and these will prevent the communication of any excess of water.

When you begin to put the flax into the water, lay the first row across the end of the pit, with the root-end uppermost; but lay all the rest with the seed-end uppermost, and let no part of the flax but the seed-end be seen; for before it is pressed down, it will stand almost upright in the pit.

If one cefs or row be not sufficient to fill the pit, lay on another and another; but the water ought to be no deeper than that three rows at the most will fill it. It must be filled to such a firmness, that a man may walk all over it with his shoes on without being wet.

Being thus in the pit, begin at the place you left off laying the last row, to sod it. Lay the sods close to each other with the grass-side downwards, so that

the least bit of the flax may not be seen. The fods must be cut thin, not above two feet long, and one broad; and they ought to be ready at the pit's side before your flax is pulled.

Your flax being thus fodded, you should tread it so as to fetch water above all the fods. But if it be sunk so stiff, that the treading of one man can't get water over the fods, let three or four stand together, or one man carry another on his back.

This often happens to be wanted, particularly when the flax begins to work and swell in the pit, as it will do two or three days after it is put in.

I never had flax better watered than when it took a great weight in treading. I often trod it with an horse, and when he disordered the fods, I always took care to lay them right again.

It must be trod three times a-day, namely, morning, noon, and night : the more it is trod, the better it is, as it mixes the warm surface with the colder bottom-water, which makes it work like new ale in a guile-fat, which works the faster the oftener it is stirred or trod.

This may seem an odd comparison to those that do not understand it; however, it is fact, for it will froth and work up surprisngly in the time of its rating, and particularly just after treading. Let no water in, or out of the pit, while the flax is in it, as the current of the water would chafe or spoil the skin of the flax, while it is in the pulpy soft state.

No certain time can be fixed that it will take in the water ; circumstances in this case differ, respecting the heat or coldness of the weather, the softness or hardness of the water, or the goodness or badness of the flax ; for good flax will take more rating than bad.

I sometimes have had flax as well rated in six days, as at other times in a month; so much do circumstances differ; for the poorer the substance or the body of flax is, the sooner it will rot, so consequently will take less time in the water.

The following tokens for the well rating of flax are to be observed, viz.

As soon as it is put into the pit, it begins to swell, and so continues till it is at the height of working; and after this, it falls till the water comes over the fods,

When it has been about five days in the pit, take out a sheaf, and try if it be very slippery, and if the stalks break and start out of the skin when doubled, and if the skin peel freely from the stalk, also if the seed or boles shake off with freedom: these are all signs of its being duly rated; but the safest way is to take a

piece out every day, and dry it on a bush; when dry break and scutch a handful; and then if the stalk break and part freely from the skin, it is a sure sign of its being sufficiently rated. All these tokens will assist you in this material point of rating.

Your flax being thus rated, take it out of the pit, and let it drip a day on the pit's side. Be careful that it be laid straight in pulling it out of the water; for the doubling of it when wet, will chafe and damage the flax.

When it is drained, carry it to the ground for spreading. Cast the sheaves at about the distance of two yards from each other; and in the casting let care be taken that they do not fall on the ends in a break-neck manner.

Let the spreaders begin at one side of the field, and lay the first row straight, or it will disorder the whole. Spread it thin

and even without lumps, or crossing, and with all the heads one way.

The best land for spreading it on is meadow, lately mowed, or for want of this, a pasture-field clear of thistles, docks, &c. which would keep the flax from the ground, and give the wind an opportunity to blow it away and ravel it, whereby it would be rendered of little use.

Bog might do for spreading on, but the forementioned grounds are preferable; moreover, it serves to fertilize the soil, by the oily slimy substance being washed from the stalks by the rains.

When the flax is thus spread, let it lie about eight or ten days, till you observe the skin to rise from the stalks at the top-branches, where it is crooked, or has a bend; in these places the flax will rise from the stalks, and almost resemble fiddle-sticks, by the hair being stretched along it: when this comes to pass, take

care to turn it with turning-rods prepared for that purpose, about the size of a rake-shaft, running them under the top-end of the flax, and turning it over, leaving it in the same position as before, thin, straight, and clear of lumps.

A good hand will turn two or three acres in a day. It is not to lie as long after turning as it did before; but, however, it is necessary to get some dews or rain on the upper part, in order to give it an even colour on both sides before it is taken up.

Sometimes it happens, when the flax is taken too soon out of the pit, that it must be turned two or three times on the grass, in order to bring it to a right consistence for working.

Take particular care that the worms do not damage the flax, by drawing it into the ground and chafing it; which sometimes happens, particularly in spring-rates, and where the ground is bare of

grafs. I have seen great damage done in one night by the worms in this case.

When you find your flax answer to the above description, of rising from the stalks like fiddle-sticks, in crooked places, &c. it is well watered and grafted. Take it then into the barn for breaking and fwingling.

But before I go any farther, let me caution my brother-farmer to be particularly careful, through all operations, to keep his flax straight and even at the roots, and the root-ends all one way; this being a very necessary precaution, in order to make it yield well to the hackle, work easy, and sell well, &c. &c.

As I have now done with the white flax till the breaking and fwingling, I shall drop it for the present, and proceed to the seed flax in imitation of white.

C H A P. XVI.

On Seed-flax.

THere are several reasons to be given, why the seed-flax has not a right to be so good as white flax, or such as is watered with the seed on.

First, we are to consider that flax-seed is of an oily nature, and that this substance is conveyed through the skin, or bast (as it is called by some) up to the seed; and when it is on its journey, as it were dispersed through the length of the stalk, it is pulled for white flax, by which it is stopped of circulation, and the oil in the skin remains there, instead of reaching to the seed.

The intent of watering or rating flax, is to rot the stalk, in order to make it part freely from the skin, when dressed; as also to soften, purge, and cleanse, or discharge any unkind harsh matter from

it; but the oil being so stagnated, preserves the flax from rotting in any reasonable time, not letting the water have the power over it, as it has over a poor substance: were it possible to extract all the oily substance from the flax, it would be left as poor as the stalk whereon it grows, consequently would rot in the same time, and be rendered as useless.

This confirms my opinion, that the less quantity of water the flax is rated in, the better, silkier, and stronger it is made by the oily substance which is permitted to remain therein; for the best particles gather and cling to the strongest body, (being the flax), which makes it weigh heavy, adds to the strength, and makes it of a kind, soft, silky nature.

I am confident, were a parcel of flax-seed thrown into one of these pits, for some considerable time before the flax was put in, so that it might have time to incorporate with the water, it would have a happy effect, and considerably add to

the goodness of the flax. I do not say that it would be worth while to do this, further than by way of experiment and proof.

I have thrown chaff that has had some light seed amongst it, into a pit, and found it to be of service.

An old pit that has had flax watered in it several years, is far better than a new-made pit; and one that has white flax with the seed on, watered in it, is better than one that has been used for bunch-rate, or flax that has had the seed taken off, only that it turns it a dark blue colour, which, by the bye, is better than a bad white. All this I have seen experienced by others, as well as myself.

Now, seeing it is so absolutely necessary for the good of the flax to preserve this oily kind nature in it, in order to keep it from rotting, and make it kind, soft, and silky, what a piece of absurdity it is to drive it out by drying it over the fire, as

is universally practised in Ireland? and indeed by some unskilful farmers in England too, where they are strangers to the true method.

In short, it is rendered harsh and brittle, so that it loses considerably in its real weight and goodness, and thereby loses in its value.

In order to be convinced of this, weigh as many sheaves as will (when broken and swungled) make two stone; one half of which dry over the fire, the other half dress without; and it will be found that when both are dressed, the difference in weight will be from a pound and a half to two pounds; a great loss in so small a quantity of flax.

The experienced flax-farmers are so sensible of the real evils that attend drying it, that they will not suffer theirs even to be dried in the sun. It is true, when it is taken up off the grass, it is dry, though

indeed some chuse to take it up in an evening, when the dew is falling.

No one that is not necessitated will offer to dress any flax, till it gets a sweat in the mow or stack, which adds to its soft silky nature, as well as weight; and after this sweat, it is never suffered to be (as above) dried in any case.

But then we are to consider that the English flax-farmers are true judges in rating their flax; which if not done properly, it is hard to be dressed well, even with fire, and much more without.

There are also other kind of tools to break and swingle it with than any in Ireland. The quantities that are raised in some parts of England and Holland, could never be manufactured in such a paltry manner: were fire of no real damage to it, it would add so much trouble and expence of drying, &c. to a farmer's other business, that it could never be duly attended to.

One acre managed in the Irish manner, would give as much trouble as an hundred would in the right method: for when it is once in the barn, it is scarce of as much trouble as corn, having no more to do than agree with men to work it; and this is mostly a set price, except it misses of a good rate, (which may sometimes, though rarely happen) or if the flax be very short; in this case there is a consideration of an higher price. The common rate for dressing white flax, is fourteen pence a stone, for breaking and swingling; and sixteen pence for seed or bunch-rate.

High or low wages vary according to the cleverness of the workman, from the difference of a shilling to three in a day; for there are several degrees of workmen: a good workman is as well known thro' the flax-countries of England and Holland, as a justice of peace or a sberiff in an Irish county.

It is necessary that a farmer look over

his swinglers sometimes, to see that they make no waste; as also that they dress it clean, for on this his success and sale in the market depends.

Some workmen will make the same flax sell higher than others by six pence or eight pence a stone, and all the flax-buyers know the good workmen by the lapping or making up of the flax.

A good workman is seldom made, if he does not learn when young. It is far easier to make a good hackler than a good swingler, though the former is a trade of apprenticeship, and the latter is not.

The swingler generally has a pair of scales by him, and weighs the flax as he dresses it, then takes it in to his master, who seldom weighs it, till he gets two or three packs together, to take to the market.

A great deal depends on giving flax a good even colour for fetching a good price

in the market. Let the colour be what it will, it ought to be of one sort; not to be striped or spotted with black and white, or green and white, grey and blue, or green and yellow, &c.

The misfortune of these mixed colours is got before it goes into the water, particularly if it be seed-flax of any kind; for the prevention of which, I ordered seed-flax, in imitation of white, to be stacked with the seed-end outwards: this prevents the outsides of the sheaves from being weather-beaten, which will turn them black or grey, so that it will always be of a quite different colour from the inside of the sheaf; but the seed being outwards, can take no damage, but will ripen or dry the faster for it.

If the bunch-rate flax get a mixed colour, it is for want of spreading even and clear of lumps after the pullers. The same evil the dew-rate is subject to, if not properly spread: but it may happen to white flax two or three ways.

First, when it is pulled, if it stand too long to dry before it is put into the pit.

Secondly, if it be not well and close covered in the pit with fods, and duly trod.

Thirdly, if it be not spread even and clear of lumps in the time of grafting.

All these cautions a farmer ought to be armed with, if he means to bring this valuable branch to its full perfection.



C H A P. XVII.

The pulling, watering, and management of seed-flax, in imitation of white.

THE seed-flax must stand about three weeks longer than the white. It will shew itself to be ripe by the leaves

fading and falling off, and the boles turning brown ; but beware of letting it stand till the feed in the bole turns brown ; for if you do, the feed will be nothing better, and the flax a great deal worse. It is a great mistake to let the feed-flax be over ripe.

Observe the same directions in pulling the feed-flax as for white, (only make the sheaves a little larger) ; set them up in a propping manner, three leaning to each other. In three or four days after, if the weather permits, make them into small field-stacks, no larger than you can reach without getting upon them.

Make them like corn-stacks, only with this difference, that the feed-ends must be outwards, in order to dry the sooner, and keep the stalks from being weather-beaten.

Thus let them stand about a week, and then make them over again, by which means the top of the stack will

become the bottom. Lay a little weeds, or the under-growth of flax on the top of the stack, in order to make it cast the rain, and keep the upper sheaves from the sun and weather.

A few sheaves turned brown or grey, would spoil a great parcel, in the beauty of its colour: for let the colour be of what sort it will, it ought to be even, or else it will not bleach even when in cloth, which is impossible to accomplish without great care before it goes into the water.

Let the stack stand, after it is turned, about ten days; after which take it into the barn, and ripple the seed off with rippling-combs.

Being thus rippled, tie it up in small sheaves, and water it in the same manner as directed for white flax; also observe the same directions to know when it is rightly rated and grafted; in short, rate it in every case as directed for white flax.

As to the seed, it may lie in the chaff or boles all winter, till it is wanted in spring; at which time riddle it first thro' a wide riddle, in order to take out all the long straws, pulse, &c.

This done, take it to the mill, and shell it as you would oats. This is a ready way of taking the seed out without waste; and on the shelling, it may be winnowed at the mill, without the trouble of taking the dirt back.

I shall spare myself the trouble of giving any directions about winnowing, as most people are perfect in that art; as it is win in the same manner as corn, saving only as to the sieves, which must be suited to the size of the seed.

And now, gentle reader, please to accompany me, once more, to the field of pulling, and I will shew you another, and a more general way of raising seed-flax, which is in imitation of black or blo

Dutch; but, in truth, I have seen and reared better and higher-priced by the following management, than ever I saw come from Holland.

Observe, that seed-flax of all sorts must stand till it come to the same degree of ripeness before it is pulled.



C H A P. XVIII.

Directions for the management of black or bunch-rate flax in imitation of blo or black Dutch, and to save the seed in perfection.

WHEN you begin to pull the bunch-rate flax, arrange your pullers all in a row, at one side of the field; let every puller take about two yards broad, and lead on at about the same distance before one another.

Spread the flax after them thin and even, with the tops all one way, as white flax is spread on the grass when it comes out of the pit. Take care that the first puller lays his row straight, that it may be a guide to all the rest; as one crooked row will disorder the whole field, and give double trouble both in turning and gathering it up.

When pulled and thus spread, let it lie till it gets a grey colour, which will be in three or four days, particularly if there be heavy dews or rainy weather; but if not, it will take a longer time.

Turn it with turning-rods, as directed for white flax, that both sides may get a grey colour alike. By this means the seed will be pretty rash, therefore handle it gently, that the boles do not shake off in gathering and binding; in which there will be the less danger, if you make large sheaves, as there will be less out-sides.

Hereupon take it home, and beat out the seed with beaters, for that purpose, made of a piece of wood twelve inches long, two thick, and six broad, and in this fix a handle sloping-wise.

When you begin to beat out the seed, spread two rows of flax on the barn-floor, with the seed-ends to meet. Then beat out the seed with your beaters; but observe that you let the beater fall level or true on the flax, or else it will break the handle: there is some art required in giving a good stroke with the beater.

Tie the sheaves up with two bands, one at each end, and lay one half of the sheaf with the tops to the roots of the other half. Make the sheaves as large as a middle-sized wheat-sheaf.

Being thus prepared, take it to the water; but this must not be sunk with force, or any other weight, but must swim upon the surface of the water, lying in

rows, each sheaf close to another. It is best to put it in pits that have been watered in, as it will have a finer blue colour.

It must be turned every second day; which is easily done with a long fork, having about two inches of the points of the grains bent, in the nature of a muck-drag.

For its being well watered, observe the directions, as for white flax; with this addition only, that it will sink under the surface of the water when it is about enough rated, but not to the bottom of the pit. If it should be left till it sinks to the bottom, there is great danger of its being over done, or, in plain terms, rotten.

These are known facts amongst the flax-farmers; but for what reason nature thus varies her operations, few trouble their heads to philosophize about the matter.

Were a curious person, however, to attend the flax throughout the process of its rating, he might infer a great deal from its rising and falling in the pit; its losing and regaining its spirits, &c. &c.

Being thus duly watered, take it out, and let it lie on the pit's side all night to drip; then take it to the ground intended to dry it on; but it must not be spread flat, but set up almost like a sugar-loaf, the sheaves being in two parts, that is, the heads each way; it will easily part in the middle, one half of which is enough for a rickle; take it by the top, and spread it round you, giving the root-end a good play, so that the wind will not easily throw it down; press the tops close together, so that, as I have observed, it may resemble a sugar-loaf, standing so thin and open, that it will soon dry; but however, it will be the better to get a little rain before it is bound up, in order to wash the dirt and slimy substance off.

The boles of this flax will be well broke by the beater as above directed, so that there will be no more to do than to winnow them, and there is no doubt of the seed being very good.

I have known such bunch-rate flax to sell, in the rough, in Snaith-market, Yorkshire, at sixty-four shillings the hundred weight, and the seed from it, as good as any foreign seed whatever.



C H A P. XIX.

Directions how to manage dew-rate flax, with or without the seed on.

SOME set up their dew-rate flax in stooks, after pulling, to dry like corn, letting it stand perhaps three weeks, or a month.

This is a bad way ; for standing in the stook so long, in order to dry the seed, tenders the outsides of the sheaves to such a degree, that they will not take so much rating as the inside, and will therefore be undoubtedly rotten before the inside is enough rated.

The best way is to spread it after the pullers, as directed for bunch-rate flax, in the following manner, viz.

Arrange your pullers at one side of the field, and let them spread the flax thin and even after them, with the tops all one way ; if there be rain, the upper part will be well rated in five or six days ; but in this case circumstances alter greatly, according to the various sorts of weather that may happen ; therefore a farmer must be circumspect, and rub a few stalks at the upper part of the row, between his finger and thumb ; and if they break and part freely from the skin or bast, he may then turn it with turning-rods, and let

it lie till he finds both sides to be rated and coloured alike. But if the flax be not spread upon the grafs, very even and thin, but lie thick and in lumps, the inside will be green or yellow, and not in any degree equally rated to the outside, therefore it will be irrecoverably spoiled.

If the flax be not enough rated by the above method, or that you dare not trust it on the grafs, so to be, (for fear of shedding the seed) then about the first of March, when the seed is off, spread it on the grafs again, thin, and even, and manage it the same way in grassing as white flax; also observe the same tokens for its being well grassed.

I have had flax well dew-rated, with the seed on, by spreading it after the pulpers, as above, without any more trouble; so that it breaked and swingled, and in short answered well every way; but I never knew it done by any one but myself; and, indeed, I never ordered any thus but

one year; in which, I had twenty-seven acres rated in the above manner; however, it is to be noted, that it was coarse-bunned flax, which made it the easiest managed thus. For it is necessary it should be so: and it requires a good look-out, lest it shed the seed, by lying too long on the grass, or getting too much slavery under the weather.

When it is enough rated, take it home for working. It must be breaked and swunged as other flax.

The seed of this dew-rate flax is undoubtedly very good, and there is also less trouble attends the flax; but it is not so good in quality, neither do I think it yields so well. Indeed it is scarce ever done, but in a country that has not the conveniency of water.

C H A P. XX.

Directions for breaking and swinging flax without fire.

AS I have reminded my reader to take great care that his tops of flax be kept all one way, and the roots even, it is to be hoped that my former caution may prove sufficient; if not, it will occasion the more labour to the breaker; for it must be very even at the roots, before it be put in the breakers, or he can never make good work.

Wherefore, when he begins to break, let him take a sheaf, and slacken the band, but not loose it quite; then chop the root-end on the ground; this done, pull all the loose rubbish it has gathered from it; then take a little more than he can hold in one hand, and again jump it even at the root; take hold as near the top as possible, so as to hold it fast; then take a little of the top from under the hand,

bring it round the flax, and lap it round his thumb, by which he may hold it faster than if he had no more than his fingers could meet about; bend it two or three times backwards and forwards, so as to make it supple close to the hand; put it into the brakes, keep it thin spread in them, and as he works it, turn it often.

When the root is breaked, let him stroke it smooth, and pull the end; then break the top-end, and the root-end again.

Being thus breaked, let him begin to swingle, holding it in the nick of the swingle-stock, with the left hand, and the swingle-hand in the right; let him always hit the top of the stock above the nick, and it will glance down past the nick with full force through the flax.

When the root-end is swingled once over, hackle the top-end with the foot-hackle, to take out the rough tow and

shoves, which are hard to fetch out effectually with the fwingle-hand alone.

When the flax is good and rightly watered, it is easily worked; three times going over with the fwingle-hand will be sufficient to clean it from shoves.

If it be rightly fwingled by a good workman, it will be quite clear of tow, to all appearance, before it goes into the hackle; so that it will be easy to count every harle in it; and the root will be as even as a pound of candles, and look as glossy, after the fwingle-hand, as it does after the hackle.

When we see a parcel of flax dressed to this perfection in Ireland, that will fetch, in the rough, from sixty-eight to seventy shillings per hundred, we may venture to pronounce that the most essential part of this noble branch, which ought to be the first introduced, has at last found its way into this kingdom.

But tho' I have given rules, as above, for a swingler, I am certain it is impossible to make a workman without ocular demonstration.

It is true, if a learner had an old workman to look at two or three days, these directions would be of great use to facilitate his instructions.

Whatever you do, beware not to dry any flax with the fire, or even the sun, after it gets a sweat in the mow; for if you do, it will certainly reduce both the value and weight, making it light, fuffy, and brittle.

I have often been told by the Irish, that they thought it impossible to dress flax without fire; and on the other hand, when I have told the English that the Irish dried their flax with fire, they wondered as much, thinking them very ignorant for so doing.

C H A P. XXI

Observations on flax-feed, of its being worn out or tired, and how to refresh it, &c. &c.

FLax-feed is a very deceitful grain; for though it may look well to the eye, yet it may not be worth a penny a cart-load, for sowing. Indeed, if it be of a good quality, it is not worse for looking well, by being clean and bright, &c.

The flax-farmers are as much on their honour in supporting the character of their seed, as that of their horses; nay more so; for it is impossible for a person to sell a parcel of seed, at any price, if he be not known to be in a good breed (as they call it); and he must be well known to be a man of a good character, and his seed well vouched.

It is incredible to tell the difference

there is in flax-seed ; which I have seen proved more than once. An instance or two I beg leave to mention, viz.

A farmer of my acquaintance lived about twenty miles from the flax-country, and though no farther off, yet he was quite a stranger to the branch ; but as he was a pushing scheming man, he made a journey over to the most famous part in all England for flax. He staid a few days among the farmers ; and as he was a smart sensible man, without doubt returned as well instructed as the nature of such a journey would admit.

Upon which he ploughed up twenty acres of good old lay-land, and sowed it with flax-seed ; which he bought at an oil-mil, and which, he said looked very well, being large, bright, and clean ; it grew very vigorously till it was about fourteen inches long, whereupon it made a full stop, began to blossom, and never got to be half a yard in length. He was greatly surpris'd at such a disappointment ;

and, as the land was good, could not unriddle the mystery.

However, he was not discouraged beyond hope; as he remembered that the flax-farmers (when he was in the flax country) sold their seed for four pounds per quarter; so that if he made no use of the flax, the seed, he apprehended, would pay him better than any thing he could have sowed his land with.

Upon this presumption, he took a sample, and went to sell it at the time of year; but not a grain could he dispose of at any price, though the farmers were selling one to another, at four pounds a quarter.

He wrote me a pitiful letter, complaining of the flax-farmers, believing they combined against him, not to buy his seed, in order to deter him from sowing any more.

Hereupon I advised him to employ a

person to sell it for him by commission, and recommended a noted flax-buyer to him for that purpose.

He took my advice, by which means he sold his seed at four pounds per quarter. However, it was a bad job for all sides; the buyers lost their crop, and the sellers their credit.

The flax was so short that it could not be wrought; and as to him who sold the seed by commission, he has told me since, that his credit was hurt so much by selling the said parcel of bad seed, that he never could sell a peck since, in the commission-way.

This shews how cautious a farmer ought to be in the choice of his seed. Among many instances of this sort, I shall only mention one more, that happened to myself.

About five years ago, I happened to be one bushel short in finishing about

fixty acres I sowed that year, with good seed of my own rearing. The field I finished in, contained twelve acres, and was very good land; wherefore I thought it a pity to let any of the land lie idle.

Hereupon I bought some seed at a venture, which looked well, and grew vigorous as the rest of the field, till it was near half a yard long; and then it made a full stop, blossomed, seeded, and grew no more, though all the rest of the field was from a yard to a yard and a quarter long.

A more demonstrable proof I never saw, for it was put into a sack wherein the good seed had been; and as some grains of the good seed stuck to the sack and mixed, it was easy to gather every stalk of flax that grew from the good seed, being above twice the length of the bad species.

Moreover, the branches of the good

feed were long, and one aspiring above another, having a leader above all the rest.

But it is not so with the bad sort, of which the branches are all of a height, so that the top will be as even as a clipped hedge. When flax comes to have such a top, and abates so much in height, it is a sure sign that the seed is tired, bad, and worn out.

Perhaps my reader would be glad to know what I mean by seed being tired, as also how to help tired seed, &c. which is as follows, viz.

First, let us consider that it is from the hot climates that this seed comes, namely, from North America and Riga. It is true that the heat in the latter only continues about three months; but that is the season in which the flax grows, during which time it is exceeding warm.

The heat in America holds much longer; and it is well known, that a plant or vegetable, which produces a fluid substance, will ripen, in fruit and seed, to a greater perfection there, than it will in our colder climates; the skin being thin, kind nature, as it were, crams her receptacles full of rich juices suited to each plant, &c.

This, in flax-seed, is demonstrably proved by the oil-mills, as they find a considerable larger produce of oil from foreign new seed, than from seed that has been repeatedly sown for many years in England, though the latter shall look brighter, larger, and plumper than the former.

The seed therefore certainly degenerates by not producing so much oil in our cold climates, but instead of oil a thick skin, and within it a gross pulpy substance; and the longer it is sown here,

the more it runs to this harsh unkind matter.

Now, this oil is the very life and spirit of the flax; therefore, as this abates in quantity, the flax abates in its length and value.

Without doubt were a parcel of seed that is quite run tired in England, taken to those hot countries, and sown, it would in time regain its former good quality.

But let not my brother-farmers be deterred from saving seed in these colder climates, under fear of its degenerating; for be assured it may be sown four or five years before the degeneracy can be perceived, and then but in a small degree; so that it will last fifteen or twenty years before it need be changed; but I only mention these particulars, in order to lead the flax-grower thoroughly into this branch.

The farmers in England have a way

of resting their seed (as they call it), which is done by barrelling it up, letting it stand a year or two without sowing; the longer it stands the better. This was discovered by chance.

A farmer happened to spare some seed after sowing; he let it stand two years; and, when he came to sow it at the end of that term among some seed of the same sort, but which had been kept sowing each year, it topped it in length eight inches. This accidental experiment has brought on a general practice, as it is found to refresh the seed in a surprising manner.

There is no accounting for this amendment, otherwise than by supposing that the pulp and skin meliorates by the evaporation of the watery particles, and by the cruder parts being mellowed and melted down (as it were) into the body of the oil.

Thus any sort of seed of an oily nature,

such as rape, mustard, or cole-seed, will produce the more oil, the older it is; and it is oil (as I said before) which is the very essence of flax.

A farther caution is necessary, that your seed be clear from button-seed, which is a very pernicious weed, and a great enemy to flax; for where this gets footing, the flax-seed must be condemned for oil, be it of ever so good a quality, so fatal is this weed to it.

The seed of this weed is white and very small, not so large as the smallest grain of mustard-seed; but there are as many joined together in a bunch as make a head about the size and likeness of a waistcoat-button, from whence it takes its name of button-seed.

It grows on a small stalk, which twists round the flax, as ivy about a tree; so that there is no getting quit of it either by weeding or swingling, as it will not part the flax along with the shove; and

the increase is so very great, that if there be only a few stalks in an acre of flax this year, the next it may destroy the whole crop.

There is another bad seed which is by some called wild-willow, and by others corn-bind; this is not much unlike hemp-seed, only not quite so large; it also twists round the flax as ivy round a tree, which makes it impossible to be weeded out: however, as the seed is large, it will stay in a sieve that will let flax seed through, by which means it may be kept clear with care; and though it is not so multiplying a seed as button seed, yet it is a great enemy to flax, and ought to be guarded against.

There are several sorts of flax-seed which might be explained, were it worth while to go to the nicety of matters: but as I have no intention to swell this work with matters of speculation, or with any thing that is not of immediate consequence to the farmers, I shall only mention two

principal seeds from whence we derive our growth, namely, that of America, and that of Riga.

The former is a bright bay seed, and produces a fine small flax; but the Riga is mostly a dark bay, broad, flat seed; it produces a gross tall flax, which I am apt to think is most suitable for this degenerating climate, for it is easily cured and made finer by sowing it somewhat thicker on the ground.

I got the best breed of seed I ever had from Memel and Riga. This Riga seed will last longer good than American seed, in England or Ireland; but it is not so beautiful to the eye, neither is it of so high a price in Dublin as American seed.

There is a sort of seed which comes from France, and when sown here produces a fine flax, but so puny, short, and small, that it is scarce worth reaping. I once sowed some (by way of trial), but


lost my crop. I have also seen others suffer by it, therefore would have my reader to guard against it.




C H A P. XXII.

Directions how to make French sieves, and their use.

French sieves, so called, as they came from French Flanders. The rim is about three feet diameter, and three inches deep; the bottom is made of parchment; two are made use of, and called a set; one of them goes under the name of riddle, and the other of sieve.

The riddle is punched with a hole, thus ; it lets through the flax-seed being flat, and any round or square seeds stay in the riddle.

The sieve is punched with a round hole, thus , which lets thro' the small round

seeds, such as rape, mustard, ketlock, or button seed, but the flax-seed stays in the sieve. These holes must be punched to an exact size, or they are useless.

There is a particular art in dressing with these sieves, which I shall spare myself the trouble of explaining, as it is impossible to be executed without seeing it put in practice; and even then it is not easily learned.

There is not above six pair of these sieves in England, and about as many men who are capable of dressing with them. It is a calling of itself; and, at the time of sowing, they are very busily employed. A farmer pays about two shillings per quarter to have his seed dressed in them. None requires to be dressed in this manner, save such as have run to weeds; and, in this case, though it is difficult to get the right knack of dressing or turning the sieves, yet the stirring of them any way will clear a great deal of dirt and seeds out.

The expence of a fet of these sieves, at a moderate computation, is three pounds; and one fet, and two men will clean all the flax-seed for ten or fifteen miles round in a flax-country.



C H A P. XXIII.

On winter-flax.

WE may truly call that winter-flax which is sown in autumn, to stand the winter, it being about five months longer in the ground than the common.

In my travels thro' Ireland, I have met with several persons that told me they had made trial of this method; and some speak in favour of it, but there are many more who condemn it.

I was often asked the reason why I

took no notice of it in my first edition? My answer was, that I thought it of no utility to the public, as I had tried it long ago, and found it did not answer; therefore I omitted taking any notice of it for that reason. The particulars of the trials I made are as follow, viz. Observing where the flax-seed had been accidentally scattered in autumn, and that it grew, or kept green all winter; I concluded that this method might be improved upon; therefore I was determined to be convinced by a fair trial; and for that reason, in October 1759, sowed one acre, in the middle of a twelve-acre field, tilled well, and managed it in every other degree as it ought to be.

About the middle of March following, I sowed the remainder of the said field with the same sort of seed. The winter-flax got to be about five inches long before the severity of the winter came on; after which it grew no more, but, from the first frost, changed its healthy dark green to that of a sickly pale green, and

at spring never regained its former healthy complexion.

After the spring-flax came up to be about five inches long, I set sticks, as marks to both sorts.

The spring-flax grew above one inch in twenty-four hours; but the winter-flax grew half an inch only.

The winter-flax was ready to pull three weeks before the spring-flax; and at pulling was scarcely thirty inches long: the spring-flax was about a yard and seven inches, so that it was longer than the former by thirteen inches or thereabouts. The winter-flax branched or spread greatly into top, so consequently produced more seed; which indeed, by the by, is no recommendation.

The year following I made another small trial, which was attended with much the same consequences; therefore

I was thoroughly convinced that winter-flax is not an advantageous crop.

The failure in winter-flax may be accounted for in the following few words, viz.

It is to be considered, that flax, in its nature, is trusting to one leader, the top of which is exceeding tender, insomuch that if any thing wound it ever so little, it will grow no more, but strike or spread out into side-branches, which is of no other use than to bear the seed, being of a poor towey quality, therefore comes off in dressing as such.

If a fly, or what is commonly called a flax-fly, happen to bite or wound the leader, or top of a stalk of flax, when at five or six inches long, it stagnates its growth, and makes it short, coarse, and stunty, much resembling a young fir-tree that has lost its leader. I found the frost had pinched the tender leader of

my winter-flax, which made it liable to the said ill consequences.

Another thing is, that flax-land must be harrowed very fine, at the time of sowing; therefore much wet weather in winter makes it cement, or bake together, which helps to bind the flax in the ground, and retard its growth. Any land is certainly better and fitter for a crop, that, after a severe winter, is opened, broke up, or pulverized in spring, as it sweetens, and proves of great utility thereto.



C H A P. XXIV.

On flax among potatoes.

IF flax-seed be sown among potatoes set with the plough, (as directed in this treatise) there is no doubt but it will answer very well, as the potatoes are set thin and in drills, having about eighteen inches between each drill, and about ten

inches between each potatoe ; by this the tops of the potatoes and the flax do not incommode or crowd each other, having room enough for each to flourish.

The potatoes set thus, will spread under ground, and produce a far better crop than when planted thick, as the tops, by this warm situation, draw one another up weak and tender ; and nature being so profuse in throwing her bounty upwards to support so much useles top, robs herself of the salts she ought to reserve to enlarge the potatoes.

In the year 1765, I received the highest premium in Ireland, for saving the most and best flax-seed among potatoes. I saved forty-eight pecks of good seed ; only the land was subject to weeds, and had little pains bestowed to clean it, or I might have had as much more ; the potatoes were very good also. I set them with the plough as directed in this treatise.

As soon as the potatoes were planted, I sowed the seed the broadcast way, at the rate of eight quarts to the acre; and, in order to try experiments, I raked and rolled some; but the most part of it I did nothing to after sowing, but left it uncovered, which proved the best crop; and though it may seem odd to my reader, yet it may be easily accounted for.

It is to be observed, that flax-seed being of an oily nature, is of a great attraction, insomuch, that if a field be sown, and not covered by harrowing or otherwise, the second day after sowing, it will be impossible to find a single grain, particularly, if there fall in the mean time either dew or rain, or if it be sown in green mold. Each grain gathers the fine particles of earth about it, being candied (as it were with mold, and much resembles a comfit; so that after the second day (as I observed) one loses it insensibly, and sees no more of it till it rises at the top of the plant, which will be in about

five days after it is sown. The first time I found this out, I was greatly alarmed, as follows, viz.

In 1753, I had a large field ready to sow on a Saturday, and having a call from home, I sent a man to sow the field, and ordered it to be harrowed once in a place when sown. At my coming home I was told the field was sown, but about an acre of it left uncovered. On Monday I sent to finish the field, but the servant returned in a great hurry, telling me that the birds had picked up all the seed; upon this, I as well as the rest of the family, and some of my neighbours, went to see if it was necessary to sow it over again.

We sought a considerable time, and could not find a single grain; therefore had concluded to sow it over again: but, by chance, I found a grain by rubbing the mold between my fingers; this learned me how to seek for it, after which I

found several grains candied with a coat of mold, and very slimy.

In order to see the result of this, I left it as it was, without harrowing, and I never had a finer crop; I believe every grain grew, and all started (as it were) fairly together, and not one grain buried deeper than another; which is not the case when harrowed; for when it happens that the seed falls to the bottom of a drill or seam, made by the pins, (which may be the case with more than half of the seed) it will be covered, perhaps two inches or more deep, therefore longer in coming up, through so much mold, by several days, than that which lies on the surface; therefore it may be justly called a second growth, and a second growth in any crop is bad, but worse in flax than any other; as those plants which first come up, are generally the strongest, and maintain their vigour, by being more open and exposed to fresh air: but the second or undergrowth is partly debarred from this advantage, being shaded or kept

under by their overbearing, predominant enemies, therefore rendered small and sickly. I have proved this so often, that I believe I shall never cover a grain of flax-seed more.

Those that would raise flax-seed among trenched potatoes with success, must adhere to the following rules, viz.

First. Never sow flax-seed on land that is subject to red-worms.

Second. Do not plant your potatoes nearer than a foot of each other.

Third. Never dig your trenches deep to throw up bad mold, but make them wide and shallow, except the under-stratum be of a good loam, or black rich haffle earth; but if the under-stratum be of a fox-sand, a red or blue clay, or of a hungry brown, or red, cankered, poisonous earth, (commonly in England called ramill) a man may as well throw his seed into the sea as on such land; and

I believe three-fourths of Ireland is subject to such a bottom. Indeed the lands of Ireland are very changeable; it is not uncommon to see two or three different sorts in one field.

On my travels through Ireland, I met with several complaints, that flax missed which had been sown amongst potatoes, and have often been shewn the ground, which was always attended with consequences as above; therefore it behoves every person to consider the land he has to work in, or he can never be successful in his enterprises; but whether the land be good or bad, or whether he means to sow flax among his potatoes or not, it is a great mistake to set his potatoes thick, as by that the land is spent by supporting the luxuriant tops; whereas, if they stood thin, there would be a free circulation for air, and the potatoes would spread the more under ground. This is evident, even to a weak understanding.

**A Table of expence and profit of
an acre of white flax, raised in
the English method, as directed
in Chap. XV.**

One English acre of flax at $5\frac{1}{2}$ yards to
the perch, will produce 55 stone, at
8 s. per stone - £. 22 0 0

The expence of said acre is as follows:

To ploughing, harrowing, and sowing - - -	0	9	0
To two bushels of flax-seed, at 10 s. per bushel - -	1	0	0
To rolling said acre - -	0	0	6
To pulling - - -	0	5	0
To drawing to the water, at a rea- sonable distance, and sodding	0	3	0
To treading in the pit - -	0	0	6
To taking it out, and spreading on the grass - - -	0	3	6
To turning it on the grass	0	0	6
To gathering up and drawing home - - - -	0	3	6
	<hr/>		
	£.	2	5 6

OF HUSBANDRY. 297

Brought over	2	5	6
To breaking and swingling 55 stone, at 1s. 2d. per stone	3	4	2
To land-rent, suppose in or a- bout the centre of England	0	15	0
Total expence	6	4	8
Clear profit £	15	15	4

**The profit and expence on an acre
of flax, raised as directed in
Chap. XVII.**

To 50 stone of flax at 7s. 6d.			
per stone - - -	18	15	0
To 14 bushels of seed, at 10s.			
per bushel - - -	7	0	0
	£	25	15 0

**Expence attending said acre if ordered as
directed in said Chapter.**

To ploughing, harrowing, and sowing - - -	0	9	0
To 2 bushels of seed, at 10s.			
per bushel - - -	1	0	0
	£	1	9 0

298 A NEW SYSTEM

Brought over	-	1	9	0
To rolling	-	0	0	6
To pulling	-	0	5	0
To stacking and turn-stacking	0	1	0	
To drawing home, suppose a mile	0	2	0	
To rippling	-	0	10	0
To threshing or shelling the seed at a mill, and winnowing	0	3	0	
To drawing the flax to the pit, suppose a mile, and fodding	0	4	0	
To treading in the pit	0	0	6	
To taking out of the pit, and spreading	-	0	4	0
To turning it on the grass	0	0	6	
To gathering up and leading home	-	0	4	0
To breaking and scutching 50 stone, at 1 s. 4 d. per stone	3	6	8	
To rent for land	-	0	15	0
		<hr/>		
Total expence		7	5	2
		<hr/>		
Neat profit	£	18	9	10

OF HUSBANDRY. 299

The expence and profit arising from
 an acre of flax-feed, managed as
 directed in Chap. XVIII.

To 45 stone of flax, at 6 s. per stone	-	-	13	10	0
To 15 bushels of flax-feed, at 10 s. per bushel	-	-	7	10	0
			<hr/>		
			£	21	0 0

Expence attending said acre of flax.

To ploughing, harrowing, and sowing	-	-	0	9	0
To 2 bushels of seed, at 10 s. per bushel	-	-	1	0	0
To rolling	-	-	0	0	6
To pulling	-	-	0	5	0
To turning when spread on the flax-stubble	-	-	0	0	6
To gathering, bringing and drawing home	-	-	0	4	0
To beating out 15 bushels of seed	0	5	0	5	0
To drawing to the water, sup- pose a mile	-	-	0	2	0
			<hr/>		
			£	2	6 0

300 **A NEW SYSTEM**

Brought over	-	-	2	6	0
To turning it in the pit	0	1	0	0	0
To taking it out and rickling	0	2	0	0	0
To binding and drawing home	0	3	0	0	0
To breaking and swingling 45 stone, at 1 s. 4 d. per stone	3	0	0	0	0
To land-rent	-	-	0	15	0
			<hr/>		
Total expence	6	7	0	0	0
Total produce	21	0	0	0	0
			<hr/>		
Clear profit	£	14	13	0	0

The expence and profit of one acre
of flax, raised by the method
laid down in Chap. XIX.

To 40 stone of flax, at 6s. per stone	-	-	12	0	0
To 15 bushels of flax-seed, at 10s. per bushel	-	-	7	10	0
			<hr/>		
Total produce.	£	19	10	0	0

Expence attending the said acre of flax.

To ploughing, harrowing, and fowing	-	-	0	9	0
			<hr/>		
			£	0	9

OF HUSBANDRY. 301

Brought over	-	0 9 0
To rolling	-	0 0 6
To two bushels of seed at 10s.		
per bushel	-	1 0 0
To pulling	-	0 5 0
To turning when on the flax-		
stubble	-	0 0 6
To gathering, binding, and lead-		
ing home	-	0 4 0
To beating out, and winnowing		0 5 0
To leading and spreading it on		
the grass	-	0 2 0
To gathering, binding, and lead-		
ing home	-	0 4 6
To breaking and swingling with-		
out fire, the 40 stone, at 1s.		
4d. per stone		2 13 4
To land-rent	-	0 15 0
Total expence		5 19 4
Total produce		19 10 0
Neat profit	£	13 10 8

C H A P. XXV.

Remarks on the foregoing tables.

I Have been very exact in calculating the foregoing tables; therefore my reader may rely on what I have set forth, as I cannot be mistaken, knowing every part of it so well; it is nothing to me to calculate, or estimate tables of this sort, in any part of the two kingdoms, as I have had so many repeated trials, and am so well acquainted with the value of land, labour, and commodities, in almost every part therein.

I have fixed the tables, supposing the flax to be all of an equal goodness, as it would be impossible for me to estimate for different crops (a farmer may chance to have) without seeing them: but he seeing the tables and different methods of management, must be the best judge, which management or table will answer best for the crop he sees himself possessed

of. But in order to assist him as far as I am able by a theoretical lesson, let him observe the following rules.

First. If your flax be very long and fine, and either does, or is likely to lodge if rain come; if your markets or situation be such, as to have a call for fine flax, then pull it for white flax, and follow the direction for chap. XIV.

Second. If your crop be a stout fair-standing one; and a degree coarser than the above; if your seed be of a good kind, so that you would be glad to save it, and that you have plenty of labourers to attend at the rippling of it, which indeed is a great clog upon this sort of flax, at this busy season of the year; if your situation, manufactories, or markets, be such as have a call for this second-rate flax, then manage this crop as directed in chap. XVI.

Third. If your flax be thin or short, or inclined to a large bushy top, which will

produce a great deal of seed (tho' indeed this seed should be sold for oil, as it is not good in nature): if you be scarce of hands at this busy time of the year; also if you be scarce, or would not be at the labour of making pits, but have drains (which if not, running water will do very well to swim this flax in); if your situation, manufactories be such as to have a call for this third-rate flax, then manage it as directed in chap. XVII.

Fourth. If your crop of flax be thick, or coarse stalked (commonly in England called round or coarse bunned); if your situation be distant from water; also if your situation for manufactory or markets be such as to have a call for coarse flax, so that your regard be more for the seed than flax, then manage it as in chap. XVIII.

My reader may have one eye upon his crop, and the other upon the foregoing hints, therefore may easily determine which to pursue.

But though it is no more than necessary to verse my reader in every method, yet the fourteenth and seventeenth chapters are what I would chiefly recommend, being the most profitable, and least subject to miscarriages, badness of weather, or hurry of other business, &c. as also the lands and manufactories of Ireland are so circumstanced, as not to fail answering for one, if not for both of these crops, almost to every farmer; as there is, in most parts of Ireland, a call for both coarse and fine flax, and there are few fields but what have two or more sorts of soil or earth in them; perhaps one side of a field may be in a bottom, which is generally the deepest and richest soil, therefore will produce a finer and longer flax, which is most apt to lodge.

The hilly part of the field may be gravelly or sandy, which will produce a shorter flax; so between the two, the farmer may suit himself with both sorts of flax and seed too, which will divide his

crop, so as to be managed in two seasons, and will prevent hurry, so that he may get easier through it.

Observe, that coarse or thick stalked flax, will take a shorter time in watering or grassing than fine small stalked, therefore ought to be watered in separate pits: the former is generally thinner skinned, therefore not so good as the latter smaller sort.

Flax will not bear to be sown thin for the above reason, except regard be had to seed alone. Three bushels of sound seed is the true complement for an Irish acre, at seven yards to the perch, and 160 perches to the acre.

By the same rule, two bushels are sufficient for an English acre, at five yards and an half to the perch; the proportion is near alike.

C H A P. XXVI.

Directions for sowing and managing
hemp and the seed in perfection.

THE season for sowing hemp is from the first of April to the middle of May. It requires a deep, rich soil; if summer-fallow the better; though stubbles will do, provided they be fine, and well tilled by a winter-fallow, and well manured. They must be ploughed early in autumn, and twice more in spring before sowing. After the last ploughing, sow the seed; and if the land be cloddy or rough, pulverize it alternately with the harrow and roller.

Contrive to sow the most weedy ground you have with hemp-seed, as it will most effectually kill the weeds, and bring the ground into a good tilth for any sort of crop that may follow it; but wheat is most commonly used, and has been found most successful.

There are two sorts of hemp that grow promiscuously thro' one another, namely, the summer and winter hemp, otherwise called male and female: the male or winter hemp bears the seed; the female or summer hemp bears none, and is ripe for pulling at least two months before the seed or male hemp.

About the latter end of July, the female hemp will be ready to pull, as will be evident from its turning a pale yellow, and the leaves withering and falling off; when at the same time the seed-hemp will be in its full vigour of growing, and the seed scarcely formed.

The female hemp being thus ready for pulling, go along the furrows and pick it out from the male; but, if you happen to break any stalks of the seed or male hemp, pull them up along with the female; as also any small seed-hemp that may happen to be in the furrows, &c.

After pulling, tie it in middling sheaves, with a band at each end; and for watering it, observe the same directions as for white flax.

Rate and grass it also the same way, observing the same tokens in every case.

Some will save no seed, but pull all together, as female or summer hemp; this is the least trouble, but not the most profit, particularly if the hemp be a gross, strong crop; but indeed, if it be a small short crop, it may answer as well; for, when it is rightly managed in the white or female manner, it will fetch from four and six pence to five and six pence per stone; which is about two shillings a stone more than seed or peeled hemp will give.

It must be breaked and swingled directly as flax, and without fire.

As to the seed-hemp, let it stand until the seed be ripe, which is generally about the latter end of September; then pull it, and tie it up with one band near the top, and set it up to dry.

When ready for threshing, make an even place for a threshing-floor in the field, and spread a winnow-sheet, on which it must be threshed.

When threshed, tie it up with two bands and water it; sink it with fods as white flax.

When enough rated, take it out of the water, set it up to dry, as directed for bunch-rate flax.

Being thus set up, it will soon be dry to take home for peeling. This peeling is good winter-work for women and children; if it be large hemp, it will be got peeled for two pence a stone, but if small,

it will cost two pence halfpenny. At times I have paid three pence, but that was in a country where the people were strangers to such work. A child of ten or twelve years old, if active, will peel two stone a day, and the stalks are good firing for them, as it is generally peeled at their own abodes.

The hemp-seed is winnowed as other grain; but it is often deceitful, as a great deal of it will be hollow within, and have no kernel, though it will look near as well to the eye as the best; therefore the buyer ought to inspect nicely into it, and try its weight, which is the safest way to buy it by, though indeed not a common one.

An acre of hemp well managed, as above, will clear at a moderate computation, about twelve pounds sterling over and above all other charges. And there are very few farmers in England or Ireland, but what have some land fit for

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this crop, such as old gardens, or land that is run to weeds, &c. provided (as I observed) it be well tilled and manured ; but the weeds will be apt to grow the faster for the manure, if not effectually killed by summer and winter fallow.



C H A P. XXVII.

A monthly kalendar, or memorandum of works to be done as they come in feason round the year.

J A N U A R Y.

IN the beginning of this month, plough the fallows that missed ploughing in autumn.

Plough for beans and pease; take the ridges up to lie dry; towards the latter end of the month, sow them if the weather permits.

Until this time, eat the clover with sheep, or light cattle, so as not to tread it; but know it must be laid up to get a head against spring, for early lambs, &c. or meadow.

Flood your marshy low land, or any other whereon you can turn water. In order to this, take in the water out of any river or drain, at the highest part of the field; convey it first along the head of said field by a small surface grip, or drain,

about a foot wide and the same deep; at about every ten yards distance, cut with a plough, a furrow sloping-wise of the hill; so that when the furrows are full, the water will flow over at the lowest side; this is easily done, as there are few fields but what one side is higher than another.

If the weather be frosty, carry out dung; leave it in heaps, ready for spreading when the frost is gone.

Lop, top, and plant forest-trees of all sorts, plant quicksets, and make and repair your ditches, clear your water-courses.

Kill and save bacon, hang-beef, and hams.

At this time, and from Michaelmas, is a good time to repair quickset hedges, by laying the thorns down in gaps, or open places where the fence is thin at the bottom; nick the thorns two thirds of the way through, in order to make them bend and lie easy, by which they will be surer to grow than if they were bent without nicking, which would bruise and wound the wood, and prevent the sap

from rising past the bruised place; whereas, if it was cut as thin as half a crown, provided the uncut wood bent easy, without bruising, the sap would circulate through the narrow uncut place to the branch, which would flourish and spread along the bottom of the hedge, and make a good fence.

This in England is called splashing. The labourers in Yorkshire and Lincolnshire are very expert at it; if the hedge be ever so ragged and thin, provided the tops will meet, they will make a good fence, which the year after will almost turn a hare, when the young fibres shoot out.

But this piece of dexterity is not universal in England; and in Ireland I never saw any of it; though few people in the world go to greater expence in planting quicks, and making ditches, &c. than the Irish.

Continue to break and swingle hemp and flax.

This is the best time to thresh out barley, as it is wanted for malting;

and the straw, which is not quite so good as oat-straw, will eat best in hard weather.

Early lambs are now dropping; turn the ewes to turnips, if you have any, which will fatten the lambs quickly; but if the weather be wet, and the ground soft, it will be too cold for the lambs; in this case, pull the turnips, and take them to the ewes on grass-land, but have no regard in this case for weathers, as they will feed better on the ground where the turnips are fast at the root, which keeps them fresh and juicy, and from rolling about in the dirt as they scoop them.

Remember to throw roach-lime into the hole of the little-house, to prevent it from smelling, and to dry the dung so as to make it spread when laid on the land.

Remember to send men to pick up the shells or bottoms of the turnips, that they be clean eaten up, before you make a fresh break.

Remember your bees, and if weak, feed them with cakes made of malt-flour,

mixed up with sweet wort, or a cake made of rye-meal, mixed with treacle-water, or give them brown sugar. Also turn up the hive, and sprinkle it well with sweet wort, or treacle-water.

Plough your barley-fallow for the second time, as I suppose it was ploughed in autumn to turn the stubble under.

Towards the latter end of the month, if the weather be open, sow vetches, whether for seed, fodder, or feeding on the ground; but if for feeding on the ground they would have been better sown in the latter end of the summer, as directed under that head.

House your weanling calves and foals, if not done sooner.

Dress your meadows.

Cut and spread ant-hills, by which the ants being exposed at this severe season will be destroyed.

Look after your pigeons, feed them, and spread ashes on the pigeon-house floor, to keep the dung from caking.

F E B R U A R Y .

SOW beans and pease, which ought to be done, if the weather permit, before oat-feed time.

Towards the latter end of the month, if the weather be open, sow oats.

The rye that missed sowing in autumn, must be sown at the beginning of the month.

Plough your barley-fallow, if not done last month. Transplant rape-stalks.

Continue to splash quickset-hedges.

Lay up your meadows, clean them from all sticks, stones, and rubbish, that may be obstructive to the syth.

Spread and break horse and cow dung, ant-hills and mole-hills, which are done in a cheap easy manner with a molding-sledge.

Look over your wheat-land, lest any water stand by the stoppage of sods or stones falling into the furrows and grips.

Set osiers, poplars, willows, and other aquatics; lop trees, plant quicks, open half the passage of your bees, grip and

drain the wet lands, look that no water stand on your crop.

Your forward fat lambs will now begin to be ready for the market; do not keep them too long, for what they gain in size they lose in price, as the markets drop when the season advances; besides, if they are off early, the ewes may be fed on clover, and be ready for market early also.

Set potatoes, to come in early.

Lay them first, and cover them well with long horse-dung, to preserve them from the frost.

Continue to break and swingle hemp and flax, and peel winter-hemp.

Begin to beat the seed out of the flax and hemp.

The dew-rate flax must now be spread on the grass; the snow, frost, and rain, rates it well.

Remember to feed your bees, turn the hive up, and sprinkle the combs with sweet wort.

Continue to spread foot on your wheat

to kill the red worms, at the rate of five barrels to the Irish acre.

This is a good time to lay any sort of short dung on your wheat-land, such as ashes, pigeon, rabbit, and hen dung; but do not lay lime on without mixing as directed, lest it burn the blades of the wheat.

You must not defer brewing your keeping strong beer any longer.

In the first week, or first fine open weather in this month, finish ploughing for the last time, your winter-fallow or ground intended to receive the wheat-plants which were sown in autumn, and get them transplanted as quick as possible in the fresh mold, that they may keep beforehand with the weeds, in order to suppress them.

About the latter end of this month, is the time to sow your spring-wheat. Land that through over much wet or hurry of business, missed sowing in autumn, will answer very well for summer-wheat, and I have seen as good a crop from spring-sowing, as that which stood all winter;

however none but the right early kind will ripen in time.

M A R C H.

THIS is a very busy month with the farmers; and it behoves every one to bestir himself, to get the proper crops into the ground in due season.

Plough for and sow oats if clover be to be sown among them.

When the oats are harrowed well, sow the clover-feed, and bush-harrow it; but I take it to be the best way to defer sowing it till the oats are come up, then sow the seed and roll it in.

If the season be good (but not else) sow barley.

Sow mustard-feed; the ground, if stubble, must have two ploughings, but it will grow with great success on lay-land if good, with once ploughing; harrow it well before sowing, and after sowing roll it.

Lay up, dress, and roll your meadows.

Spread ant-hills.

Lop and top trees.

Plant quicksets. Plant osiers, willows, and other aquatics.

The fat sheep must now be kept drawing off the turnips, as they now begin to grow near an end, and the markets advance much about this time.

You may yet sow vetches, tho' it were better done sooner.

Finish splashing quickset-hedges.

Turn your ewes and early lambs into clover or rye-grass, as the turnips are near an end.

Widen the passage for your bees, and continue to feed them, if required.

Turn up the hives gently, and sprinkle the combs with sweet wort.

Geld your year-old foals, take care to rub their thighs, and over their kidneys, with marsh-mallows.

Set the tails of your young horses. It is also a good time to break them.

The calves that drop now, ought to be kept for rearing; but as milk is at this time scarce, a good drink may be made by boiling hay till the water is very strong, into which, put for every three calves, and

so in proportion, a pint of flax-seed, a pint of oat-meal, and a quart of skim-milk; put the flax-seed in along with the hay, and boil it all the time; it will be smooth and like a jelly; put in the oat-meal and milk when the hay is taken out, after which give it a good boil.

There is no finer feeding for calves than this; it both strenthens and makes them grow large, and it is very cheap food to rear them with.

There are people in England who make a very comfortable living, by buying calves as soon as they drop, and rearing them thus: some give them nothing but flax-seed and hay-water, after they are a month old.

They can buy the flax-seed from the oil-mills, at about three shillings and sixpence a bushel, and a bushel will rear two calves by the above rule.

I have heard of farmers in Lincolnshire, rearing from sixty to an hundred calves in a year, by this method.

Put out dung for potatoes, and set them whether by plough or spade.

Sow flax-feed when the land is well harrowed.

Sow all sorts of artificial grasses, such as burnet, clover, rye-grass, white hay-feed, common hay-feed, timothy grass, &c.

Sow beans and pease. Sow white pease.

At the latter end of the month, if the weather be good, roll wheat, bear, and rye, but sow the grass-seeds first, if they be intended.

Sow broom and whin seeds on the tops of ditches for shelter; but if it be a gravelly ground, they will not grow well; therefore make the drill deeper, in which throw a little good earth to sow the seeds in; this is easily done, and the crops are surer of success.

Clip young quicksets, to make them spread.

Water or rate the bunch-rate flax, if the water be clear of ice.

Turn your young cattle on to the bog or coarse mountain, which will eat better from this till the latter end of May,

than any time of the year; and is of great use to save the fine pastures till they get a head, by which the grass retains the dew, and the sun is kept from the roots.

Plant potatoes, sow flax-seed amongst them at the rate of eight quarts to an acre, to raise for seed.

Finish killing your bacon-hogs this month, or making hang-beef or hams, as it will not do so well if done later.

Towards the latter end of the month, if the weather be good, sow barley, and grass-seeds after it is harrowed, and bush-harrow, or roll them in.

Spread foot-on your green wheat. See receipt for red worms.

Sow burnet or vetches, to stand for feed.

Spread ashes, compost, pigeons, or other short manures, on your winter-crops.

Continue to plough your fallows.

Sow hemp and flax. Try your flax-seed first if it will grow.

The quickest way to do this is to lap a little seed in a wollen rag, and put it into

a couch of malt; this will shew whether it has lost its growing quality or not, in two or three days.

A P R I L.

THIS is also a busy month with the farmers.

Sow buck-wheat, flax, hemp, lucerne, faintfoin, rye-grass, clover, and hay-seeds of all sorts.

Sow barley, which ought to be finished this month, though some will sow till the middle of May, but this is better avoided if possible; though, indeed, it is better to wait a month, than sow in soft, dirty, wet weather, as it is a tender grain.

About the middle of this month, turn sheep into clover, as the turnips are now done.

Finish rolling, stoning, and cleaning the meadows.

Destroy young rooks, and their nests, which is easily done, by small long poles, one spliced to another, with an iron crook fixed to one end, which will easily pull the nests down.

Plant quicksets and forest-trees of all forts.

This is a good time to give your mares to the stallion; make use of such a one as is broad and strong, short-jointed, moves light, and goes true on his legs, what is called half-blood, or in England chapman's horses: Ireland is ruined by following too much after blood, which are not fit for service (on those hard roads) or the farmer's profit.

If time permit, in the latter end of the month, begin to pare your land for burn-beating.

This is a good time to begin to dig, drain, and reclaim your bog, as directed. (See reclaiming bog.)

Clip your young quickset-hedges, to make them grow thick at the bottom, by putting out fresh shoots or fibres.

Continue to keep your cattle on the bog and mountain, as the heath at this time is wholesome, sweet, and tender; and by doing this, you save your fine grass-pastures till they get a head.

Delay no longer to water or rate your

bunch-rate flax, for in hot weather the worms, both in water and on the grass, will damage it, if done much later.

Sow mustard-seed on stubble-fallow, or lay-land.

In the beginning of the month, finish sowing oats, white-pease, and fitches, grey-pease, and mustard-seed.

Roll your corn of all sorts; delay no longer to lay up and dress your meadows, and roll them before the ground is hard; set the tails off, and break your young horses.

Keep your calves that drop now for rearing; feed and make choice of such as are described in the kalendar for March.

M A Y.

WE may now suppose most of the busy seed time to be over; but if any of the latest crops, such as buck-wheat, barley, and sundry sorts of grass-seeds, and potatoes remain unsown, finish them as soon as possible.

Cross-harrow your fallows of all sorts, and plough them; after which blood your

horses, and give them a fortnight's rest, being very necessary to refresh them, after their hard seed-time labour.

The first of this month, (old style) break your summer-pastures, bleed your horned cattle of all sorts, and give them a lick of tar, which will prevent diseases or catching distempers.

This is the time to buy in your in-calvers for milk; make choice of those with a fine, long, small, green horn; fine and clear of leather under the chops, and a good full shoulder, deep-chested, broad and well made behind, a straight broad back, full hips, with short straight legs, a walk open and stately, a thick skin, and broad ribbed, with a good milk-vein and udder, and large teats; such dams are worth breeding, or rearing calves from, and their calves will cost no more keeping than such as are quite the reverse.

Were a farmer to bear in mind that a calf, when a year old, of the above beautiful shape, will bring from forty to fifty shillings, when one of the ill-favoured kind (as Joseph called them) will not

give, perhaps, above ten or fifteen shillings; certainly he would be more nice in his breed, particularly when he considers that they both take the same keeping.

Were all farmers or breeders to be so circumfpect, what a beautiful brute-creation we should have?

Give the breed-mares the horse; and as they are generally low in flesh, from their hard labour, they will be more apt to hold in foal.

Put your dung out in dung-hills, in fallow-fields where it is to be spread.

Continue to destroy moles, rooks, magpies, &c.

Look after your bees, which, if strong, will now begin to swarm, and one swarm now will be worth two later in the season.

Continue to pare your land for burn-beating, and if the season be wet, the sods must be set upon an edge to dry.

Towards the latter end of the month, plough your fallows, that were cross-harrowed the beginning of the month.

Weed your wheat, and if too forward or rank, eat it with light cattle, such as calves, foals, or sheep.

Roll your wheat, and all sorts of grain, first sowing the grafs-seeds intended.

Lay up your clover intended for hay, or seed: but if a crop of hay, and a crop of seed be required, it must not be eaten in spring, which if not, it will be ready to mow by the middle of this month, and then the seed-crop will come in in good time, before short days and bad weather put in.

Cut turf, and provide your winter-firing of coals, &c.

You may yet continue to plant fir-trees without danger of success in growing.

Continue to geld your young colts, this being the safest month in the year, as the young grafs purges them, and keeps them cool and open, therefore in less danger of swelling.

Do not forget to go on with reclaiming bog; throw it up in ridges, and burn the fods as directed. (See bog.)

Weed your quickset-hedges.

J U N E.

THE clover must not be eaten any longer (that is intended for either feed or hay) than the first of this month.

The forward clover's first crop will be now fit to mow; take it when it is very early in flower.

Continue to cut turf, and provide the winter-firing.

About the twenty-fourth of this month, the buck-wheat, pease, or vetches will be ready to plough in for manure.

As near the twenty-fourth as possible, and when there is a prospect of rain, sow turnip-feed.

Weed hemp, flax, and corn, early in the month; but it ought to be finished last month.

Look after your bees, which in hot weather will swarm and do well if early in this month; but the latter end is too late if it could be helped.

Weed your quickset-hedges.

This is the time to burn your land intended for turnips, rape, or cole-feed.

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Wash and clip sheep, pare their nails, to prevent them from being lame.

Bleed your cattle, particularly poor cattle, when turned to feed.

About the twenty-ninth of this month, sow rape and cole-seed.

The beginning of this month, rye-grass will be ready to mow.

The latter end of the month, natural meadows will be ready to cut.

The rape and cole-seed will be ready to reap the beginning or middle of the month.

Look after your rank flax, and if it lodge, turn it as directed.

Burn lime for your fallows.

Hoe and weed potatoes, set with the plough or spades.

Plough and sow your rape and cole-seed stubbles with turnips.

Provide pits to rate flax in, and fill them with water, in order that it may be the softer, which it will be the longer it stands, and the softer the water, the better. (See remarks on flax.)

J U L Y.

THE north of England and Ireland are now busy with their hay-harvest, but the south of England has got it over.

Continue to sow rape and cole-seed, which may be done with success to the last of the month; and it is better to wait a week or a fortnight for a prospect of rain, than to sow in dry weather; for if the ground be very dry, a great part of it will not come up till rain falls.

The latter end of the month, turn bulls to your store-heifers.

When the weeds or grass grow, your fallows must be ploughed.

Towards the latter end of the month, early rye will be ripe, reap it.

Pull and rate female hemp, take care not to break the seed-hemp, when pulling the female.

Pull and rate your white flax, beginning under the hedges, or where it lodges. This is the best time to buy in store-heifers for the bull, which will be got

nearly as cheap now, as two months sooner ; by which you will save the grass to get a good head, which will bear more stock.

AUGUST.

THIS is the harvest-month for the north of England and Ireland, but in the south of England it is mostly over.

Reap and mow all sorts of corn as it becomes ripe, but some will not be ripe till the next month, particularly what grows on cold wet land.

When you stack the corn in the hay-yard, between every layer or course of sheaves, throw fine sand, which will get into the ears of the mice and rats, and prevent them from destroying it.

As soon as the corn is off, plough for and sow turnips, burnet, or vetches, for winter-feeding, which will do the land good, and be a great help to fodder.

Remember to plough your fallows.

Pull and stack seed-flax as directed, (See flax.)

Fallow your flax-stubble for wheat,

which will be in fine tilth by Michaelmas with two ploughings, and there will be no doubt of a good crop.

Turn rams to your ewes for early lambs.

Geld your lambs. Turn to feed such ewes as you intend for store.

Wean your lambs and runner calves.

Hoe or weed your turnips, and spread ashes on them, if you have them to spare.

Put your bulls to the store-heifers.

The beginning of this month, buy in your store-heifers for the bull; but take care they are not bulled before you buy them.

A sure token to know this is, if there be wax in the teats, that you can fetch out by drawing them between the fingers.

Again, observe the barren; and if there be a drop hanging at it, which mostly gathers dirt, this is a sure sign she is bulled.

Plough your stubbles, and sow fitches or burnet, as soon as the corn is off, for winter-feeding.

You may also sow turnips, tho' they

will not be large, yet will be a great help to make fodder, as their tops will bear some eating. And the farmer is to bear in mind, that all winter-crops, whose seed is cheap, are partly clear gain; and turnip-feed will not cost above six-pence or a shilling an acre.

About the last of this month, sow your seed-wheat as directed in chap. ii. vol. 2. in the new diagonal method of husbandry.

S E P T E M B E R.

Continue to get in the harvest, which will be all ready this month.

The first of this month sow your wheat as directed in chap. ii. vol. 2.

Pull your seed-hemp, and towards the latter end of the month, it will be dry, ready for threshing.

Turn the rams to your ewes; buy in half-thick sheep, and bullocks, for winter-feeding; turn them into your after-grass, and when it is eaten, turn them into the turnips.

Provide fence to pen on the turnips, either nets, sheep-bars, or faggots.

Plough stubbles for winter-fallows; take up or gather the ridges, that the land may lie dry.

Thresh feed-wheat towards the latter end of the month.

Sow fitches or burnet for winter-feeding; those that are sown for feeding, must be sown thicker than for a feed-crop.

Sow wheat, rye, and bear; take care to water-furrow and grip the land, to keep it dry.

Wean your foals, and geld them.

Look after your bees, straighten the entrance into their hives, and destroy wasps or drones, or they will rob them of their honey. Drones are such as have lost their sting, after which they grow large and idle, will not find for themselves, but live on the other bees labour.

Put your hogs up to feed for pork, or bacon.

Clean or open your water-courses. In the north of England this is compelled to be done by a water-jury, appointed for

that purpose, who views all the drains, levies fines, and recovers damages for any one that is aggrieved by reason of his neighbour's not scouring his drains, upon proper notice given.

Turn your hogs into the stubbles and woods to gather acorns.

Throw out musty straw to make dung.

Lay marl or lime-stone gravel on your grass-land, and let it grow a year or two to the sod before you plough it, by which it will do the more service to the land, and will last longer. It is by no means proper to marl or gravel broken or fallow land, because the manure sinks, therefore any that falls to the bottom of the furrow, will sink or descend too low for the plough to turn up. When it is laid on grass-land, the first time it is ploughed must be very thin; and in fallow, take care that the marl lie at the top of the surface the last ploughing.

O C T O B E R.

SOW wheat, rye, and bear; water-furrow and grip as soon as sown.

Plough stubbles for winter-fallow; but this must be only done in wet weather, or in such times as wheat-feed sowing cannot go on, because no time in this must be lost.

Plough up your potatoes that were set with the plough, and sow the land with wheat or bear.

Begin to splash quickset hedges, and scour the ditch to lay at the root of the quicks.

Scour or clean all water-courses, to give the water, when it comes, a ready passage.

Continue to sow fitches and burnet for winter-feeding.

Now is the time to take or drive your bees; but it is better to kill the bees in the hives you intend to take, than to run the hazard of losing two swarms, by driving, which is often the case; for when two swarms are put to the allowance of what honey there is in one hive, that hive not having enough to support them all, they eat what there is, and then perish for want.

The way to drive them is, to put the mouths of two hives together, and they will go into the upper one.

The way to kill, them is, to make a round hole in the ground, which will fit the mouth of the hive; in this stick three bits of sticks, about six or eight inches; slit the upper end, in which fix three linnen rags, dipped in brimstone, set them on fire, and over them put the mouth of the hive downwards, and stop it close round with sod, so that it will let neither smoke nor bees out; this will effectually kill all the bees.

Prune and plant all sorts of forest-trees and quicks.

The flax and hemp has by this time got a sweat in the mow, begin to break and swingle it out.

The last week in this month, transplant your wheat-plants sown in August or September, as directed in chap. ii. vol 2.

This is the time, before too much water comes, to make small surface and pipe drains, that they may be open;

and ready to take off the water when it comes.

The surface drains, or grips, are cut across meadow-grass, or corn-land; from every low place, to the ditches, or head-drains. They are made only wide enough for a spade to run at the bottom, to shovel the mold out.

How to make Pipe-drains.

Pipe-drains are particularly useful to drain in lawns or meadows, lying opposite gentlemen's houses, who, for beauty's sake, would not have drains seen; and these answer the end of French drains. Pipe-drains are made thus, viz.

Take a sharp spade, run it sloping down ten or twelve inches, then turn your face and spade another way, and cut another nick, sloping down, opposite to the former; let the sod at the top be about eight inches broad, and the spade going thus sloping down both ways, will meet at the bottom, therefore the sod will have a ridge or sharp angle, of which cut about three inches off; then drop the sod

into its own place, by which there will be a tube or passage for water, about three inches triangular, which is sufficient to take any downfal of water off.

The sod dropping into the same place, forms (as it were) an arch; and if the ground be tolerable firm when it is made, a horse, may tread on the sod, and it will not sink. It is best to defer turning cattle into the land where such drains are made, for three weeks or a month after, in order that the sod may grow together, and be more solid.

You may cut these drains as near together as you please, or need requires; they are quickly and easily made, and there is no loss of ground, or any offence to the eye. It might be done on a bowling green, or grass-plot; spread the little triangular sod or mold you cut off, which will help to freshen the surface.

Streighten the passage for your bees, and take care that no mice or snails come at them, they being great enemies.

Kill wasps and drones, so pernicious to bees, by eating their honey.

This is the time to brew your strong-beer, for keeping for the ensuing summer's drinking.

And here let me advise the Irish farmers to copy after the English, by brewing good beer or ale, and make that their drink, instead of giving their money to the French for wine and spirits.

No man is to be pitied that cannot enjoy himself or his friend over a glass of good ale, the produce of his own land, and perhaps his own farm, therefore comes at a cheap rate.

On the other hand, he is very weak, and greatly to be blamed, who is led away by pride, to ape the gentleman of fortune, in treating with such costly liquors, when the produce of his own country suits both his constitution and pocket better.

NOVEMBER.

NOW is the time to finish ploughing your winter and ensuing summer fallows, whether stubble or lay-land, and

then lay by your ploughs and harrows dry till January.

Put up your hogs to feed for bacon.

Mofs-harrow your lands, either summer-pasture or meadow.

Take up your cattle, and horses, of all sorts; put cows into the house, and bullocks, and other dry cattle into the barnyards to eat straw.

For the conveniency of which, make racks to stand on four feet, like sheep-racks seven feet long; this will hold a large arm-full of straw. To every two beasts have one of these racks, and disperse them about the yard, so as cattle may walk and eat round them.

Turn your sheep into the turnips, and confine them to what they will eat in a week.

Buy in small store-pigs, to turn into the barn-yard, to eat the loose corn that falls under the stand-racks, which will pay well by May.

Continue to sow wheat, rye, and bear.

Overflow your meadows.

Bleed your horses and fat cattle of all sorts.

Destroy ant-hills.

Move your bees under shelter, if they be not already in a bee-house.

Plant quicksets, scour your drains, splash quicksets, fell coppices, provide timber for carts and ploughs.

Fatten your swine for slaughter.

Plant fruit and timber trees, if the weather be open or clear of frost.

D E C E M B E R.

THIS is one of the farmer's months of rest partly, not having much to do.

When the ground is clear of frost, mofs-harrow and roll meadows or grass-ground of all sorts that want it.

Look after your fat sheep, and give them a little hay to clean their mouths from dirt, occasioned by their scooping the turnips out of the ground.

Pick up the turnip-shells with a fork, that the sheep may eat them clean before a fresh break is made.

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Kill your bacon-hogs, and winter's beef.

Take care of your young foals, and instead of threshed oats, give them fine oat-sheaves, which is better for them.

Turn cattle into your burnet or vetches that were sown for winter-feeding, if it be forward ; but it is better to spare it till spring, when herbage is of more value.

Spread foot, or the compound of salt to kill the red worms, and enrich the land (See receipt.)

Look after your bees and feed them, if they want it; feed your pigeons, spread ashes among their dung. Fell copses, and provide timber for house-boot, cart-boot, and plough-boot.

T H E E N D.

