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H I N T S

T O

GENTLEMEN

O F

LANDED PROPERTY.

B Y

NATHANIEL KENT,

OF FULHAM.

L O N D O N :

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ADVERTISEMENT.

THE Reader is cautioned not to expect any thing systematical in the substance, or stile of the following Remarks. They are simply such as have arisen in the course of a three years residence, and observation in the Austrian Netherlands, and an extensive practice since in the superintendance, and care of several large estates, in different parts of England. Nothing is borrowed from books, or built upon

upon hearsay-authority ; what little they contain is, chiefly a description of such practical points of Husbandry as may be adopted in many parts of England to great advantage. And as these Hints are published from no motive of interest whatever, but merely to enable gentlemen of landed property to be competent judges whether their estates are properly managed, or not, it is hoped they will meet with a candid and favourable acceptance,

T H E

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H I N T S, &c.

INTRODUCTION.

MOST of the publications upon Husbandry, which the press hath lately teemed with, seem to be read more for amusement than profit; very few, if any, of the schemes recommended have been carried into general practice; which shews that agriculture is very little attended to as a science. The intelligent farmer will always know

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and gather more from practice and observation, than he can acquire from books and study. It is upon this principle that I have avoided all theoretical rules; for if we consult only the book of Nature, and observe her order, and the consequences that result from her prognosticks, we shall derive infinite advantage from her instructions in all country-business, since no voice is so loud or distinct as hers. Every plant, and weed characterizes the soil it grows upon, and tells us its quality and value. A thousand animals, and insects foretel us what weather, what seasons we are to expect; and are therefore well worthy of our attention. The late ingenious Mr. *Stillingfleet*, among other publications of great moment, favoured the world with a register of the times of the budding, blooming, and foliage of different flowers, shrubs,

shrubs, and trees, in different years, under the title of "*The Calendar of Flora*," and recommended it to all gardeners, farmers, and planters, to consult these appearances at all times, and to be guided more by them in cropping and treating their land, than by the regular return of the months and years. Many people have observed, that when ants wander carelessly from the seat of their republic, in the spring of the year, a drought almost invariably ensues; but when they daub, and plaister the sides of their habitation, and confine themselves nearer home, a very dripping wet summer is known to follow. Swallows flying low, occasioned by the weight of the atmosphere pressing down their prey, denote speedy rain. In a drizzly morning, when the whole village is in doubt, whether it will be a thorough wet day, or clear up

before noon, the sheep will often tell them. If a continued rain be to ensue, they generally feed, notwithstanding the moisture, with great eagerness ; knowing that they shall have no better weather for that day. If they desist from eating, herd together in detached parties, and creep under the hedges, they know the rain will be over soon enough to afford them time to fill their bellies. It is needless to enumerate the advantages to be derived from many more of these instructive agents ; I have mentioned these few, in order to insinuate, that the great study and success of agriculture, the most useful of all sciences, indeed the nurse of them all, depends upon a due investigation of nature ; that the true secret or mystery of ascertaining the value of land, and knowing what plants are suitable and apposite to particular soils, must be obtained

tained by consulting her*; which reduces all our profitable researches upon husbandry, merely to two points : First, to find out, Whether our respective lands are properly applied to the use for which nature designed them? and next, Whether we practise the best methods of art which have been hitherto adopted? In making this enquiry, it will appear that great absurdities are frequently practised in the misapplication of crops, or in an improper succession of them; and it will be equally apparent, that the best methods of art are far from centering all in one spot. Every county seems to abound in excellencies and defects: but as every

* Mr. *Black* of Lutton, in Essex, one of the best judges of the nature and value of land, who practises as a surveyor, has strictly conformed himself to this idea; and the deserved reputation which he has acquired, is the best proof that can be given of his having taken a sure guide.

farmer thinks his very worst custom preferable to the best which another county makes use of, there can be no hope of seeing the best adopted and brought into general practice, and the worst wholly exploded, but by the intervention, and example of gentlemen of property; who may perhaps be able, by time, and perseverance, in a great measure to effect so desirable an alteration. Many and various are the good and bad practices I allude to; and 'tis not the task of any one man to separate them; but many hints from different people, if they are grounded upon sound experience, may in time form a complete system of practicable husbandry. According to this idea, I have always conceived the *Museum Rusticum*, to be one of the most useful modern productions; because well-meaning men have thrown in their respective mites of instruction,

instruction, as far as their knowledge extended, without pretending to more.— Upon this plan, I shall venture to publish a few thoughts upon such parts as have particularly fallen under my own observation.



INCITEMENT TO THE STUDY OF
AGRICULTURE.

A Competent knowledge of Agriculture is the most useful science a gentleman can obtain; it is the noblest amusement the mind can employ itself in, and tends, at the same time, to the increase of private property, and public benefit. Nor is this study, so necessary and serviceable to mankind, attended with much difficulty, or labour; but is even entertaining in the acquisition: for its chief instructions are to be found in the pleasant and open fields, and not in the confined library. To gentlemen whose property is realized in land, this is one of the most important objects they have before them. Indeed to them it becomes a duty, which they owe not only to themselves,

selves, but to the community ; as it behoves every man to make the most of his property, by every laudable means ; and as the public is likewise interested in the produce of the earth, which the landholder has greatly in his power to increase or diminish, by good or bad management.

When gentlemen turn their thoughts into this channel, they will never want employment ; and may be assured of sitting down from their labour with the most comfortable reflections ; knowing that their own private fortunes are flourishing at the same time that the mechanic and labourer receive advantage from their exertions.

But it has been very common to men of fortune, to aim at increasing their property by purchases, which have at best paid them only three per cent. while

they have neglected the most obvious improvements upon old branches of their estate, which would have paid them at least four times as much. Instead of running into this error, it would be better to consider what particular advantages their estates derive from nature and situation, and whether those advantages are made the most of? whether the best modes of art are employed in cultivating them? and whether industry accompanies the whole? If there be any defect, the remedy is easy, and the application is all that will be wanting.

APPLICATION OF SOIL TO ITS RIGHT
USE.

NOthing can be more absurd than to attempt raising particular crops upon land where the soil is naturally ill calculated for their production. To find out what corn, grass, or plants are most suitable and apposite to the ground that is to be sown or planted, is the nicest part of a farmer's business ; and for want of proper attention to this main object, ill success and failure is frequently the consequence. For where an intelligent farmer would thrive and grow rich, a blundering inconsiderate man will quickly reduce himself to ruin.

There are rich loams, and mixed soils, of various complexions, which are kind
and

and favourable to the growth of most branches of the vegetable kingdom. The value of these will be easily found out, by growing on them whatever finds the readiest and quickest way to market. But there is a much greater number of soils, whose nature must be studied before any great advantage can be derived from them; and as they are frequently blended together, and in colour and appearance much alike, tho' very different in their quality, it is extremely difficult to describe them sufficiently in writing. Their temper, as I have hinted in my introduction, is best found out by their own natural produce; by the samples of grasses, and weeds, which are always to be found on the borders and skirts of the fields, which always characterize them truly. This makes it essentially necessary that every man should study at least
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the nature of all natural grasses, wild plants, and weeds, before he can presume to be a general judge of the quality, and value of land.

Some soils are however so distinct in their nature as to be easily described.

I shall first mention blue clays and cohesive loams, which are by nature evidently designed for grass; and if well laid down, and properly managed, are generally found to be some of our most valuable pastures.

The red and black clays, if they be not too tenacious, are in general well calculated for wheat, oats, and beans; but require good culture. If their depth be considerable, oak likewise flourishes well upon them, which is also found to be of the best quality.

Sands of all kinds, and light soils of every degree, are calculated for the
turnip-

turnip-husbandry, barley, and artificial grasses.

Thin-skinned, chalky land is clearly adapted to the growth of beech ; which thrives prodigiously, when nothing else will grow upon it. But tho' this be a fact beyond contradiction, many extensive tracts of high land remain naked and unprofitable, which, by proper planting, would become useful, and highly ornamental.

Chalk, of greater depth, is good for St. Foin ; as well as some sorts of gravelly-land.

Woodcock-foil generally consists of yellow, or white clay, with a mixture of gravel ; is seldom fruitful, and, besides its standing in need of draining, is very unkind, and difficult to work ; and therefore better devoted to pasture.

All land, of every kind, which is so disposed in situation as to admit of flooding, either by rivers, brooks, roads, or yards, should be turned into meadow-ground.

Boggy lands which lie low, and cannot be drained effectually without being scarified, should be planted with black poplar and withe. Little angles and odd nooks, near running rivers, should be turned into ozier-beds, or planted with white poplar.

Barren heathy-lands may be profitably planted with Scotch firs, and wild cherry-trees.

Ash, one of our most useful and profitable trees, which has every farmer for its enemy, because it obstructs his plough, and is noxious to other woods, as well as corn; should be planted in angles and by-places.

Elm,

Elm, as it grows erect, and oak, as it receives its principal nourishment from a tap-root, will do best in hedge-rows. But more of this under the article of **TIMBER.**



DRAINING.

DRAINING.

DRaining is the first improvement which wet lands can receive ; for, till the land be laid dry, 'tis in vain to bestow any kind of manure upon it, because it soon washes away, and the rush takes possession of it entirely. In ploughed land, where the soil is naturally wet, different remedies have been attempted. In the famous vale of *Evesham*, in *Worcestershire*, the land is thrown into ridges from ten to thirty yards wide, and raised in the middle, to an elevation of at least a yard above the level, which is attended with great loss and inconvenience. The furrows very often contain water three yards wide. The headlands are thrown up in the same manner, which dams up the water in the furrows, so that it cannot get off, but rots the seed, and destroys

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the crop. When the season is remarkably dry, another disadvantage results from this awkward method. The tops of the ridges, if the soil partake at all of gravel, are sure to burn. Both which disadvantages are brought on by the extreme the occupiers of those lands have run into, by increasing the convexity of the ridge from time to time. Besides the real loss they sustain, it must be a great inconvenience to occupy land in this manner, which nothing but use can reconcile. This, of all methods of draining, may safely be called the worst; and it is to be lamented that no other can now be suggested, in this, or any similar case; since it would not answer, by any means, to throw the ground into any other form, as the labour would be immense; and the manure, which has been laid upon it for centuries back, must in that case be buried,

ried, and a poorer foil brought upon the surface. It is therefore to be wished, that no similar practice may be introduced, upon a like foil, in any part of England.

Another mode of draining ploughed land is, by throwing it into very small ridges of two, sometimes four, or six furrows only; and provided the ground be ploughed in such a manner as to give the furrows a free discharge, this is by no means a bad practice; because it takes off all surface water, and the land is not more difficult to occupy, and may be thrown again into any other form at pleasure.

But the most effectual way of draining ploughed ground is that practised in Essex; where the farmers have the merit of laying land, which is naturally full of springs, entirely dry; and of obtaining great crops where no corn would other-

wile vegetate. The common way is, to have a principal drain, six or seven inches deeper than the ordinary drains, for the latter to empty themselves into. There is no general rule, with respect to the proportion of ground which these master-drains will serve. Sometimes one is sufficient for ten acres; but in this case the land must lay all one way, and the soil must be tenacious in its nature. When the descent lies different ways, there must be a principal drain to every slope. But where there is a good discharge into a ditch, which has likewise a good outfall, many people prefer it to a master-drain, because any obstructions which may happen, are easier remedied; for when a single drain is choaked up, the place is easily found out; but when many drains are connected together, it is often difficult to find out the defect. And sometimes the
 burrowing

burrowing of a mole will occasion a stoppage.

The method of opening the principal drains is, to plough four furrows, throwing two each way; the two inside furrows being ploughed deeper than the others. After the plough, the earth is sunk a spit deep with a common spade, and afterwards another spit with a land-ditching-spade, called a griping-spade. Last of all a scoop is made use of, to rake out all the loose earth. This drain when compleated is about two feet deep. The common drains are begun, and finished, like the principal drains; but the spit with the common spade is omitted; and therefore they are not above eighteen inches deep, two and a half wide at bottom, and three and a half at the top of the grip. In this proportion, the narrower they are, the better. The drain is

filled up as high as the top of the spade-work, with brush-wood at the bottom, and a piece of wood, as big as a man's leg, on the top; a little straw is shaken over that, and the remainder of the drain is filled up with earth. The greater the proportion of wood, and the harder the earth is pressed in, the longer will be the duration of the work. The wood must be such as runs pretty free in its branches. Elm, alder, and fallows are as good as any.

It is rather difficult to make an exact estimate of the expence, because the price varies, in the county of Essex itself, from one penny to three pence per pole, in the workmanship only; and some land requires the drains to be nearer together than others; but supposing the drains to be a pole in width from each other, which is the common distance, the following

lowing calculation, upon an average, will be pretty exact for an acre :

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Sinking the ditch to obtain an outfall	0	7	6
Drawing the furrows - - -	0	2	6
160 poles of digging and filling up, at 2 <i>d.</i>	1	6	8
Wood, estimated at a faggot of twelve feet long to a pole, carriage in- cluded, at 4 <i>d.</i> per faggot -	2	13	4
Half a load of straw, and carriage -			
Extra-digging in the ends where the plough will not reach -	0	1	6
	<i>£.</i> 4 18 6		

This improvement varies according to the soil. Upon an absolute sand it will indeed barely answer. Upon a gravel, which is the soil where springs most abound, or upon a mixture of loam and gravel, it will last from five to twelve years. Upon a clay, or stiff cohesive soil, it will last twenty. But even in the former case, it is apparent that it will answer the expence, as it is done in general by the rack-tenants in that county,

and very frequently by tenants at will.

This kind of draining, where it can be practised, is the neatest and best; but it would be certainly an improvement, if the depth of the drains were varied according to the bed of the springs. One universal principle in this mode of draining must be attended to, which is, to get a good outfall, or discharge, and to draw all the drains obliquely, across the descent of the ground, not right down with, nor right across the fall. The advantage is obvious; for if a spring rises in any part of the ground, it cannot, in this case, have far to run, before it finds the means of getting off; but if the drains were drawn right down with the descent, it might ooze down, parallel with the drain, for a furlong in length before it would get into it, tho' it were only at the distance of ten yards from it. And, on the other
hand,



Fig. 1.



A Field Drained by one of its Ditches, instead of a principal Drain. *A Field Drained by a Master Drain in the Middle being lower in that part than at the Sides.* *A Field Drained by two outside Master Drains, being higher in the Middle, than on the Sides.*

Note, The Main Descent of the Land, is supposed to be from the Figures 1 to 2.

hand, if the drains were drawn across the descent upon right angles, and a dead level, they would of course remain full for want of a free discharge, and not have their proper effect. A little fall must be allowed; but, the less the fall, the greater will be the duration, as the drains will not so soon choak up, by the washing in of the soil. This method of draining seems to be the most excellent, upon springy land. I subjoin a sketch of the usual way of opening these drains, marked N^o. 1.

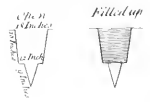
There is a method of covered-draining with stones practised in some parts of *Somersetshire*, and *Wiltshire*, which is very expensive compared with that in *Essex*, but then its duration is much longer; for when it is well executed, the farmers think it completed for ever. Lord *Weymouth's* extensive park, at Longleat, has
been

been drained in this manner, at an immense expence, stones being very scarce near him. The expence of these drains, in workmanship, is from six pence to seven pence a pole ; in Essex it scarce bears half that price. I should prefer either of these methods according to the ease with which the materials are obtained.

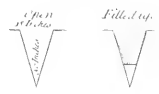
There is still another sort of covered draining, which may be adopted in a very stiff, tenacious soil. It is called turf-draining; and, besides that it is the cheapest of all, I believe it to be as lasting as any, if the land be sufficiently cohesive : But upon a loose, crumbling soil it is impracticable. This draining is of two kinds ; in the one, the inverted turf is put upon a shoulder, as described N^o. 2, leaving a hollow part under it, and the remainder of the drain is filled up merely with the earth that came out of it.

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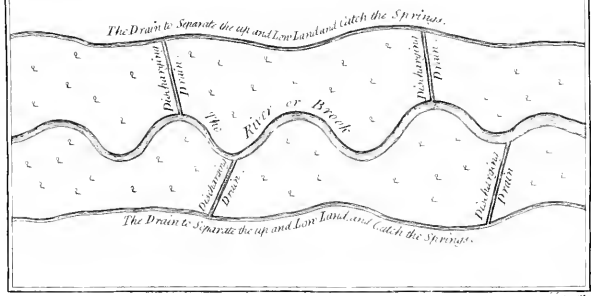
N^o 2.



N^o 3.



Sketch N^o 4.



The other method is, to cut out a wedge, in the form of a Roman figure of Five, described N^o. 3; and, when it is taken out, to cut off about six, or eight, inches of the bottom part of the wedge, and to put the remainder into the same place again. I believe, if a few rushes were put round the bottom of this wedge, so as to keep the lower part from dropping, and the ends of the rushes were drawn upwards, between the sides of the drain and the wedge, it would be an improvement to this last method. Where either of these methods are made use of, care must be taken, to keep off all cattle till the drains have had time to settle.

But open drains are to be preferred to the Essex, or any other mode of covered draining, in all marsh and boggy land, and in sandy soils, where the hollow drains are more liable to be choaked;

and in meadows, where they serve for fences, as well as laying the land dry: but here the same rule should be observed, to sink them, as much as possible, in the before-mentioned oblique directions.

In flat countries, such as *Norfolk* and *Suffolk*, there is a sort of bad meadow-land, which skirts the river, in a narrow form, and generally lies extremely wet, from the springs which issue out upon it, from the higher ground, on each side. In this case, open drains should be sunk, parallel with the river, on each side, between the up, and the low-land, just at the top of the places where rushes frequently shew themselves. These drains should be sunk sufficiently deep, to catch all the springs, which the high grounds produce; and may be deeper, or shallower, as the springs lie. When these drains are charged to a certain height,

they should be eased by a smaller drain; which may be cut, occasionally, right down with the descent; and communicate, as an outfall, with the river; according to the sketch annexed, N^o. 4. But it must be observed, that this last method of draining is merely contrived to guard the meadow land from the dripping of the higher ground, as it is seldom wet in itself; and this practice is by much the cheapest and most effectual.



NATURAL GRASSES CONSIDERED.

MR. *Stillingfleet*, in his Observations upon Grasses, has described a few of the best sorts so clearly, that any person, who directs his attention to this useful study, may easily distinguish them.

Annual meadow-grass is one of the most valuable; for though it does not run so long in the stem, as some other grasses, it produces a vast deal of blade of a sweet and nourishing quality; and is most to be desired, of all grasses, upon land that is chiefly used for pasture. Indeed upon this sort of land it mostly shews itself. Mr. *Stillingfleet* took notice, that a great deal of this grass appeared, on a much frequented walk, on Malvern-Hill, tho' he could not find any of it, upon any other parts of the hill. This remark of
his

his led me to study the particular nature of this grafs, more than I should otherwise have done. And I am of opinion, that almost all land is impregnated with its feed, and will of course produce it, though not in equal quantities. So that it does not seem necessary to sow it, but merely to encourage its growth. When the surface lies hollow, other grasses, of a coarser nature, and possessed of deeper roots, get the better of it, and are apt to stifle it. But when the same land becomes trodden, this grafs immediately shews itself; and if the pressure be frequently repeated, it very soon gets the advantage over most others, as may be seen at the entrance, and outfides, of most fields, where the feet of cattle give it, as it were, a new birth. So that as pressure alone does the business, it seems a great argument in favour of seasonable rolling,

which

which is indisputably a very fine improvement upon all meadow, and pasture, particularly upon light dry land. By this improvement the moisture is more preserved, and the earth, being pressed close to the roots of the grass, preserves it from burning. Those who are against rolling assert, that the quantity is lessened. In hay, I believe, it may sometimes be the case; because rolling, which fines the surface, and thickens the set of annual meadow-grass, checks and weakens the long spungy grasses, which frequently compose the bulk of the crop. But then the quality of the hay, after rolling, will be so superior to what it would be without it, that two tons will be as good as three; and if the land be grazed afterwards, the advantage will be still greater.

Some of the next best grasses are, the *crested dog-tail*, the *vernal*, the *sheep's fescue*,

fescque, and the *fine bent*; which are all indications of sound land. And the observation which is frequently made, that most common things are the best, is particularly verified in these grasses; for they visit us, in greater proportion than most others, and are equally excellent in hay, as in the green blade, which is of a fine nature. They are particularly wholesome for all kinds of cattle; and, provided we attend to them properly, are much to be improved. Nothing is better for these grasses than the sediment of ponds; or, next to this, a generous compost made of three parts of good, fresh, maiden earth, or the scouring of ditches, and (if the soil be a clay, or stiff in its nature) the fourth part chalk, or lime. But if it be sandy, or a light soil, two parts of maiden earth, one other part clay, and a fourth part rotten dung, will

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be

be best. This compost, well mixed, should be laid on before Lady-Day, be well worked into the ground with bush-harrows, and repeated at least every fifth year; which will not only be a very high improvement to these grasses, but be the means of producing a great deal of white clover.

The *flote fescque*, or *marsh bent*, another most valuable grass, is found in moist lands; is to be improved beyond all others, and at a less expence, merely by flooding; which I shall endeavour to shew hereafter.

Mr. *Stillingfleet* was very earnest, in advising husbandmen to gather, and sow, some of the best of these seeds in their ground, instead of filling it with the stale rubbish which they generally make use of. Great advantage might certainly be made of this hint, particularly when
land

land is laid down for meadow, or pasture. In this case, the best grasses cannot be collected at too great an expence; for I have seen a small spot of land, in the middle of a large piece, which was laid down, twelve or fourteen years since, by Mr. *Stillingfleet*, upon the estate of Mr. *Price*, of *Foxley* in *Herefordshire*, with some choice feeds, at the same time when the remainder of the field was laid down with common feeds; and this spot is considerably better than the rest. It not only appeared so to my judgement, but was allowed to be so by Mr. *Price*'s bailiff, who was well acquainted with its produce.

From Mr. *Stillingfleet*'s experiment, and my own observations, I am clearly of opinion, that any person who has land, calculated for grass, may improve it, by this method of laying it down, to a much

greater degree than he can in the usual way. But as he may be at a loss sometimes to distinguish the grasses, and may not, at first, know which suit his soil best, I advise him to proceed in the following manner, *viz.* Let him clean a piece of land effectually, and sow different natural grasses upon different ridges of the same piece. Let others, mixed, be sown upon other ridges. Give every sort the same attention, but at the same time let each have variety of management; which may easily be done, by setting two or three lines of hurdles across the ridges. One part of the whole may be fed, another part may be mowed, another part may be manured with different sorts of manure. By this means, in two or three years, the nature of every grass will be found out; and an intelligent farmer will soon know which to prefer

prefer for meadow, which for pasture, and which to reject.

The next best method of getting clean feed is, to hurdle off clean spots of sheep-downs, which have been fed quite bare. This, tho' seldom practised, is a good way of coming at clean natural feeds.



ARTIFICIAL GRASSES CONSIDERED.

St. Foin.

THOUGH *St. Foin* be not so generally understood, nor so universally cultivated, as some other artificial grasses, I shall venture to give it the preference to all others, not only for its hay, which exceeds in goodness every other sort, but for the advantage of the after-grass; which is particularly good, between Michaelmas and Christmas, when the natural grasses begin to decline. Nor is it less valuable on account of its duration, by which it supplies, in a great measure, the place of meadow and pasture in hilly countries, where there is a deficiency of such herbage, or on soil where it cannot be obtained. It is truly a most useful and valuable grass, and cannot
be

be too highly esteemed. In some parts of *Hampshire*, *Wiltshire*, and *Berkshire*, there are considerable tracts of land, sown with *St. Foin*, which now let from twenty to thirty shillings an acre, which would not be worth above half that rent, in corn, or in any other mode of husbandry.

The land proper for this grass is, chalk, gravel, or almost any mixed mould, provided it be not wet, and that it has a rocky, or hard, bottom, to check the root, at about a foot, or fifteen inches, depth; otherwise it will spend itself below the surface. This therefore may be considered as a general rule—that *St. Foin* should never be planted where there is a great depth of soil.

The ground cannot be made too clean, before it be sown; so that it generally succeeds best after turnips; and, as well as most other grasses, is better sown with

about half the quantity of barley, which is usually sown for a full crop, than by itself. For the barley will shade, and keep it moist, during the first summer; and, at the same time, not injure it, as the crop will be lighter than ordinary. About four bushels of *St. Foin-feed* is enough to an acre; and as the seed is large and coarse, it ought to be completely buried; and therefore 'tis best to plough it in with a very shallow furrow. The first autumn it ought not to be fed at all. Every succeeding summer it may be mowed for a crop; and the second autumn it may be fed, with any cattle, except sheep, till Christmas, but not close. Every autumn afterwards it may be fed with sheep, as well as other cattle, and may be fed as close as they can bite, provided it be laid up by the middle of January.

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The second winter after sowing, it should be manured with peat-ashes, if they can be had at any reasonable rate; otherwise, with any other ashes, which are the best manure for this grass. And if this dressing can be repeated every third year, the *St. Foin*, if it happen to take good root, will last sixteen, or eighteen, years; and when the land is broken up again, it will be considerably improved by the roots, which the ground will be full of. It does not attain its perfection till about the third year; and about the tenth it will begin to decline, unless greatly assisted by manure.

Clover.

Clover may be esteemed, from its excellent quality, great produce, and meliorating root, which is a great improver of land, the second artificial grass in point
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of value. It is now in such general use, that it seems almost needless to describe the manner of cultivating it; therefore it will be sufficient to observe, that the best way is to sow it on clean land, with a full crop of barley, after turnips, at the rate of twelve pounds to an acre. The duration of this grass is, however, very short, except on fresh land; which points out the necessity of keeping off its succession, longer than the common custom, by intermixing with it as great a variety of other crops, as may be suitable. If it had not been for this defect, I should have been inclined to have given it the preference, even to *St. Foin*. But on land where it has been often repeated, it seldom will continue above two years; and, very often, not above one; and though manure will increase its crop, it will not prolong its stay. This grass
evidently

evidently grows kindest after turnips ; and any soil which will bear them, is suitable for it. The usual way is, to mow it in June, and make it into hay. Two tons upon an acre may be reckoned a medium-crop. As its quality is nourishing, it is particularly good for all draft horses, oxen, fattening, and milch cattle ; but not so much respected for saddle-horses. Sometimes it is mowed a second time, late in the month of August ; but the hay of this second crop is less in quantity, and of an inferior quality to the former ; and therefore, if the farmer be not in any great want of hay, he will do well to feed it, instead of mowing it a second time.

When it is saved for feed, the custom is, to feed it down close until the latter end of May, and no longer ; which early feed is a vast advantage for ewes, lambs, and

and other cattle, as it comes in before the natural graffes.

These are the common advantages derived from this grafs; but a much greater benefit may be obtained by cutting it green, as often as it attains a sufficient growth, and carrying it into stables, and yards, to be eaten, by different cattle, out of racks and cribs. In this manner, it will certainly support more than twice the stock it would do if fed off upon the ground, where it grew; besides the additional quantity of manure that will, by this method, be made in the said stables, and yards, if the same are kept littered with any sort of straw, or even rushes, or fern; which increase of manure will fully compensate the farmer for his expence, in cutting, and bringing the clover into the yards. I have known this method used, in many parts of England,

to

to very great advantage; and I apprehend the great difference may be accounted for as follows. The quick growth of this grass, after mowing, shades the ground, and prevents the sun from exhaling the moisture of the land, so much as it would if fed bare; consequently it continues to spring with more vigor; and the moment one crop is off, another begins to shoot up. Whereas when cattle feed it, they frequently destroy almost as much as they eat; and, besides, bruise the necks of the roots with their feet, which prevents the clover from springing, so freely as it does after a clean cut by the scythe. In hot weather, which is the common season for feeding *clover*, the flies too are generally so troublesome to the cattle, that they are continually running from hedge to hedge, to brush them off; by which it is

inconceivable what injury they do to the crop. But when they are fed in stables, and yards, they are more in the shade; they thrive better; and, at the same time, consume the whole of what is given them without waste.

As it is almost a general practice, to sow wheat after clover, and essentially necessary to manure for it, unless the clover has been manured the preceding year, it is greatly for the farmer's interest, and by much the best husbandry, to manure the clover; for, by this means, he greatly augments his present crop, and the land will be in fine condition for a crop of wheat, without any farther assistance.

There is a species of *clover* called *cow-grass*, which has been lately cultivated, in some parts of *Hampshire*, with great success. The ground relishes it extremely
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well, and it is by many farmers preferred to the *common clover*. It grows more floridly, and thrives better upon poor land. At first sight they are not easily distinguished; but, on a close inspection, the *cow-grass* will be found of a darker green, and more pointed at the ends of the leaves; the stalk is of a closer texture, and not so porous as the common clover. Some people imagine this to be a native of this country, if so, it may be highly worth our attention.

Darnel, or Perennial Rye-Grass,

Sometimes is used as an *artificial grass*, and is then sown with clover at the rate of a quarter of a peck to an acre. Sometimes it is sown by itself at the rate of two pecks to an acre, and at other times in the proportion of a gallon to an acre,

with eight pounds of clean trefoil (exempt from the husk). It comes earlier than most other grasses, and all cattle are particularly fond of it in the spring of the year ; but towards Midsummer the stalks become dry, and cattle then refuse them ; therefore, in all pastures, this grass should be kept down, by being constantly fed. When mixed with clover and mowed for hay, it may be spring-fed notwithstanding, and is even the better for it ; because it would otherwise be ripe before the clover. When sown with clover its greatest advantage is experienced in the second and third years, for as the clover declines, this increases in proportion. When mixed with trefoil, it is a very good grass upon light land, designed to continue several years in sheep-pastures.

Lucern.

LUCERN.

Lucern is a valuable grass, but requires so much weeding, and attention, that it is not by any means calculated for large farms; but if cultivated upon a small scale, it would prove highly serviceable in dairy-farms, or to any person who is obliged to keep horses, and cows, and has but little land.

This grass, like *St. Foin*, ought to be checked at a certain depth, or it will spend itself too much under ground; but instead of a foot, or fifteen inches staple, it will require from eighteen inches to two feet, and the land ought to be tolerably good in quality.

The best way is, to sow this seed in drills, at about two feet apart. The ground must be first made very clean, and

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the feed must not be buried above two inches deep. The first year it will require an infinite deal of labour in weeding, for it has an utter abhorrence of every other neighbour ; but, when once it has got good root, two weedings in a season will be sufficient ; which may be done by women, and children. But every time it is cut, it ought to be hoed ; and thus treated (with a light coat of rotten muck every spring) it will last ten or twelve years, and bear cutting four times in the course of the summer. The best way is, to foil cattle with it green. It is very nourishing to horses, and causes cows to give a great deal of milk.

T R E F O I L.

Trefoil is a very useful grass on poor land ; for the closer it is fed, the more
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it will spread ; and therefore it is highly useful in laying down land for sheep-pastures ; but is not held in any esteem for dairies, as it gives the butter a rank flavour. Nor is it calculated for mowing ; for it produces but little after-grass, and the hay is of a very critical nature ; for, if it receives the least injury by wet, the leaves mat together, and it becomes mouldy, and of very little value.

WHITE DUTCH CLOVER.

The *White Dutch Clover*, though last mentioned, is of the first consequence. Nothing is so good for laying down lands for pasture, as this, mixed with other grasses ; nothing more sweet, and nourishing for all kinds of cattle ; and, when used as an artificial grass, it is the best substitute for the *common clover* which

can be made use of. But its good qualities are so well known, that it must be needless to add any thing more in its favour.

I purposely omit *Burnet*, as it does not seem to have had sufficient trial, to discover what may be expected from it.



DIFFERENT METHODS OF IMPROVING
MEADOW AND PASTURE-LAND.

MEADOW, and pasture-land is oftener neglected than ploughed ground, notwithstanding it generally admits of a much greater proportion of improvement.

The first, the most easy, and the greatest of all improvements is made by flooding. In *Dorsetshire*, and *Hampshire*, there are meadows which are increased, from ten shillings to three pounds an acre, by bringing the water of the common river over them; which is easily effected by means of little trenches, or grips, which shoot the water on, and draw it off at pleasure. These meadows are particularly useful for the nourishment of ewes, and lambs, in the spring; and after they

are eaten quite bare, so late as the latter end of April, will often produce, in ten weeks time, three tons of hay to an acre, without ever receiving any kind of manure, or any other attention, than the throwing them under water at proper seasons; which destroys all weeds, and enriches the land to a very high degree. There are thousands of acres, in many other counties, which might be equally improved. The temptation is certainly great enough, to put any one upon his mettle, to find where the thing is practicable, and to encourage him to adopt it. If the great difference between 10s. and 3*l.* an acre, in yearly value, strike us, the difference between 15*l.* and 90*l.* in the fee simple of an acre of this land, will still more strongly affect us, though the proportion be the same,

There is another sort of flooding,
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which is likewise very beneficial, and which may be easily adopted in all hilly countries. I mean that of throwing the scouring of hills, and roads, and the dripping of yards, over land. This is sometimes done, and as much in *Herefordshire* as in any other county ; but though the improvement be immense, the practice is by no means general. The advantage is often seen by the tenant, but unless he has a lease, he seldom avails himself of it ; and sometimes it is neglected through indolence. But whatever motives may keep the tenants from availing themselves of such advantages, owners of land, and gentlemen's stewards, are unpardonable, in waving such beneficial improvements.

Flooding is truly the best of all improvements, where it can be effected ; and there ought not to be a single acre of land neglected, which is capable of it.

As rolling, and pressure, bring the *annual meadow-grass*, so flooding immediately begets the *flote fescque*, or *marsh bent*, the richest of all grasses; being equally bulky in quantity, and nourishing in quality. This is the grass, that swims upon the tops of ponds; springs up where water has stood; and which cattle frequently plunge up to their bellies to reach. Horses, and cows, are ravenously fond of it; and, according to Mr. *Stillington*'s account, the blade is not only sweet, but the seed which it produces is gathered, and eaten, by the common people in *Sweden*, as we eat millet.

There is a sort of pasture, to be found in most counties, where land lies to a cold aspect, which is very much inclined to moss; which chokes up the grass, and impoverishes the land. Penning sheep upon it is one way of killing the moss,
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and improving the pasture; and another good method is, to harrow it well with sharp-tined harrows, in the spring of the year, and to manure it afterwards with any compost of a warm nature. After such harrowing it is a good practice to sow *Dutch clover*.

There is another sort of pasture, which produces little more than a sharp, coarse-bladed grass, which the farmers call Pink, or Carnation-grass; from the resemblance the blade of this grass bears to the blades of these flowers. This is the same grass, which grows in great tufts, or bunches, in coppices, and has but little nourishment in it. This land wants draining; and, when drained, should have a great deal of stock kept upon it, by strewing turnips before them, or foddering them with hay, to invite the *annual meadow-grass* to spring,

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Another sort of pasture, in many parts of England, is overspread with alders, and other scrubby wood, and bushes; which, besides carrying a very slovenly appearance, harbours wet; and the shade renders the turf sour. This rubbish should always be extirpated. Wood and grafs never do well together. If it be necessary to have wood of this sort, it should be raised in separate plantations, in the manner I shall hereafter point out.

Another sort of pasture still is overrun with ant and mole-hills; owing, at first, to neglect, in the occupier of the land. Such turf as this is generally old; sometimes it is too bad to recover; but oftentimes, when the hills are laid, proves good land. There are two ways of curing this ground; the one is by crossing and hollowing up the turf, scooping out the middle part, spreading it about, and
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laying the turf down again in the same place. This way is to be preferred, where the piece of land may be in view of an habitation, or under any similar circumstances. But the most effectual improvement is, doubtless, to pare them entirely off, to lay them in heaps to rot, which should be mixed afterwards with a moderate quantity of lime, and then spread over the same piece of land from whence they came. As these ant hills originated for want of rolling, it is almost needless to recommend rolling as a complete finish to this improvement.

When meadows are very coarse, whether naturally so, or occasioned by rushes which grew on them, before they were properly drained, there is no better improvement for them, than strewing twenty, or thirty, load of sand to an acre over them. It tends greatly towards fining
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the surface, and generally begets a set of *white clover*.

The earth is so generous a parent, that we find all land repay us for our labour, and skill; but it will appear, on the slightest investigation, that no land pays so well as meadow, and pasture. Where improvements upon ploughed land pay a crown, the other generally pays a guinea. Therefore when land is newly laid down in pasture, it ought to be well manured the third or fourth year, let the expence be ever so considerable, because it will bring a good set of grasses much sooner than they would otherwise come; and double the land in value for seven or eight years afterwards.

I shall close this subject with advising all farmers to be careful, not to overstock their pasture land; for when they do, they are great losers by it. Land,
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when fed too bare, is apt to burn in summer, and to be chilled in winter. Besides, the necks of the roots are so injured by very close biting, that they do not afford so quick, or free a spring to the succession of blade, as would otherwise be. But, on the other hand, I do not advise the leaving a long set of grafs on the ground. The medium will agree best with all land; and be attended with most advantage to the occupier. And the more sorts of cattle feed upon land, at different intervals, the better. Alternate mowing, and feeding, is likewise good. The one fines the turf, and the other enriches it.

THE GREAT ADVANTAGE OF A SUIT-
ABLE STOCK OF CATTLE.

NEXT to the judgment required, in adapting each soil to the purpose for which nature intended it, the stocking of land with proper cattle is one of the nicest parts of the science of farming. Where nature is left to herself, she always produces animals suitable to her vegetation, from the smallest sheep on the Welch mountains, to the largest sort in the Lincolnshire marshes ; from the little hardy bullock in the northern highlands, to the noble ox in the richest pastures of Somersetshire. But good husbandry admits of our increasing the value of the one, in proportion to that of the other. Land improved enables us to keep a better sort of stock ; which shews the double

ble return the earth makes for any judicious attention, or labour, we bestow upon it. The true wisdom of the occupier is best shewn, in preserving a due equilibrium between this improvement of his land, and stock. They go hand in hand ; and if he neglect the one, he cannot avail himself of the other.

We should first consider, what kind of cattle will answer our purpose best, in the cultivation of our ground ; and next, what sorts pay best in the consumption of our produce.

Upon a light soil, where two horses are sufficient to manage a plough, or where, if more be employed, a quick motion is required, horses will always be found most useful, and profitable ; because four horses on such land will cultivate as much ground as eight oxen. But where the soil consists of a clay, or any heavy,

heavy, strong ground, such as requires four horses, and admits only of a slow motion, oxen will there have the advantage; and be in the proportion of twelve oxen only to eight horses. In the former case, the oxen would be double in number, in the latter, they are only as three to two.

When this distinction is clearly made, each animal will be found to have his excellence; and every intelligent occupier of land will know which to prefer. The horse is so delightful, so spirited, and pleasant a servant, that one would wish to make choice of him upon every occasion; but when interest is thrown into the opposite scale, the ox will often deserve the preference. For the great expence of supporting the horse, his natural decrease in value, and proneness to accident, by which that value is totally
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lost, are great drawbacks in his account, especially when we consider the more moderate charge of supporting the ox, and the profit which is made of him, even when he is past his labour. This is obvious; of these therefore I shall say no more; they are equally advantageous upon different soils, and neither species is wholly to be preferred, or wholly excluded.

Sheep may, next, be considered as one of our most profitable animals. Three great advantages result from them to their master. Their annual coats, their increase in value, or number, and the excellent manure which they bestow on land. Indeed, upon all light soils, I might mention a fourth advantage reaped from them ; since their treading is almost as great a benefit as their manure.

Many farmers have found great advan-

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tage, in buying sheep from the poorest spots, as they generally thrive most when they come into a richer pasture; like trees, which endure transplanting, the better for coming from a poor nursery. They likewise think, that they endure folding, and penning, better than sheep which are bred on a more luxuriant soil. They are certainly right in these observations. And therefore this reason should induce the occupiers of poor land to let their artificial grasses continue longer before they are broken up, that they may be able to breed the more sheep: in which they would also find their profit, and at all times a ready market for them.

With respect to the notion which farmers are too apt to entertain, that all kinds of sheep will not endure penning; I am apt to think they labour under an error. I rather believe that all lean, or
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store-sheep are the better for being folded. They are generally more healthy, as they take their sustenance at regular intervals, and are kept from eating the wet grass too early in the morning, which is generally allowed to be unwholesome to them. In the most famous sheep counties, *Dorsetshire*, and *Wiltshire*, penning, or folding is universal. And above all other advantages, this one is certainly obtained by it; when such sheep are put to fatten, they thrive much better, and faster; as oxen do, that have been moderately worked.

Upon moist lands sheep are not proper stock. The dairy will here turn to greatest account; and women and half-grown children will from hence find sufficient, and becoming employment. Where this is the case, pigs should be bred, of

all animals the most profitable. Potatoes, and carrots boiled in the skimmed milk, and whey, make an excellent food for young pigs ; and every one knows how far an acre of these useful roots will go, and how profitable a farrow of pigs is to the breeder. But great farmers, whose sole object is to grow corn, look upon hogs as troublesome animals, and affect to despise these profits ; tho' even to them they would not be inconsiderable. Besides that hog-dung is the best of all manure.

Upon strong, florid pasture, the large ox seems the most suitable stock.

Upon turnips the Welch or Scotch bullock is most profitable.

Thus different land, and different produce seem, in point of profit, to require different animals to cultivate the one,

and consume the other ; and it is worth our while to be at some pains to make the best application.



MANURES CONSIDERED.

THE manuring of land is so necessary a part of husbandry, that no object is more essential, in the practice of farming, than that of procuring a suitable, and sufficient quantity of this useful improvement. We find, that the richest land will not yield a long succession of crops without help: at the same time that the poorest soil will make a considerable return, when we take pains to assist it! We should therefore first endeavour, to raise as much vegetable, and animal, manure as possible; and, next, contrive to multiply it, by adding such other useful, component parts as industry may find, in different situations.

Nothing tends so much to the increase of vegetable, or animal manure, as a judicious

delicious choice in our system of cropping. I am inclined to believe, that any limited portion of land, tolerably good in nature, will produce, if well cultivated, and properly stocked, vegetable and animal manure enough to support itself, in good heart, for ages, without any foreign aid. But no exact rules can be given in writing, what the course of cropping should be, since soils vary so much. But it may be asserted with confidence, that the most advantageous one does not consist, in the old mode of sowing three crops of grain, in succession, and then letting the ground remain two, or three years more without yielding any thing, under the notion of recovering it by rest. This system should be wholly exploded. The husbandry of the *Austrian Netherlands* is, undoubtedly, the most useful that is practised. There the land, like our gardens, yields

a crop every year without diminishing the least in its own value. The whole contrivance lies, in interweaving, as much as possible, the crops which are particularly useful to man, such as wheat, barley, potatoes, beans, and pease, with the crops most useful to beasts, such as turnips, carrots, vetches, cole-feed, and artificial grasses. The more we plant, or sow, to the mutual benefit of man, and beast, the nearer we are to the best system; and consequently to that which will produce the greatest proportion of vegetable, and animal manure.

The turnip-system, in *Norfolk*, comes as near to the practice of the *Netherlands*, as any made use of in England; one of their best courses is divided into six divisions, as follows:

1, Wheat after clover, or artificial grasses.

2. Bar-

2. Barley.
3. Turnips.
4. Barley, with clover, or other artificial grasses.
5. Clover, or artificial grasses, of the first year's lay, generally mowed.
6. The same of the second year's lay, generally grazed.

To support this course of cropping, they manure invariably for wheat, and turnips, but not for any other crops. They support a great deal of stock by this means, and keep their ground in good heart, and very clean ; but find an inconvenience, in their clover's coming round in too quick a succession; by which means the land is tired of it. This system might be improved upon, by a closer imitation of the *Flemish-Husbandry*, by dividing the land into eight divisions,

fions, cropped somewhat in the following order :

1. Year, wheat after clover of one year's lay.
2. Ditto, turnips.
3. Ditto, barley.
4. Ditto, pease, beans, potatoes, vetches, or cole-feed.
5. Ditto, wheat.
6. Ditto, turnips.
7. Ditto, barley, with clover feed,
8. Ditto, clover.

By this method the ground will, almost regularly, produce an alternate crop, for man, and beast; and the land will never loath the clover, because it will only stand one year out of eight, instead of two out of six. Every other crop will likewise be meliorating. The ground will be kept perfectly clean, and the produce will occasion manure enough, to keep

keep it in good condition. I would not however insinuate this to be practicable, except upon pretty good land. Where it is naturally poor, this system cannot be adopted. Here sheep will be found the most profitable stock; because the manure obtained by penning will be the cheapest and best improvement to be had; and therefore such grass-seeds should be sown, as are most durable; which should be continued in the ground at least four years, taking care to manure them well, the first year after they are sowed.

Any intelligent farmer will, I am persuaded, see the force of this argument; and consider a good course of cropping, as the first step necessary to be taken towards enriching his land.

I would next recommend an advantage, to be derived from the quantities of maiden-earth

den-earth which are to be met with, at the sides of many of our roads. These, mixed with muck, or lime, make excellent manure for our corn, and turnips. In *Essex*, they are particularly industrious in this practice; and as the outsidcs, or skirts, of inclosures, though enriched by rotten leaves, seldom produce any corn, on account of the shade, and dripping, of the hedges, and what it does produce is of little value, because the birds prey upon it; they generally sink these borders, at least a foot deep, and mix them into compost, for the benefit of the rest of the land, which is more exposed to the sun, and less liable to be preyed upon by the birds. Most estates afford a great treasure in this respect; and no farmer is excusable, in sleeping over such advantages. If it be alledged, in answer, that this is only a temporary advantage,

vantage, it cannot however be denied; but that it must increase the staple; and though it may only improve it for the present, this is no inconsiderable point gained. For land, like animals, when once it is brought into good heart, may, with a little care, be easily kept so; but when much out of condition, it is very difficult to be brought into a vigorous state.

Next to the banks in roads, and the borders of inclosures, the scouring of old ditches, the mud of ponds, and sediment of all stagnate waters, are particularly excellent upon grass land; and a small mixture of lime is well bestowed among it. If these better sorts cannot be met with, then any common maiden-earth, with one seventh part of lime, and one other seventh of rotten muck, will be very proper manure for most kinds of
pasture,

pasture, as I have before observed in treating of Natural Grasses.

Clays, of every kind, are highly suitable to all sandy, or light soils; because they brace the loose particles together, give them strength, and keep them moist.

By parity of reasoning, sand is equally beneficial upon all clays, and other tenacious, stiff land; because it separates the parts, and destroys their cohesive quality; by which means the sun, air, and frost penetrate them the better. This must be very obvious to every one; yet very little of this has been done, in proportion to the vast improvement it may effect, and the variety of situations where it will be found to answer. Upon this last principle, close land, inclined to stones, ought not to have them picked out.

Sand is likewise of great use upon
rough,

rough, coarse, meadows ; nothing fines the surface more, or produces a thicker set of Dutch clover.

Chalk, if it be of an unctuous, soft, quality, easy to dissolve, is a most valuable manure upon most land ; but upon sour land, or any clay, it has a surprizing good effect ; it loosens, and meliorates it, renders it highly fruitful, and sweetens the produce, when it is in grass, exceedingly ; and, if used in compost, may be repeated for ages.

Marl differs greatly in quality ; that which is most weighty, and soapy, when moisten'd, is the best. If it be right good, and laid on in liberal quantities, it throws the land into a fermentation, and frequently changes its very nature ; rendering it highly fruitful ; though it seldom has any great effect, before the third year. But it makes ample amends, when

it does operate ; for it will be felt, without a repetition, at least twenty years. No manure, in short, is so lasting. Some people have imagined, that *marl* will not answer a second time ; but I am of opinion, that if a small quantity be used in a compost, it may be repeated, with very good success, every tenth, or twelfth year.

All ashes are indisputably good ; but peat-ashes are the noblest manure we have, for all kinds of artificial grasses. Those who live in the neighbourhood of *Newbury*, in *Berkshire*, are sensible of their inestimable value. There are undoubtedly a vast number of meadows, and commons, in many other counties, where peat may be found ; but, though its ashes are one of the most valuable sorts of manure the kingdom produces,

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it is very little fought after, and very far from being generally known.

Soot is excellent on most land, but best bestowed on artificial grasses.

Maritime counties have many advantages over others, not only in the opportunities they have of, sometimes, importing manure, but in being able, frequently, to collect great quantities of sea-weed and useful sea-sand.

Salt is known, and universally allowed, to be a great stimulator of vegetation ; and gentlemen in parliament cannot serve the public, or themselves, better, than by getting the duty lowered upon so much of it as might be used for manure. But this article, in my opinion, would answer best, when mixed with other coarser manures ; and thus applied, a little would go a great way, and bear repetition, which it would not other-

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wife do. I shall pass over a variety of other manures, which are excellent in their nature, because they cannot be had in sufficient quantities, to effect any improvement upon a large scale. Some of them are bones, rags, and the dung of poultry. Where they can be met with, it is to be supposed that no person will be so blind as not to avail himself of their use.



MAXIMS RELATIVE TO PLOUGHED
LAND.

EXPERIENCE shews, that the longer we keep off the succession of any grain, the better the crop will prove. Land delights in a variety of feeds; and loaths a too frequent repetition of the same grain. Clover, in particular, may be sown till the ground will be so thoroughly weary of it, as to reject it entirely. This has induced many farmers, to attempt the growth of several species of grain, and grasses, wholly incompatible with their soil; thereby running at once into the opposite extreme. True judgment will introduce as much consistent variety as possible, and equally avoid the folly of courting objects wholly inapposite.

If the soil be stiff, cold, and suitable only to wheat, beans, and oats, it will be absurd, to aim at separating these crops with turnips, and barley. The better way will be to interweave some meliorating crops, such as buck-wheat, which is an excellent exchange for this sort of land. The great west-country cabbage would sometimes be a valuable crop here. On the other hand, upon a very light, sandy soil, wholly calculated for rye, barley, turnips, and artificial grasses, it would be equally ridiculous to lay much stress upon wheat, beans, and oats. Here potatoes, carrots, and vetches, will keep the ground cool, and prove valuable crops.

Upon a loam, the advantage of both sorts of grain may be united ; and as almost all the articles before enumerated may be sown upon it, there will be no difficulty

difficulty in varying the different species of grain.

Another material thing to be attended to is, the ploughing at proper seasons. In general, land receives injury from being ploughed in wet weather ; at least it often tends to promote the growth of weeds, instead of destroying them. Land that is designed for winter-fallow, should be ploughed before the end of November ; so that it may receive the full benefit of the frost. Provided it be ploughed clean, it cannot lie too rough. Land, for summer-fallows, should be broken up early in May ; and every subsequent stirring should be a cross ploughing ; and if it be ploughed shallower, and deeper, alternately, during the summer, it will, in general, help to clean it the better.

There is a method of husbandry, practised in some countries, which seems to

me highly pernicious. It is called burn-baking, or breast-ploughing. It must have taken its rise from laziness. Where land is covered with a coarse, rough, sward, or is become very foul, the indolent farmer, to avoid the pains of making it clean, solicits his landlord (or, in some places, the custom is so prevalent, that he does not even ask him) to grant him leave to pare and burn the turf; by which, if he has a dry season, he gets rid of all his trouble at once; and generally procures three, or four, florid crops, by means of the ashes. But this is obtained at a heavy expence to the landlord; whose property, in the fee-simple of such land, is, by this means, diminished at least one fifth. The injury is so obvious, that no unprejudiced person can well doubt of it. The sward, or skin, is generally pared off, by this method, to the thickness of about

two

two inches ; and as it is of a hollow substance, it may be admitted, that if the earth were well shaken out, and separated from the roots of the grafs, these two inches might be reduced to one. But when this two-inch-turf is burnt to ashes, those ashes will not cover the ground to the thickness of a half-crown-piece ; so that, upon any soil, this diminution must be severely felt for half a century afterwards ; and upon a shallow soil it is next to destruction.

Farmers will assert, by way of reply, that they only burn the roots of the rough grafs, and that the fire does not reduce the earth, or soil. But it is well known, that the surface of all land, to a considerable depth, is nothing but the relics of putrified vegetables, and plants ; and therefore will admit of a diminution. And though the crops will flourish for a

few years, the great, and lasting, nourishment to vegetation is by this practice destroyed.

Ground will sometimes be rough-skinned, and exceedingly difficult to be cleaned ; which, I apprehend, induced some ingenious person, a few years since, to invent, and construct, a plough, which remedies the inconvenience at once. This plough has two separate shears, and coul-ters ; but both are contrived to operate in the same line, or direction. They are each of them set to any depth, and lay the ground the same way. The first pares off the turf, or skin ; the next ploughs up a clean body of earth, and throws it directly over the former, so as to bury it effectually. By which simple means, the land is at once effectually cleaned. Whatever further working the ground may require, it may be done by

shallower ploughing, to which particular crops may be suited. And there is no necessity for bringing the rough, or foul, part up again, till it be entirely rotten. Sometimes two crops may first be taken. This method is practised much among the gardeners and farmers, in the neighbourhood of *London*; and might be every-where adopted, except where the land is stony, or remarkably shallow. Nor is this plough at all difficult to manage, or much harder to draw than one of an ordinary construction. The inventor, whoever he was, may justly pride himself upon his discovery.

Deep ploughing has been greatly recommended, by some modern writers. Upon particular land, where the bottom and top are of two opposite qualities, and neither of them right good, a mixture is sometimes very beneficial; and here this
experiment,

experiment, of going below the common depth, may sometimes answer. But where the top and bottom, for eighteen or twenty inches depth, consists of the same soil, I do not believe it is ever worth while, to exchange the upper part, which has been enriched for centuries back, for a part less rich, merely because it is more fresh. I have indeed observed, that deep ploughing (except for some particular grain and plants) is by no means necessary. The vegetation of ordinary corn, and grass, does not require any great depth. In many parts of *Cornwall*, the land is exceedingly fruitful, though the soil is extremely shallow ; and, in many other counties, they find, by experience, that they ruin their land by ploughing below the usual depth. Besides, when land is ploughed very deep, the roots of the weeds are only turned over, and removed,

moved, and hardly ever thrown upon the surface to wither; but clean, shallow, ploughing dislodges, and destroys them much more effectually. Nay hand-hoeing is allowed by every body, to do more towards cleaning land than a ploughing. And even the pernicious practice of burn-baking, which I have just spoken of, effectually cleans land, though it only goes two inches deep. This seems to shew, that very deep ploughing is by no means necessary, towards cleaning land; and it must be universally allowed, that the longer we keep our manure within three, or four, inches of the surface, the better; especially upon a light soil, from which it is apt to sink, and escape too soon.

With respect to the sort of plough which merits preference, there is none which can, perhaps, be universally recommended. But upon all sandy, or
loamy-

loamy-land, the *Norfolk wheel-plough*, with one handle, which is extremely light in its construction, clears its furrow remarkably well, and is effectually worked with two horses, seems the best; and is most like what they use in *Flanders*, where they frequently plough their land with one horse. Next to this plough, there has been an iron swing-plough lately invented, in *Suffolk*, which is very light, and useful; and many give it the preference to the former. I mention these two only, because they are a horse's draft easier than most other ploughs, and do their work as well as it can be done. For the business of clean, shallow ploughing, the *Norfolk plough* is, perhaps, better than any other.

IMPROVEMENTS, AND THEIR EXPENSES.

THE best advice which can be given to a man of fortune is, to persuade him to carry on all improvements, which are out of the common way, at his own expence. There are but few tenants capable of sinking any considerable sum of money, even when the prospect of a return is ever so promising; they can much better afford, to pay an increase of rent, equal to ten per cent. for such money as the landlord may lay out upon judicious improvements, than they can, to sink a less adequate sum in ready money. But the gentleman's purse, and the farmer's labour, will do great things, when the contract between them is so contrived as to yield them mutual benefit. A vast
deal

deal of land might be more than doubled in value by draining ; but the improvement, though obvious to every observer, is generally neglected, either because the tenant's term in the premises is not long enough, to reimburse him the expence, or else for want of ready money to discharge it. The landlord, in this case, is much to blame ; for, let the cause be which it will, he may apply the proper remedy. If he choose to lengthen the term, the tenant will generally do the work ; but if he does not choose to grant a farther term, he should at least pay the expence of the improvement, take proper interest for his money, during the remainder of the existing demise, and then he would have the benefit of its reversionary value, after its expiration. If money be wanting to the landlord, as well as the tenant, it may be worth

while to sell a part of his estate, to improve the rest. Next to draining, claying, marling, and chalking deserve liberal encouragement; and where a tenant has spirit to set his hand to these capital objects, leases, of twenty-one years at least, should never be withheld; for, where they are, the owner of the estate is guilty of a present injury to the public, and a future one to his own posterity. Estates, undoubtedly, ought to be let for their fair value. The bad effects are equal, whether they be under-let, or over-let; in the one case, the tenant is frequently negligent, in the other, he is discouraged; but, when the true value of an estate is known, and a good tenant offers, it is unreasonable to expect him to risk his property, without putting him upon a footing of some certainty. And
therefore

therefore land-owners who refuse leases, in such cases as this, merely because they will keep their tenants in a state of submission, and dependence, are inexcusable in such conduct; because they prefer a simple gratification to their real interest, and to the more enlarged notions of contributing, all they can, to the advantage and prosperity of their country. Even in the single business of collecting different sorts of manure together, it cannot be expected, that a tenant at will should look forward, beyond the immediate crop which he is preparing to put into the ground.

There is an infinite field for improvement, in numberless other points, which almost every large estate admits of; and of which every owner may avail himself, by a spirited application of a little ready money.

money. The mode is certainly practicable, and promising in its effect; and those who adopt it, will find their advantage in it.



H

WASTE

WASTE LANDS CONSIDERED, AND
THEIR SUITABLE IMPROVEMENT
SUGGESTED.

THOSE who have made observations upon the wealth of this country, have considered our extensive forests, chafes, and commons, as one of the greatest resources remaining to us; and have lamented, that such noble tracts of land should be suffered to lie in a neglected, unprofitable state, while lands of a worse quality are cultivated, in many unhealthy parts of America. The forests, and chafes alone, would be a treasure, under proper regulations; they are naturally the finest spots, the best nurseries this country affords for the produce of *Timber*; and if judiciously planted, and well protected, would hereafter furnish almost

almost a sufficient quantity for all the purposes of the navy ; but at present, there are so many different interests subsisting upon them, that in point of real value, they are little more than blanks in the kingdom. Time, it is to be hoped, may correct this defect, and render them of advantage to society.

Many other waste lands are at the disposal of individuals, and those I shall principally consider ; but it will not be amiss to examine, first, the objections, which are often made against inclosures of this sort.

It is observed by the advocates for *commons*, that they are of great use to the poor. That a greater number of people are supported, by means of them, than would be without them ; and that a vast number of young cattle are likewise bred upon them. These observations are

generally made by well-meaning people ; and there is something very humane, and specious in their conclusion. But on examination, it will appear, that cottagers who live at the sides of *commons*, generally neglect the advantage they have before them. There is not, perhaps, one out of six, upon an average, that keeps even a cow ; and, being generally tenants, and seldom owners, they rent these miserable habitations proportionably high, on account of their situation. It is the owner, therefore, and not the occupier of these cottages, who, in fact, gets what advantage there is to be had. The cottagers themselves are not, in any shape, more comfortable than those who live in parishes, where there are no commons ; because if there be any advantage to be derived from their situation, they do not enjoy it without paying for it. But I am
inclined

inclined to believe, that the precarious profits of a common sometimes disappoint them; and that constant, regular, labour is a better support; at least it would be, provided gentlemen of fortune would take the laborious poor more under their protection; for which I shall venture, in another place, to suggest a plan.

As to the advantage which population is said to receive, it bears no proportion, to what it would do, if these commons were cultivated, and disposed into proper allotments. It may be asserted, that, within thirty miles of the *capital*, there is not less than 200,000 acres of waste land. These lands, in a proper state of cultivation, allowing fifty acres to a family, one with another, would find employment for, at least, four thousand families. It never can be said, with

truth, that these wastes support, in themselves, without other help, half that number of people in their present state. Besides, these lands, when cultivated, would not only support the people employed upon them, but would be exceedingly useful in the support of others, who follow different employments.

The argument made use of, relative to the advantage of raising young stock, has much less foundation to stand upon. Every one knows, that all commons are wholly neglected. No draining, or any improvement upon them, is ever undertaken ; so that the produce is very trifling, compared to what might be expected from the same soil, if it were properly managed. Their being fed at all seasons, is another disadvantage which *commons* lie under ; and as neither surface water, or springs, are ever led off,

9

they

they frequently occasion the rot, and other distempers in cattle; and often destroy as many as they support.

Many parishes possess a right of common upon a thousand acres; which, if cultivated, would be worth from 500*l.* to 1000*l.* a year. In these, the poor-rates are, generally, higher, than where there is no common at all. To account for this, it is replied, that there is a greater number of inhabitants, than there is in a parish, of equal size, where there is no common. Very true; there may be more inhabitants, in proportion to the cultivated parts of the land, in the one parish, than in the other; but if the parish which has the common, were all cultivated, as well as the other, the poor would find fuller employment; and as the proportion of profitable land would be greater, the rates, of course, would be

enced; for admitting that there would be as much paid as before, there would be a greater quantity of land to furnish the supply; and, in this point of view, landed property would be better enabled to support its poor, where commons are inclosed, than where those commons remain unimproved.

It may be supposed, that two-thirds of all the commons in *England* will admit of improvement. Many parts, by judicious draining, would make good pasture-land, and dairy farms, which would be very useful, and profitable, and are everywhere wanted. Other parts, which now produce furze, would bear good corn. Even a great deal of heath-ground would produce turnips, light grain, and artificial grasses; especially where clay, marl, or chalk can be obtained. In *Norfolk* vast tracts of this land have been improved,
to

to the mutual advantage of landlord, and tenant, and to the great benefit of the country.

To such gentlemen as have objects of this sort before them, the following hints may, perhaps, be acceptable.

Where inclosures are made, which are designed for pasture, the fences should be contrived, to answer, as much as possible, the use of drains ; and it will be advisable, to sink the ditches to a good depth at once. Having this double advantage in view, such new inclosures should be made more in parallelograms, than squares ; the longest sides lying across the descent, as much as the ground will admit of. And as it is very material, to raise the fences as soon, and as cheap as possible, it is a good way to sow furze-feed, on the top, and at the back-side of the ditches. It has a quick growth, keeps

the layer warm, and sheltered, makes a fence in a few years, and, in some particular parts, where people keep a watchful eye upon their cattle, will render the expence of posts and rails unnecessary.

Parts designed for tillage, in the summer preceding their being broken up, should have the furze, goss, fern, or whatever is upon it, effectually cleared away, and the roots stubbed up. Early in the ensuing winter the ground should be ploughed up, with a strong plough, and left in rough furrows, till a month after Candlemas, that the frost may penetrate, and chasten it. Then it should have a brisk cross-ploughing, and afterwards an harrowing. In the spring of the year, and all the ensuing summer, it should be fined, cleaned, and sweetened by frequent ploughings. The remaining roots, and rubbish, may be shaken out, and burnt.

The

The next winter it should be laid up again in ridges, as high as the plough can lay them. In May following, two bushels of buck, or French wheat, may be sown upon an acre ; or, if the ground be pretty good in quality, or strong in nature, it may answer better to sow it with cole-feed in July, or August following. The buck-wheat should be ploughed under for manure, when the sap, or milk, is in the stem, and the flower in full bloom, just before the feed begins to set ; and this should remain under furrow, without disturbance, till a fortnight before Christmas. Buck-wheat generally thrives better than any thing else, on this sort of ground, as a first crop, and very often the crop is not contemptible.

The cole-feed, if it produce ever so light a crop, will be of vast advantage, as it will invite the sheep upon the land ;
and

and their treading and manure, will be of great benefit. They may be kept on such parts, from the latter end of November, to the middle of April, in feeding off this crop. The next summer turnips should follow, according to the mode of cultivation I have described in another place. Upon this sort of land, the whole crop of turnips should be fed off where they grow, contrary to the practice which I recommend upon an improved farm. Two sorts of stock will be proper for the consumption of the crop. The turnips should be hurdled off in small lots. The first parcel of cattle should be stock, designed for the butcher, and should have a fresh bait every day. The other parcel may be lean, or store-cattle, which will thrive well on the refuse. After these turnips, barley, with grass seeds, may be sown ; and these
 grass

grafs feeds should be continued at least two years. When the land is broke up again, it will be fit for a regular course of husbandry. And about this time, it will be proper, to begin casting the clay, marl, or chalk, whichever may be easiest come at. The land will want some such assistance, to finish its improvement; and it will be improper to lay it on before, as the ground ought to be first settled.

In the course of my practice, I have been instrumental in the improvement of considerable tracts of land of this sort; and have generally found it answer extremely well; for if the soil be tolerably good, and the method of improving it prudently considered, it is very often an estate created at a moderate expence. The best method of improving waste lands is, that which tends to the mutual
advantage

advantage of landlord, and tenant. This may be easily done, by accommodating the latter with a lease of thirty years, and allowing him all the furze, fern, or whatever may be upon the land, at the time the improvement is begun, together with all he can grow upon it, during the first three years of the term, without requiring any advance of rent. In the mean while, the landlord should be at the expence, of erecting all necessary, new fences, gates, and buildings; and, at the end of the first three years, be at the farther expence of half the charge of marling, chalking, or claying; which half of the expence will be, from thirty shillings to three pounds an acre, according to the distance, and difficulty, in getting the manure. Here the landlord's whole expence ends. For the next three years, the tenant should pay five

shillings

shillings an acre, yearly; for the next seven years, seven and six pence an acre; and for the remaining seventeen years of the demise, ten shillings an acre; which may be supposed to be the medium value of this sort of land when the cultivation is completed. Some, of course, will be of more, and some of less value. This method I have known to answer; but, where a gentleman has several farms, in the neighbourhood of any large waste, which he wants to improve, it will be best to divide the object among several tenants, as less expence will be required in buildings. Besides, where a man takes a large tract, sufficient for a farm of itself, he will be seven years in clearing, and breaking the whole of it up; and it is not reasonable, to expect that his lease of thirty years should commence, before the time of his clearing the
last

last part. Upon these terms, there are industrious men enough to undertake such improvements. A few words, and figures, will shew the landlord's advantage in it. I will calculate upon 500 acres, under every disadvantage; supposing it worth two shillings an acre in its natural state, and ten shillings an acre when improved.

This

This quantity of land, at the end of the first thirteen years, valued at 10s. an acre, and } *l.* *s.* *d.*
 thirty years purchase, will be worth _____ } 7500 00 0

From which deduct

The expence of erecting buildings for a complete farm of the beforemen- }
 tioned size _____ } 1140 00 0

Allowance for fencing, supposing the inclosures to be about ten acres, upon }
 an average. The quicksets, or layer, furze seeds and all included, 4600 } 460 00 0
 poles, at 2s. a pole _____ }

Fifty gates, at 14s. each _____ 35 00 0

Loss of the three first years rent, upon the whole quantity, at 2s. an acre - 150 00 0

Interest upon the four preceding sums, for the first three years, at compound }
 interest, reckoned at four per cent. _____ } 225 00 0

The moiety of the expence of chalking, marling, or claying, estimated at }
 2*l.* an acre. To be expended at the beginning of the fourth year - } 1000 00 0

From the beginning of the fourth year, to the end of the thir- }
 teenth, the six preceding sums would produce, at compound in- } 1514 6 0
 terest, at the rate of four per cent. _____ }

But, from this last sum, must be subtracted

The ten years increased rent, over and above the old rent of 2s. an }
 acre, from the beginning of the fourth year, to the end of the } 1383 9 0
 thirteenth, at compound interest, and four per cent. - - - }

Difference _____

Add, at the end of the thirteenth year, the original value of the whole quan- }
 tity, at 2s. an acre, and thirty years purchase _____ } 1500 00 0

Deduct all these losses, expences, and original valuation _____

The Neat gain, upon the cultivation of the above quantity, at the end of the thirteenth year 2859 3 0

[113]

This estimate is drawn, as though the whole of the 500 acres were broken up in the first year, and brought into condition, to receive the chalk, marl, or clay, the fourth year, as it shews the advantage of this improvement in a clearer manner, than it could otherwise have been done. The same scale of calculation may be applied, to a greater, or less, proportion of ground.



CULTURE OF TURNIPS.

THE culture of turnips being one of the most capital branches in agriculture, and the best method by no means generally understood, I shall give an exact description of the *Norfolk practice*, originally brought into that country from *Flanders*; and annex such remarks upon the use, and advantage, of this excellent root as may recommend the same mode in other parts of the kingdom, where this part of husbandry is not so well understood.

In *Norfolk*, this crop answers three material purposes: it cleans the ground, which has been fouled by other crops; supports a vast deal of stock; and is an excellent preparative for almost every succeeding crop, particularly for barley,

and grafs-feeds. The *Norfolk farmer*, sensible of its great importance, spares no pains, or expence, in the cultivation. He considers it as his sheet-anchor, or the great object on which his chief dependance is built.

Wheat, barley, or oat-stubble is generally chosen, for the bringing on turnips. The ground should be ploughed very shallow, some time before Christmas, so as to skim off the rough surface only; and in the month of March following, it should be well harrowed; and, after harrowing, have a cross-ploughing to its full depth. If any weeds shew themselves, it should be harrowed again, about a week, or ten days, after this second ploughing; but, if the land be in a clean state, it is better without this harrowing; for, the rougher it lies, the better. In this state, it may remain till
the

the middle of May, when the Lent seed-time will be finished, and the farmer at leisure to work, and attend, his summer-lays. At this time, it should have another ploughing, of equal depth to the last; and, if the weather be dry, and the soil stiff, be immediately harrowed after the plough. If the soil be light, it may suffice to do it at any time, within a week. By the beginning of June, the ground ought to be perfectly clean; and if the ploughings here recommended, be not sufficient for that purpose, more should be bestowed. About this time, upon a supposition that the ground be clean, ten good cart-loads of manure should be laid on to an acre, regularly spread, and ploughed in quite fresh, about half the depth of the two former ploughings; unless the land has been manured for the preceding crop; in which

case, the manure may be spared for turnips, as it sometimes is, though always well bestowed, if it can be had in sufficient quantities. In this state it may remain, till about the twenty-first of June, when it must be well harrowed, to blend the soil and manure together. Thus harrowed, it must be ploughed to its full depth; and the harrows drawn over the ground, only once, the same way it is ploughed. The seed is then immediately sown, upon the fresh earth; not even waiting for the ploughing of a second ridge. A quart of seed is the quantity generally sown upon an acre. The seed is to be well harrowed in, only twice, the same way as the ground was ploughed. The best, and neatest, finish is, to walk the horses, which draw the harrows, the first time, and trot them the last. The harrows should be
short-

short-tined, and, the lighter they are, the better. The width of the ridges may be varied, from four to ten yards, according to the natural wetness, or dryness, of the soil. The manure may consist of one fifth maiden-earth, marl, old cement from walls, or almost any rubbish, and four-fifths muck ; which should be laid together, some time in the winter, the muck on the top ; and should be turned over, and well-mixed together, at least a fortnight before it is made use of. If the soil be light, the muck cannot be too short, nor too rotten ; but if the soil be stiff, and cohesive, the longer the muck is, the better ; because it will keep the ground open ; and land for turnips cannot lie too light. There is another manure, which answers extremely well for turnips, *viz.* malt-dust or combs, about twenty sacks to an acre ; each

fack containing as much as can be heaped upon three bushels. The price, at this time, in *Norfolk* is, one shilling and nine pence a fack ; which is not very dear, when the ease of the carriage is considered ; for a waggon will carry enough for three acres. This sometimes is only harrowed in, instead of being ploughed in ; for it ought not to be buried above two inches at most. Some sort of manure is essentially necessary for turnips ; and the liberal use of it is, perhaps, one of the principal causes, why the fly does not destroy the plant in *Norfolk*, so often as in many other counties. The ground, by this treatment, being in good heart, and the sowing of the seed so timed, as to make it strike root, just as the manure begins to operate upon the land, the plant is generally pushed on with such vigour, that the
rough

rough leaves form the sooner, and put it out of danger much earlier, than in those counties where they do not manure, and take these precautions. For there the plants come up so weak, and languid, that they are often destroyed in their infancy, which has always been a great discouragement to the cultivator.

The nicest part of the turnip-husbandry yet remains to be treated of, *viz.* Hoeing, without which all the former labour is thrown away. Ground prepared, and treated in the manner before-described, will, in about a month from the time of sowing, if the season be kind, produce plants large enough for hoeing. If they cover a space of three inches in diameter, they will be of a proper size; and should then be hoed with a ten-inch hoe, and set at fifteen inches apart, without paying any regard to the apparent health,

health, in the choice of those which are left. The expence of the first hoeing is four shillings an acre. About ten days after the first hoeing, or a fortnight at farthest, the ground must be hoed a second time, so as to stir the mould effectually between the plants, and to check any rising weeds. This second hoeing is as beneficial as the first. The expence is from two shillings to half-a-crown an acre. About a fortnight or three weeks after Michaelmas, the turnips will be fit for consumption ; and may be used from that time to April, unless the frost should injure them. The almost invariable practice in *Norfolk* is, to draw the whole of the crop from wet land, and give them to cattle in cribs in the yard, or strew them before their cattle on some dry pasture or clean stubble-land. The advantage derived from this is very great.

In

In the first place they avail themselves of every turnip, and the cattle have the comfort to eat them off a dry place, where they go twice as far, and do them more service than they would trodden into, and picked out of the dirt where they grew. Even upon light land they draw half the crop, that is, every other ridge, or every other half-ridge, according to the size of it, and hurdle off the other half, to be consumed by bullocks and sheep in fresh portions, as they require them; letting the fatting stock in first, and the store-cattle afterwards to eat up the offal parts. If the latter are neat cattle, another great advantage is derived by putting them into the straw-yards at night, where the extra quantity of urine, occasioned by feeding on the turnips in the day-time, contributes to-

wards their making more, and better, manure than they otherwise would.

This method of drawing one half, and consuming the other where it grows, should be the universal rule; but wet ground will not admit of it. By this practice it is clear, that a *Norfolk* farmer manures twice at one expence; for, half the turnips consumed where they grow, besides the manure laid on when the crop was sown, will leave the ground in an excellent state for barley, and artificial grasses; and the other half strewed before cattle, on clean pasture or stubble, will improve it as much as a moderate coat of dung: and this very stubble-land in *Norfolk*, is often sown with turnips the succeeding year, without any other manure, and does very well; but, when this is the case, the stubble cannot receive the first ploughing till
March.

March. There is something so rational in this mode of cultivating turnips, and the benefit resulting from it is so obvious, and considerable, that it is a matter of wonder how any farmer can hesitate in adopting the practice : yet I have never found that persuasion alone will prevail with men, accustomed to a different method of culture ; and am inclined to believe, that nothing will be a sufficient inducement but example, which should be set by gentlemen of landed property, as well for their own advantage, as that of the public.

If this method of raising turnips should be thought too expensive, to answer in general practice, it should be considered, that when the crop is good, twenty acres will fatten at least fifteen bullocks, and support ten followers, or store-cattle, for twenty-five weeks ; or sheep, in the
proportion

proportion of eight to one bullock ; besides the infinite advantage which this system of agriculture is of to the land, by cleaning, meliorating, and preparing it for other succeeding crops, which is an object very much beyond the former in point of real profit. For it is evident beyond contradiction, that almost all the Norfolk estates have been improved, in the proportion of forty per cent. at least, merely by marling, and this method of raising turnips ; and many thousands of acres which before grew nothing but furze, ling, broom, and fern, now produce fine crops of corn, and turnips, and support a prodigious number of sheep, and other cattle.

The white-loaf, or cream-coloured, turnips, are generally esteemed the best sort, and next to them the purple.

For the information of such persons

as may not understand the manner of treating turnips for seed, it may not be amiss to remark, that if the seed be gathered from turnips which are sown for three or four years successively, the roots will be numerous and long; and the necks, or part between the turnips and the leaves, will be very coarse and big; and if they be transplanted every year, these parts will be too fine, and the tap-roots will diminish too much. The best way is, to gather the seed from the turnips which are transplanted one year, and sown the other; or, if they be transplanted once in three years, it will keep the stock in very good condition. The method of transplanting is, to take up the turnips chosen for seed about Christmas, to cut off their tops, and to plant them as near the house as possible, that the birds may be kept off

off the better ; which is a material consideration, for they are very fond of the feed, which will be fit to gather in July.

In many parts of England, the reason assigned by farmers for not growing turnips is, that the ground is too wet to admit of their being fed off. They will often allow that they can grow turnips, but think them of no value, unless they can consume them on the spot. This, to a *Norfolk farmer*, would be no reason at all ; for there are vast tracts of land with them in the same situation ; and when they cannot eat their turnips where they grow, they draw them without hesitation, and almost to the same advantage. This objection therefore falls to the ground ; and it may be asserted with confidence, that if other counties would copy this practice of growing, and drawing their turnips, there might be

five times the quantity raised that there now is.

I cannot close this subject, without venturing to give even the *Norfolk farmer* one piece of advice, which I flatter myself will be of service to him, if he will attend to it.

In very hard frosts it is a difficulty to pick the turnips out of the ground; and the poor cattle are obliged to thaw them in their mouths, before they are able to eat them. The frost, when it succeeds a wet season, and then breaks into a sudden thaw, is very apt to rot the turnips; and in the latter part of the winter those which are still left in the ground, are apt to draw, and exhaust it very much, without doing themselves any good, but rather injury, by running into stem. To remedy these inconveni-

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ences, I think it would answer extremely well, to sink some few beds in the ground where the turnips grow, about two feet deep, of a considerable width, and to lay five or six layers of turnips into them one upon another, with a little fresh earth between each layer, and to cover the top over with straw, to keep out the frost; or else to carry them home, or into some clean field where they are meant to be consumed, and to pile them up in small stacks with the greens outward, a little clean straw between each layer, and at last to cover, or screen them with wattles or hurdles lined with straw. If this were done in small proportions, (I do not mean generally) it would certainly afford the cattle great comfort in frosty weather; would preserve many turnips from the rot,

which are now destroyed; and would dispose of them better than by suffering them to remain till the middle of April, exhausting and impoverishing the land.



CULTURE OF COLE, OR RAPE-SEED.

AS this plant is valuable in itself, and may be often interwoven with different sorts of grain to very great advantage, by changing the succession, where the course of husbandry is but little varied; I shall, for the benefit of such gentlemen as may be unacquainted with its nature, describe the soil which suits it, the best mode of cultivating it, and its different uses.

Cole-seed requires good land; and, if it has been long in tillage, a loamy or mixt soil does best. Very stiff clay is not suitable to it, and thin-skinned poor land is wholly inapposite; but fen-land, marsh-land, and almost any old pasture, generally produces great crops of it; and it often succeeds well upon such newly cultivated

cultivated commons as, in their natural state, produce thorns and furze.

The ground is to be prepared exactly in the same manner as for turnips, which I have particularly described in treating of that plant. If the ground it is sowed upon be fresh broken up, it should be first made perfectly clean; but if it be sown upon land which has been before in a course of tillage; wheat, barley, or oat-stubble is the best to make choice of; and the first ploughing should be early in the autumn. If it follow wheat, then barley, or oats, with grass seeds, should follow the cole-feed; but if it follow oats, or barley, then wheat should succeed it; which delights to grow after it better than after any other crop, and is always of the best quality; and as the cole-feed will be reaped so early as July, the ground will

admit, if necessary, of two, and sometimes three ploughings before the wheat seed-time. The seed is to be sown the last week in July, or the first week in August. If the land be not fresh, or in good heart, it should be manured in the same proportion, with the same sort of manure, and in the same manner as I have recommended for the turnip-crop. Two quarts of seed are in general enough for an acre, unless the cultivator should prefer ploughing, instead of harrowing, it into the ground; in which case three quarts will be necessary; and the furrows must be very narrow and shallow. If the soil be rather light, I believe the last method is the best. As soon as the plants are as big as the top of a radish, when drawn for the table, they are to be hoed, with a smaller hoe than that which is used for turnips. The rule is,

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to set them from six to nine inches apart, according to their apparent vigour, or the goodness of the land. One hoeing is enough ; the expence six shillings an acre. Thus far attended to the crop will remain, without requiring any other trouble than protecting it from cattle, till the latter end of June, or the beginning of July following, when it will be ripe. The crop is then to be reaped, (the nearer the ground the better) and laid over the same ground where it grew, in very thin grips, or gavels. In about ten days, or a fortnight, according to the weather ; having been once turned in that time, it will be fit to thrash ; which is done in the field, upon cloths laid upon a smooth part of the ground, or else upon wattles, or hurdles, laid over stools or pieces of wood ; one end being elevated more than the other

to shoot off the straw, with cloths underneath to catch the seed. The last method is the best, though not the most common. It is brought to the thrashing-place upon sledges, drawn by one horse, the bottom and sides of the sledge being lined with cloth, to catch the seed, which sheds in the removal. The seed should likewise be winnowed, or cleaned, in the field; and being put into sacks, is then fit for market. This is often a very profitable crop; for if the soil be proper for it, forty or fifty bushels may be expected upon an acre: there have been instances when the produce has amounted to eighty bushels. The price indeed varies, from four shillings to seven shillings and six pence a bushel, according to the quantity grown, and the kindness or unkindness of the season; it being much subject to blight,

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and mildew, and its value, in some measure, is governed by the good or ill success of the whale-fishery. The expence of reaping, turning, thrashing, dressing, and putting it into the bags, is, from one pound to one pound five shillings an acre. I shall follow the seed no farther, as I am not acquainted with the manner of extracting the oil, and preparing the cakes, which is a separate branch of business; but the use those cakes are of in fattening cattle, and manuring land, is not inconsiderable, being worth at this time four pounds a ton.

The straw (preserved from wet) may be used for lighting fires, heating ovens, coppers, and burning in brick-kilns; but is not of much value for manure. The chaff and cinder is generally burnt on the spot, and the ashes spread about the ground. The stubble, if the soil be
close,

close, is useful to the next crop; but if the foil be light, I do not apprehend it is of any service.

As I wish the cultivator to be acquainted with all the disadvantages, as well as profits, of this crop, I would have him take notice, that when it is cultivated for feed it costs as much, in putting into the ground, as a crop of turnips: and, standing a whole year, takes up the same time as a turnip and barley crop together; but as it will be better fitted to receive a succeeding crop, than barley after turnips, it will notwithstanding be frequently found as profitable as both the other; and in that case, for the benefit of change and variety, it will sometimes be prudent to give it the preference. I may add, that this crop is exceedingly useful in cleaning land, and is of a meliorating nature.

There

There are many people who cultivate this plant merely for feeding cattle, and an exceeding good practice it is. The ground is prepared, and sown in the same manner, as for the crop I have just described ; but in this case there is no necessity for hoeing. It is fed off, as occasion may require, from the beginning of November to the middle of April; and when this is the case, barley, and grass-seeds are sown the same year upon it, almost always with good success. Before Christmas, nothing is better for fattening dry ewes, and old sheep of all kinds; and after Christmas it is better than any thing for ewes and lambs. When fed early in the winter, if the frost be not so severe as to rot the stalk, or stem, it will spring again the beginning of April.

It is generally supposed, that this feed

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is a great exhauster of land; and so it is, if it be too frequently repeated; but it may be sown, without prejudice, every fourteenth year for a crop, or every seventh for feeding cattle, but not oftener.



CULTURE OF HOPS.

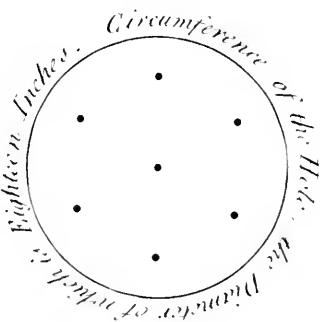
THE soil for hops should neither be sandy, porous, or gravelly; cohesive clay, or moor; but a generous rich loamy mould, of at least eighteen inches depth of equal quality, the deeper the better. It must not be liable to injury from floods, or springs. The situation should be open to the south, and south-east, but well sheltered on the other parts, particularly on the west; because the winds from that quarter are often violent and boisterous, and do more injury to the crop, than even the northern winds. Old pasture-land of the before-mentioned quality generally does best. It should be broken up in the autumn; sometimes it is ploughed, and sometimes dug, but the latter practice is best. In
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the beginning of March the holes designed to receive the plants, should be made, at the distance of six feet and a half apart; and 1300 of these holes may be contained in an acre. They should be so ranged, or disposed, as to form straight lines every way. Each hole is to be a foot deep, and eighteen inches diameter, and to be filled quite full of some good compost, made of rotten muck, and fresh maiden earth well mixed, and incorporated together, at least nine months before it is appropriated to this use. After the holes are thus filled, and the plants introduced, the compost should be a little trodden by men's feet, especially round the plant, so that it may be pressed down, about two inches below the common surface of the ground. The original price of the plants is six pence a hundred, which is reckoned at

fix

fix score. Seven roots or plants are set in one hole, one in the center, and the other six, forming a circle round it, at equal distance, and

at about four inches from the outside of the hole, as described in the margin; the seven dots, contained in the circle, representing the



plants. The roots

are set two inches deep in the compost, with only the top of the stalk just out; and after they are so set, the whole of the plants are covered over about two inches deep, with some of the native soil made fine, and drawn lightly over the compost, which will fill the hole even with the common level of the ground.

It is not prudent to sow any thing,

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the first year, with the young plants, except onions; which may be done in the month of March, when the hops are set; and this generally proves a very valuable crop. They are much better than any thing else, because they admit a more free circulation of air through the plantation. In each of these holes (which, in future, must be distinguished, on account of their increasing bulk, by the appellation of hills) there should be set, pretty early in the spring of the first year, two small sticks of about two or three yards long, to teach the young binds to climb; and three in number should be led up each stick, and tied with meadow-rush, sedge, or something of a similar quality, two or three times, as occasion may require, in the course of the summer. The ground should be kept particularly clean from weeds, and

rubbish of all kinds ; and the hills should be moulded twice in the course of the first year ; the first time, in the middle of May, and the next, in the beginning of August. Here ends the first year's expence, and trouble.

In the course of the ensuing winter it will be necessary, to provide poles. If the hops be luxuriant, and strong, two poles will be sufficient for each hill, or two thousand six hundred to an acre. But if the plantation be languid, and weak, every other hill should have three poles ; which will require 3250 to an acre. But, though the weakest plants will require the greatest number of poles ; yet, as they will not require them so long, or substantial, the expence of the poles will be nearly equal, in both cases. The price of poles varies, of course, in different neighbourhoods, very

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considerably ; but the medium price may be considered from fifteen to twenty shillings a hundred, at the stub, without reckoning their carriage.

When the poles are brought to the ground, they should be unloaded at the outsidcs of the plantation, and carried upon men's shoulders to the places of poling.

No muck, or compost, is necessary for the second year ; but the ground must be dug in the autumn, in the same manner as it was the first year. In the month of March every year, after the first year's planting, the hills must be opened, and the plants dressed, by cutting off the old, last year's bearing-stalks within two joints of the root ; and if any of the plants have failed, or are found in a sickly state, others must be substituted in their stead. In doing of
which

which care must be taken, to dig the earth sufficiently deep about each stock, or root, that all defects may be discovered, and that there may be room to cut off all the old stalks. When the plants are thus visited, and dressed, the earth should be raked back upon them. The best of the prunings will serve for fresh plantations.

The general rule for poling is, when the binds have shot about two or three inches out of the ground. Three or four binds should be conducted up each pole, and confined, by being tied with meadow-rushes, or sedge, as before-described; which must be repeated three or four times, as occasion may require. Sometimes, when the poles are long, and the plants vigorous, it is necessary to have a ladder to tie them on the top.

This business requires particular atten-

tion at the beginning of the summer. When short and slender poles are set to a hill, where binds may happen to be exceedingly florid, and strong, it will be worth while to remove them to another hill, where they are weaker, and to bring other poles which are stronger in their room. The expence is a mere trifle; and the advantage derived from this attention is often very considerable. All superfluous binds should be taken away, several times, in the course of the summer; except two only upon each hill, which should be reserved, to supply the place of such as may happen to be injured, in being first led up the poles. Such injuries frequently happen, either by the buds being bruised, or their heads beaten off by wind, or other accidents, to which they are very liable in their tender infant state. Three hoeings, in a season,

season, are essentially necessary ; in the beginning of May, June, and July ; and at each hoeing some mould should be drawn upon the hills, to keep the roots of the plants moist. They must likewise be once moulded, pretty early in the month of August ; and if this be done soon after rain, it is the better ; and therefore it may sometimes be done, on this account, a little sooner or later than the customary time. This is the whole which will be requisite, till the crop be gathered.

As soon as the hops are ripe, and fit to pick, the poles are drawn with an *instrument* in most places, called a *pulling-book*. Four skeys will be necessary for every acre ; and four women, or children, may conveniently make use of one skey. If the weather be tolerably fine, they will be able to pick an acre in ten days, or a

fortnight. From ten to fourteen hundred, to an acre, is esteemed a good crop; but there are instances of twenty hundred being grown upon an acre; which, at five pounds a hundred, amounts to an hundred pounds an acre. But this seldom happens.

As soon as the hops are picked, they are carried to the kilns to be dried; and about five or six days after they are dried, it will be a very good time to bag them.

The best way of bagging is, to have a hole cut in a chamber-floor, or loft, to the just size of the bag; the mouth of which must be fixed to a frame, laid upon the floor, with the bottom part hanging suspended below. A man then gets into the bag, with a heavy weight; which he keeps removing, to the place where he is not immediately treading.

The cloſer they are preſſed into the bag, the better ; becauſe they preſerve their colour, ſmell, and taſte, the more. A few hops are tied apart, in the four corners of the bag, for the convenience of removing them, as it were, with handles.

There are ſome neceſſary rules, to be obſerved in reſpect to the duty ; but as every cultivator of hops ought to be particularly inſtructed upon this head, it will be adviſable for him, to have a real copy of the exciſe-law for his guidance.

Soon after the hops are picked, the poles ſhould be cleared of the binds, and ſet up in ſquare ſtacks, or piles. About thirty or forty poles ſhould be ſet to each corner, and each corner props its oppoſite. The four corners ſhould ſtand twelve feet apart, every way, at the bottom ; and the tops of the piles ſhould

unite, and be interwoven together, as close as possible. Between the four corners below, there will be an open free passage, which, admitting a free circulation of air, will contribute greatly to the preservation of the poles.

The binds, if got up perfectly dry, and laid under cover, will make tolerable fuel for coppers, ovens, and brick-kilns.

Although muck is to be omitted the second year, it is absolutely necessary every year afterwards, in the proportion of twelve good cart-loads to an acre, well mixed, and incorporated together with fifteen loads of fresh, virgin-earth, for near twelve months before it is used. This is one thing which makes the culture of hops exceedingly expensive; but the quantity here described is absolutely necessary. Indeed it is the most mate-

rial part. This compost should be carried on the ground with small carts (those of three wheels drawn by one horse are best) before the ground be dug in the autumn, and laid in small heaps; and should afterwards be incorporated with the mould surrounding each hill, at about the distance of a foot from it.

The old stock ought to be stubbed up, and renewed, every tenth or twelfth year; and it is most prudent, to break up a due proportion of the old, and to plant an equal quantity of new every year, or every other year, to keep up a regular succession; and to do it by gradual expence, and labour. Another advantage arises from this method, *viz.* The oldest of the poles which, by long use, are rendered unfit for the old plantations, will nevertheless be exceedingly useful

useful in the new ones, during the first and second years. As to the duration of the poles, the best will not last above six, or eight years.

The whole expence attending this crop may be estimated as follows :

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Medium price of an acre of land } suitable for hops ———— }	1	10	0
Digging the ground ————	0	13	0
Dressing and pruning ————	0	8	0
Poling ————	0	15	0
Three hoeings ————	0	9	0
Once moulding ————	0	3	6
Tying the binds to the poles ————	0	12	0
Stripping the binds off the poles ————	0	3	0
Stacking the poles ————	0	4	0
Sharpening the poles ————	0	10	10
Manuring ————	2	0	0
Picking, drying, and duty, at 1 <i>l.</i> 10 <i>s.</i> a hundred, the crop being estimated at twelve hun- dred to an acre ———— }	18	0	0
Bagging, and the occasional ex- pence of bags, about ———— }	0	16	0
Carried over	26	4	4

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought over	26	4	4
Ash-poles estimated at 3250 to an acre, supposed to last eight years, medium price 18 <i>s.</i> a hundred, at the stubb: the eighth part of which is, as nearly as need be calculated	3 13 0		
Carriage of poles estimated at	-	1	5 0
	<hr/>		
Supposing twelve hundred to be grown upon an acre, and that the medium price is 4 <i>l.</i> a hun- dred, the produce will amount to	31 2 4		
	48 0 0		
	<hr/>		
And the expences deducted out of the produce, will leave a medium profit of	16 17 8		

Sometimes, as I have before observed, a hundred pounds has been made of an acre of hop-ground; which accidental profit is apt to mislead young planters, who very often promise themselves more than they ought. It is likewise apt to induce some people to plant hops, upon soil ill calculated for their growth.

When

When the ground is perfectly suitable for the crop, and so situated as to command a sufficiency of poles, hands for picking, and manure at a moderate expence; hops are certainly an object of great profit; and land being enriched, and at the same time perfectly cleaned, by their culture, is left in the best of all conditions for being laid down with grass. But, as they require an infinite deal of attention, and so great a quantity of manure; when farmers cultivate them, except it be in the neighbourhood of towns, they do it to the ruin of all the rest of the farm. This is very evident in the counties of *Worcester*, and *Hereford*; where it is very common, for a farmer who occupies two hundred acres of land, to apply the greatest part of his muck to the nourishment, and support, of about ten or a dozen acres of hops, and to neglect

neglect every improvement upon thirty or
 forty acres of pasture-land, merely for
 the sake of its producing him alder poles
 for his plantation: which pasture-land
 might often be doubled in value, if the
 alder-stools were extirpated, and the
 land properly drained. Farmers should
 therefore be checked, when they aim at
 raising too great a proportion of hops,
 not only for the reasons beforemen-
 tioned, but because the article is preca-
 rious in its nature; and when a failure
 happens, they are unable to discharge
 their rent. The regular produce of a farm
 brings more certain profits. In short,
 the business of cultivating hops and
 farming is incompatible, each requiring
 constant attention.

OBSERVATIONS RELATIVE TO BUILDINGS AND REPAIRS.

THE first object in the management of an estate is, to discover and adopt all practicable modes of improvement upon the land. The second relates to skill, and frugality, in the construction of such necessary buildings as the estate may require, and care and contrivance in their occasional reparation.

The following general rules respecting new erections may be worth observing.

“ Not to build any thing but what will
 “ be really useful. To build upon a
 “ small compact scale, and as much as
 “ possible upon squares, or parallelo-
 “ grams, not in angles or notches. To
 “ build at all times substantially, and
 “ with good materials. Not to lay any
 “ timber

“ timber into fresh mortar, because the
 “ lime eats up, and wastes, the ends of
 “ it long before the other parts decay;
 “ but to lay the ends into loam or clay.
 “ Not to put any window-frames or
 “ door-cases into new brick-work at the
 “ time the walls are carried up; but to
 “ introduce a discharging-piece, or lin-
 “ tel, over such door and window-
 “ spaces.” The reason of the last cau-
 tion is obvious; for as brick-work set-
 tles, soon after it is up, the window-
 frames and door-cases, on account of
 their strength, will not yield with it,
 but occasion cracks and flaws; but when
 a lintel is made use of, the whole work
 settles regularly together, and door-cases
 and window-frames may be then intro-
 duced, with more propriety than before.

With respect to materials, tiles or slate
 are the best covering for houses; but
 barns

barns and stables should be thatched, because workmen are always careless, in laying corn and hay into them, and generally push the tiles off with their prongs ; and besides, these buildings, when empty, collect a great deal of wind, which is apt to dislodge them, unless they are pointed in the inside, which encreases the expence considerably, and is never lasting. Reed is the best of all covering for barns, stables, cart-houses, &c. There is a sort of reed which grows in fens, marshes, and wetlands, so excellent for this use, that a moderate coat, if it be well laid on, will endure at least half a century, with very little expence of reparation : and it is a fact beyond contradiction, that the timber used in roofing will last thirty years longer, when covered with reed, than it will when covered with tiles. The next
best

best covering to this is the *Somersetshire-reed*; which is nothing more than the strongest wheat-straw which can be met with, combed clean from weeds, having the ears of the corn cut off, instead of being thrashed, and so laid on upon the building in whole pipes, unbruised by the flail. This latter reed may be had in any other county, as well as *Somersetshire*, in sufficient quantity; and it is absurd, in the last degree, to make use of straw for thatching in any other way, because the difference of expence in the preparation is a mere trifle, compared with the difference of duration between the *Somersetshire-thatch* and that of other counties. The common, injudicious, slovenly practice of beating the straw to pieces with the flail, and then laying it on with some of the seeds and many weeds in it, causes it very often to grow

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quite

quite green, after it is laid upon the building; and, being bruised in all parts, to collect and retain the wet, much more than it would if the straw were whole, and consequently to become quite rotten in a few years. When straw is designed for thatching, it is a good way to cut the corn rather earlier than ordinary.

With respect to the timber most proper for building, I know of none that is to be preferred to Spanish-chestnut, where it can be had, because it is very pleasant to work, and as durable as oak, though it seldom bears the price of it. In maritime counties where oak sells well, and deals are tolerably cheap, it is best to dispose of the one, and buy the other; because oak is generally cut to waste in most repairs, and deals may be bought, of any scantling that may be required.

In all paling, battoning, and other
fences

fences about the homestead, nothing is more useful than pollards; and they should always be made use of on such occasions, because they are generally the produce of the farm, of little value, and save better timber. Sometimes they are useful in sheds and small buildings for cattle. Bricks are a very considerable object, and great care should be taken in getting them of a good quality. Upon most estates, of any considerable size, brick-earth or clay may be met with; and, where this is the case, they may be always made and burnt in clamps, for one third less than they can be bought at the kilns, and equally good in quality. I have had a great number burnt in this manner, from eleven to fourteen shillings a thousand, in *Norfolk*, *Hertfordshire*, *Gloucestershire*, and *Worcestershire*. The medium price is twelve shillings a thou-

land where fuel is reasonable. Besides the difference in price, there is generally a great saving in carriage, when gentlemen burn their own bricks.

No material in building requires greater inspection than mortar, in which masons are apt to be deficient. Two things are to be attended to; the quality of the different articles, and the manner of mixing them.

When new buildings are to be erected, it is essential to choose the most sheltered spot which can be pitched upon, consistent with the situation of the land; because it is prudent, to guard against tempests as much as possible, and because young stock thrive much better in warm yards.

Farmers are never satisfied, with the number of buildings which are assigned them; they are particularly craving for
a great

a great deal of barn-room, which makes the expence of repairs extremely heavy. Owners of estates should therefore be governed by what is really necessary, and not led into superfluous expence, merely by listening to a man who pleads his own cause only.

The most necessary buildings to a farm, besides a convenient comfortable house, are good accommodations for cattle; such as stable, cow-sheds, calves-pens, and pigs-cots. These may frequently be supplied by lean-to's, or otherwise built at a moderate expence; but barns, which are very expensive, may often be contracted, and much unnecessary charge saved. What should be most recommended is, stacking; which ought to be done much more than it is. Wheat is certainly better preserved in ricks, than barns; the air keeps it sweet-

er, and it is more secured from vermin. Every barn should be so contrived as to have a rick-staddle at each end, and a hole in each gable to pitch the corn into it. Upon small farms, the barn need not consist of more than a thrashing-floor in the middle, and an equal space at each end, just to receive the quantity contained in a small rick.

When bricks can be burnt upon an estate, upon the terms I have before mentioned, nothing is to be preferred to them for barn, and stable-walls; but where they come dear, and timber is tolerably cheap, feather-edged boards, between the cills and wall-plates, are next to be chosen, and if tarred are very durable. As for stud-work, with brick-work between, or daubing, it is so much subject to accident, that it seldom lasts long.

All work, whether old or new, should
be

be set as much as possible by the jobb, for a fixed sum; always subject however to inspection and approbation when finished.

No new coat of thatch, or covering of tiles, should be put upon an old roof, not likely to carry it till it is worn out; nor any new roof upon old decayed walls.

In reparations two points should be attended to, in preference to every other consideration. The one is, to keep all the ground-cills or foundations, constantly tight, to prevent the wall or upper part of the building from warping, or getting out of its perpendicular; the other is, to keep the thatch or covering at all times whole, to prevent wet from getting in to damage the timber.

When buildings are very old, and in bad condition, it is better to pull them

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quite down, than to be at much expence in patching them.

Tenants ought to find straw for thatching, because it is the growth of the farm, and to carry all materials for repairs gratis, because their teams and carriages are ready on the spot, and they can often do it at leisure intervals, without much inconvenience.

When farms are leased, the landlord generally engages to put them in repair, and the tenant to keep and leave them so. But estates, under this regulation, are very often neglected ; for when the landlord is not called upon, it is very natural for him to be careless ; and at the expiration of the demise, there is often a heavy unexpected charge brought on, for want of a little timely attention ; and it seldom happens that a landlord can prevail on the departing tenant, to
be

be at much expence in making good defects, and it is very unpleasing to be obliged to compel him to do a thing by force. Constant attention not only reduces the expence of repairs, but brings them to a more regular and even charge. But as no exertion or assiduity whatever, in an owner, or steward, can be sufficient to attend to every accident, that happens upon a large estate, it seems essentially necessary, that the tenant ought somehow to be interested in the preservation of the buildings, as well as the landlord; because as he is always on the spot, he can remedy a breach at the expence of a shilling, by taking it in time, which will cost the landlord a guinea by being neglected. He too, by being on the spot, can better attend to the workmen, to see that they do not idle away their time, when they work
by

by the day. This obvious inconvenience has been effectually remedied by Mr. *Anſon*, upon his eſtate under my care in *Norfolk*, by agreeing with his tenants to allow them all reaſonable accommodations, and all neceſſary materials for repairs, but that they ſhall ſuſtain the moiety of all expences for workmen's wages, unleſs tempeſts or accidents ſhall bring the expence of ſuch workmanſhip, in any particular year, to more than ſix per cent. upon the rent; in which caſe the landlord pays the ſurpluſage. The ſaving has already been conſiderable; and as no tenants have a better landlord, nor any landlord a better ſet of tenants, they find mutual convenience, and ſatisfaction, in this regulation; as others may do, if they will imitate it.

THE DEFICIENCY OF TIMBER CON-
SIDERED.

THE decrease of timber in this island has been much complained of, and not without reason. A few years since, the government took this important object under consideration. The Commissioners of the Navy, and many other persons, were examined before a Committee of the late House of Commons, as to the quantity, and condition, of the timber in general throughout the kingdom. The deficiency was clearly proved, but the remedy applied was no cure to the disease. Instead of planting and protecting the King's forests, and encouraging private persons to promote the growth of timber, in order to keep up a proper succession, a restraint was
laid

laid upon the East India Company from building ships of so large a size as formerly. This measure, instead of being of use, was a manifest discouragement to the growth of timber, because it precluded the grower from carrying his commodity to any other market than the Navy; and as Government fixes its own price, no man, in future, can be expected to suffer his timber to stand beyond the size, which he has a right to dispose of in what manner he pleases. Government undoubtedly secured all the timber then standing, but effectually cut itself off from all farther supply; which it must severely feel in the long run.

It would perhaps have been better, though I speak it with deference, that nothing had been done in this matter, than that a prohibition of this kind should have been established. A vast
deal

deal of growing timber will now be cut, at a smaller size than formerly ; besides that all restrictions which affect trade, or private property in any shape, are impolitical, and odious.

I have taken the liberty, to preface my observations upon timber with this remark, merely to shew, that no regulation of Government is so likely to provide a remedy against the deficiency of timber, as the private attention of individuals ; and therefore, great as the object before us is, nothing seems wanting but to convince men of landed property of the great profits which result from planting.

That there is a deficiency of timber in this kingdom, particularly in oak, evidently appears from the proceedings of the said Committee ; and every man who has lately travelled much into the internal parts of the country, must be
fully

fully sensible of it from his own observation. It will therefore be needless, to add more to prove it, but essentially necessary to adopt some eligible plan, for the future increase and preservation of this useful commodity; which I shall endeavour to suggest in the following hints.



THE MOST USEFUL SORTS OF TIMBER
CHARACTERIZED.

SINCE the modern fashion of ornamenting country-seats, and villa's, has prevailed, almost every gentleman's attention has been taken up in that mode of planting ; and many of them are apt to consider themselves as great planters, merely because their habitations are surrounded with a thick margin ; half the trees of which will never be of any national use. I do not however mean to insinuate, that this method of planting has no merit, but that it is not the style of planting which this country requires ; and that, while gentlemen attend to the embellishment of a few acres, they frequently neglect larger objects, upon such parts of their estate as lie farther from
home,

home, and are more calculated for growing better sorts of timber.

When real use only is considered, we shall find that a very few trees, in species, will be sufficient to answer all our purposes.

The *oak* claims our first regard: its use is general, and essential; and though necessity might teach us to shift without other timber, this alone, when we consider the importance of our navy, is what we cannot dispense with, without feeling the greatest inconvenience.

Ash is perhaps the second timber, in point of utility, though it be far from being held in universal esteem. It has many enemies, because the wet, which drips from it, is very noxious to most other plants. And as it shoots its roots horizontally, and pretty near the surface, farmers have a particular dislike to it,

because it interrupts the plough ; but when its extensive use is considered for coopers, wheelwrights, coach-makers, carpenters, sieve-makers, and some other trades ; for hop-poles, hurdles, and many other purposes, no wood, except oak, could less be spared ; and as its growth is quick, I do not know a more profitable one.

Elm is another noble sort of timber, being useful for shipping, pipes for conveyance of water, millwrights, and carpenters uses. There are many sorts of it ; but the most valuable are “ *the small-leaved English elm*, and *the smooth narrow-leaved elm*, by some called *the upright narrow-leaved elm*.” This tree once planted, is planted for ever, as it spreads itself astonishingly. It is the best of all trees in hedge-rows, because it generally grows erect, does least damage

to fences, and will stand much closer together than any other. Some people are fond of it, merely because it will bear lopping better than any other tree : but the common custom of pruning is very destructive to the health of the tree, and injurious to the quality of the timber ; and, where this practice prevails, is a great blemish to the appearance of a country.

Spanish chesnut, sometimes called sweet chesnut, may be classed among the most useful trees. In all purposes of building it is nearly equal to oak, and generally reckoned as durable. It is likewise pleasant to work, and where it relishes the soil is quick in its growth. No timber deserves our attention and encouragement more than this ; it may be looked upon, with great propriety, as the oak's best substitute ; since it answers many
purposes

purposes where no other wood, except oak, would do.

Sycamore is useful for turners, and is besides very profitable in stem-wood.

Beech is used for felloes of wheels, and by cabinet-makers, for making handles to a great many tools, and for firkins to hold soap; is a most elegant tree for pleasure, and ornament, and pays extremely well upon dry chalky hills, which are little calculated for any thing else.

Abele, and *white poplar*, which are exceedingly quick in their growth, particularly when planted near a running stream, make good boards for ordinary repairs; and serve for the purposes of wheel-barrows, and the sides of waggons and carts, and may be considered as an useful substitute to the ash, in those, and many other purposes.

Black poplar, alders, and several sorts of *withe*, make useful rafters, poles, and rails, and planted in the manner hereinafter described, make a very quick return. The latter is likewise used by patten-makers, and sometimes by turners; and where elm is scarce, it is often used for water-pipes.

Having, in a cursory way, run over the different qualities, and uses, of the most necessary kinds of timber, and wood, I shall proceed to treat of them more particularly.

The first maxim in planting is, to make a judicious choice of such trees as our soil will bear; which is best discovered by the trees themselves, where any happen to grow upon it, otherwise the observation must be made upon some other soil, of a similar nature, where they do grow.

The next maxim is, not to plant the sort of tree which the neighbourhood is already stocked with, but (*vice versâ*) those of which there is the greatest scarcity. This is a consideration of great consequence, though seldom much attended to.

If the soil be apposite, and the country not over-stocked, or so situated as to admit of carriage out of it, give the preference to *oak*, *ash*, *elm*, or *Spanish chestnut*.

In maritime counties, and others, where there is water-carriage, there cannot be too much *oak*, or *elm* planted, let the neighbourhood be ever so much stocked; because these sorts, being useful in shipping, will always find a good market elsewhere, if not at home. With other timber, in some particular instances, a country may be over-planted, and injured by that means.

If all sorts of timber be equally scarce, and dear, plant the quickest growers; and among these *abele*, *white poplar*, and *Dutch witbe*, if the soil be moist, should have the preference.

If coal be very dear, it may sometimes answer, to plant merely for fuel; in which case *ash*, *beech*, *sycamore*, *maple*, and *hazel*, make excellent stem-wood upon sound land; and *alder*, *black-poplars*, and *witbes* of all sorts, do well near brooks, rivers, or even upon boggy land.

When *furze* is scarce, it is not an unprofitable thing to plant even that, as it is very useful for ovens, and kilns. I know instances of six pounds an acre being made every third year, by this crop, upon land for other purposes not worth above five shillings an acre yearly.

In the neighbourhood of basket-makers

makers plant *oziers* ; which are very profitable, and quick in their return.

In hop-countries plant *ash*, and the *long-leaved withe* for poles.

The judicious planter will weigh all these different circumstances, and make his own application ; but, besides all that I have observed, the price of each sort of timber, as well as the quickness, or slowness of its growth must be considered, before a just discovery can be made, which is most profitable.

DIFFERENT METHODS OF PLANTING
SUGGESTED.

EXPERIENCE shews, that thorns and bushes are the natural nurses for all forest trees, particularly for oak ; and as these never grow high, we learn hence too, that oaks do not like any neighbour to over-top them, longer than is necessary to protect, and keep them warm in their infancy, till they get good root, and are able to expose their heads to the open air.

Observation will next discover, that trees, when they arrive at any considerable size, do best in plantations of their own kind only ; *oak*, for instance, dislikes the *ash*, and seldom thrives well in its company. This teaches us, to make some inferior wood subservient to
that,

that, which we set the greatest value upon; so that it may answer the same end, to the better sort, as thorns and bushes do in a forest.

When large plantations are designed to be raised, the first business is, to clean a piece of land for a nursery, sufficiently large for the purpose required; which should be securely fenced round, and tolerably well sheltered; but should be of a poorer kind than is intended for the trees, when they are transplanted.

When the plantation is made, it is clearly the best way to plant the *oaks*, or whatever trees are designed for timber, at nearly the distance they are designed to stand forty years afterwards; and when any fail, to supply them occasionally. This best sort, designed for timber, should be planted at the growth of about seven or eight feet high; and
all

all the intermediate spaces should be planted, at the same time, with more ordinary plants, such as *sycamore*, and *horse-chestnut*, at the distance of about two yards square, and about half the size of the better sort; which will be when they are about two or three years old. Part of these, as they advance in growth, should be chopped down, to thicken the bottom, to keep the better trees moist, and warm. As they still grow on, the remainder should be chopped down, by degrees; which will make a very fine, and profitable *under-wood*, about the time that the better sort of trees will want to spread their branches, and be clear above. This method of raising timber in plantations, must be allowed to be a nearer imitation of nature, than the common way of planting a variety of sorts together, of equal age, such as *oak*, *ash*, *elm*,

beech, *chestnut*, and many others ; and experience, the best of all evidence, has always proved it. The common method of planting has this great disadvantage attending it—the planter has not the heart to cut down valuable trees, when the plantation wants thinning, though they stand too thick ; and if he spare them at such a crisis, he spoils the whole plantation ; but he would feel no remorse at cutting down a *horse-chestnut*, or a *sycamore*, to promote the growth of a better tree.

Round the borders of such plantations it is highly proper to plant thorns, or furze, the width of twenty or thirty feet, to keep out all cattle, to interrupt disorderly people from getting in, and to furnish useful stuff, of this kind, for mending hedges, and other purposes which every farm stands in need of. In
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the middle, or at one corner of every large plantation, it is very proper to have a small nursery, that any dead, or sickly trees may be replaced with greater expedition, and less expence than they can be, when the nursery is at a distance.

These large plantations may frequently be made, upon land which lies waste, and upon land lying at a distance from home. And less plantations, of a similar kind, may be made upon almost every farm, in angles, nooks, pits, and corners, which are of very little advantage in any other way; because, when such parts are in tillage, they are difficult to plough, and when they are grazed, cattle are very apt to gore, and kick each other. *Asb*, in particular, should be confined to small spots of this kind.

In the middle of every large grazing-ground a clump should be planted, to afford

afford shade and shelter for cattle ; and to prevent their lying too much under the hedges, in hot weather, which damages the fences, and tempts them to break out. Besides, cattle are more troubled with flies under a close hedge, and have less benefit of the air than in an open grove. If the piece be very large, two or three clumps will be useful.

Hedge-row timber generally grows to the greatest size ; is of the best and soundest quality ; and most calculated for the use of the navy. *Elm* is there to be preferred, because it grows erect, and does least damage to the land by its under-branches, and next to that *oak* ; because it draws its principal nourishment from a tap-root, and therefore does not exhaust the surface of the ground, like ash, and some other trees, nor interrupt the plough by horizontal roots.

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Some inconvenience indeed will be sustained, by shading the ground, but it will bear no proportion, to the profit which will accrue from the increase in the growth, and value of the timber. Hedges, properly managed, afford a large field for planting; but, where this method of raising timber is practised, pollards should be totally extirpated. They take up a deal of room, as much as the largest trees, utterly destroy all fences, and produce very little more wood, than would grow in the same space from stubbs, or quickset-stools. If there was only one tree planted, in the room of every pollard through the kingdom, it would very soon be sufficiently stocked; and the difference in beauty, and profit, would be astonishing. If the cutting down of pollards should be thought to lessen the quantity of fuel, the under-wood

wood in the nooks, angles, pits, and corners which I have recommended to be planted, will be more than adequate to the deficiency.

Before I take leave of hedge-row timber, I shall communicate a mode of planting it, which Sir *Charles Cocks*, at my recommendation, has lately adopted upon his estates in *Gloucestershire*, and *Worcestershire*. A clause is inserted in every lease, to oblige each tenant or occupier of a farm, yearly to plant, and properly protect one tree to every ten pounds a year rent, or ten to a hundred a year rent, and so in proportion, on such part of their respective farms as are pointed out to them for that purpose. The expence to the tenants is a mere trifle, as the trees are provided for them in an adjoining nursery; and, where leases are granted, they very cheerfully
consent

consent to it. By this easy method, upon a large estate like his, the quantity of timber, thus imperceptibly raised, will be very considerable, even in the course of a twenty-one years lease. Upon every thousand pounds a year there will be two thousand one hundred trees in number, at the end of the lease; because, if any fail, the tenants plant the next year a greater number. And if we suppose these trees to pay only three pence a year each during the demise, which is a moderate calculation, they will be worth, at the expiration of the lease, 288*l.* 15*s.* and from that period will begin to pay at least six pence a tree yearly. This scheme of planting is certainly practicable upon every estate, if a landlord will give his tenants a reasonable bargain in their land, and leases for their encouragement.

I shall

I shall mention one other method of planting, which is productive of much improvement, *viz.* to appropriate wet and boggy lands to this use, instead of devoting them to pasture; in which case they frequently give cattle the rot, and are often dear at a crown an acre. But, planted with suitable aquatic woods, they yield an immediate profit of fifteen, or twenty shillings an acre yearly, and carry on an increasing gift to posterity, which will be of as much value, in fifty years time, as the fee simple of the land before this improvement was made.

The best way of planting this sort of land is, by digging the whole of it a foot deep, inverting the turf, and afterwards opening trenches, which should have a free discharge, at one end, into some more capital drain, or outfall. These

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trenches should be eighteen feet apart, three feet deep, two feet and an half wide on the top, and one foot wide at the bottom ; and all the stuff, which comes out of these trenches, should be thrown upon the tops of the beds, which will help to raise them. At the same time a row of holes should be opened in each bed, at about eighteen feet apart, eighteen inches deep, and three feet diameter on the tops. This should be done early in the winter, that the frost may get into the ground, and chaften it. Early in February, the surface of the beds should be chopped with spades, and made as fine as possible. And about the latter end of the same month, *white poplar*, or some other suitable trees, should be planted in the before-mentioned holes, and all the intermediate spaces upon the beds should be filled up.

up, with withe, or ozier-fets. If with the former, they should stand at four feet square, if with the latter, at only thirty inches. The first will make hop-poles, and may be cut every sixth, or seventh year; the other may be cut every year, for the use of basket-makers. The fets, when planted, should be about the size of a man's thumb; and should be cut with a sloping point at both ends, just above, and just below a knot, or bud. They should be about two feet long; one half should be pushed into the ground, and the other stand out.

Some people plant beds of *asb* in this way; and if the beds be laid tolerably dry, it generally flourishes in stems exceedingly well, and makes the best of hop-poles, and cooper's-stuff. I have seen some, which were planted a few years since near *Sudbury* in *Suffolk* upon

a common horse-moor, which flourish surprizingly; and I was told, by a proper judge in the neighbourhood, that it was honestly worth thirty shillings an acre yearly. On a dry bank of land planted at the same time, in the same piece of ground, I observed that the *asb* was not by above a third so good as that on the boggy part.



ADVICE RESPECTING THE MANAGEMENT OF TIMBER.

NO trees ought to be dismembered of their branches without absolute necessity ; such treatment is very prejudicial to all sorts of timber. But where trees hang over roads, and buildings, it cannot sometimes be dispensed with. Where this happens, the limbs should be taken off close to the tree, and the place where it grew planed quite smooth, that the wet may not hang upon the part. If the tree be young, and thrifty, the wound will quickly heal, and the blemish be covered ; but when trees are hacked in the branches, and left jagged, the wet hangs upon them, and by degrees rots them quite into the heart.

Thinning timber is a very essential

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part,

part, of the care it requires. Grove-timber, and thick plantations generally stand in need of some attention of this sort. The first rule is, to thin it early ; the second, to do it by degrees ; and the third and principal rule of all is, to take Nature for our guide, and clear away such trees only as she points out ; namely, the unhealthy trees ; without paying any great regard to regular distances.

When these rules are not observed, the bad consequences are obvious. Trees in thick plantations, when left any considerable time before they are thinned, get too long in their bodies, for the size of their heads ; and when a fresh current of air is let in upon them, the sap is immediately chilled, and the trees checked in their growth. But if they are thinned early, and at different times, they are
hardened

hardened by degrees, and their branches expand regularly, and preserve a due proportion with their bodies. If trees be taken promiscuously, or so as to leave the remainder at equal distances, nearly the same inconvenience arises as in the former case; for there will be a variety of tender parts, which cannot be perceived at the time of doing it, left unguarded; but if the sickly trees be taken, the others will immediately receive great benefit.

The obvious signs of health in timber are these—The bark will be smooth, look clean, and grey in colour, and the fresh shoots will be long, and straight, and free at the points. The colour of the green will be much deeper, than that of those trees, of the same sort, which are not healthy; and the trees will retain their leaves longer in the autumn.

The marks of unhealthy timber are nearly the contrast of the former. The tree will be hide-bound, the bark rough, close, and thick, and often covered with moss; the fresh shoots will be very short, and crooked at the ends. The green will be of a paler colour, and the leaves will drop sooner. An unhealthy tree should never be suffered to remain in any plantation, but should be taken down, as soon as it has done growing, let its size be what it will; and a young plant set in the vacancy.

Some gentlemen, who have not ready money, are discouraged from planting, because the expence is immediate, and the profit at a distance. At the same time, perhaps, they have a great deal of timber standing on their estates, which gets worse every day, and lessens in value, which they do not choose to cut,

cut, for fear the world should think them needy. Other gentlemen let their timber stand, till it rots on the ground ; thinking it highly reputable to have a large quantity of old timber on their estates. Both these overlook their own interest. The public, and private good requires, that all timber should be taken down as soon as it gets to perfection ; and a regular succession kept up by young plantations. The man who acts upon this plan, acts rationally ; and if he be young, or even middle-aged ; he may live to cut down the greatest part of the old timber, which he finds upon his estate, put money in his pocket, and leave his estate better stocked with timber than he found it. And what is more material, perhaps, with many a young gentleman, he will avoid the disgrace of cutting down, which is apt to imply

want,

want, when the world perceives that his schemes, upon the whole, are more calculated for the growth, and increase of timber, than its destruction or diminution.

In short, the true way of managing a timbered estate is, to make use of what Nature has brought to perfection, and to keep up a regular uniform succession ; so that at the time we take one egg from the nest for our own use, we may leave another, as a nest-egg, for the benefit of posterity.

Sensible of the importance of this plan, Mr. *Windham* of *Felbrigg* in *Norfolk*, has done me the honour of approving, and adopting it in its full extent ; and has impowered me to carry it on upon such a vigorous scale, as will gradually swell the quantity, and value of his timber, notwithstanding his falls will
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be considerable every year. I am persuaded, that any other gentleman who follows the example, will find his account in it.

For these, and many other useful hints upon planting, and the management of timber, I am particularly indebted to Mr. *Willes* of *Astrop* in *Northamptonshire*, Mr. *Gilbert* of *Cotton* in *Staffordshire*, and Mr. *Marsham* of *Stratton* in *Norfolk*, who have made noble improvements upon their respective estates, and possess more knowledge and skill in the cultivation of timber, and other wood, than any gentlemen I have ever conversed with upon this important subject.

ADVANTAGES RESULTING FROM
SMALL FARMS, AND THOSE OF
THE MOST PROFITABLE SIZE DE-
SCRIBED.

EVERY speculative Englishman who travels through the *Austrian Netherlands*, is astonished at the great population of that country, and at the sight of the markets, which are plentiful beyond description. Upon enquiring into the internal state, and regulation of the country, he finds that there are no large farms, no class of men who pass under the character of gentlemen-farmers, acquiring large fortunes merely by superintending the business of farming, but that the whole country is divided, into much smaller portions than land is with us, and occupied by a set of laborious people, who in general work
for

for themselves, and live very much upon a footing of equality.

This seems a presumptive proof, that agriculture, when it is thrown into a number of hands, becomes the life of industry, the source of plenty, and the fountain of riches to a country; but that monopolized, and grasped into few hands, it must dishearten the bulk of mankind, who are reduced to labour for others instead of themselves; must lessen the produce, and greatly tend to general poverty.

I shall not attempt wholly to account for the amazing increased price of provisions with us. There are, undoubtedly, many causes which contribute to it; but it is very evident that no single cause affects it, so much as the destructive practice which has prevailed, for near half a century back, of demolishing
small

small farms. This absurd custom, which is not without its advocates, draws its birth from ill-digested calculations; is attended with great cruelty to individuals; and ends in considerable private loss, and public calamity.

The specious inducements are, to avoid trouble, to save expences in repairs, and to secure the rent by having more capital tenants.

Granting these arguments their utmost weight, they may be easily confuted.

With respect to trouble, those who manage their own property, have their own reward, and satisfaction in all they do. And a steward, or agent, ought to think nothing a trouble, which is conducive to the good of his principal's estate.

The saving in repairs seems, on the first view, to carry greater plausibility;
but,

but, when all subsequent consequences are duly investigated, it will be found very inadequate to the loss, which will be sustained in the end.

There is no possibility of forming an exact estimate of the expence of keeping an estate in repair. It varies greatly in the different price of labour, and materials, and still more in the different skill, and attention, which is bestowed by the person, who has the care and direction of the work. But from great experience and attention, I have observed, that large farms being once put in good repair, may be kept so, upon an average one with another, at about seven, and small farms at about ten per cent. (fire and tempests excepted) and if we extend it to eleven upon small farms, for their greater proportion of accident, the buildings being

more numerous, we shall be sure to make a calculation that will not deceive us.

Admitting this, there appears to be a saving, by large farms, of forty pounds a year, upon an estate of one thousand pounds a year. But, on the other hand, it must be allowed by every candid person, that small farms let every-where for, at least, fifteen per cent. more than large farms; and that industrious tenants upon these small farms are enabled to give this difference, by doing the chiefest part of the work themselves; by their greater frugality in living; and by availing themselves of a variety of little advantages, which the great farmer will not stoop to pick up. Therefore after deducting the four per cent. saved upon repairs, from the fifteen per cent. difference in the scale of rent, it appears that there is an
actual

actual loss of eleven per cent. or one hundred and ten pounds a year upon every thousand pounds a year, and so in proportion for a greater or less estate. As to the better payment of the rent, there are always industrious and safe tenants enough to be gotten, if care be taken, and proper encouragement given.

The landlord indeed is sometimes in a situation, from which he cannot easily extricate himself. His buildings, by degrees, being diminished, for want of a little timely care, and charge, he finds himself, in a manner, obliged to let his property in large lots, sometimes perhaps contrary to his inclination, and is thereby deprived of the advantage, he would otherwise have had in a greater choice of tenants. But whether this inconvenience descended to him, or has been created by him, it is his duty, and

P interest,

interest, to remedy it as soon as possible. For, if his farms be small, he will have many more offers, because smaller capitals will be required to stock them; but, if his farms be large, the number of good tenants, possessed of money enough to stock them, will be very few, comparatively speaking; and these few will have it more in their power to effect combinations, and keep down the real value of land, which is often the case in many parts of England.

Upon these accounts, not to mention others, the calculation seems totally erroneous, which supposes the ballance of interest to the landlord, to be in favour of large farms. And motives of a different kind are not wanting to discountenance their extension.

Those who contribute towards the destruction of small farms, can have very
little

little reflection. If they have, their feelings are not to be envied. Where this has been the practice, we see a vast number of families reduced to poverty, and misery, the poor rates much increased, the small articles of provision greatly diminished in quantity, and number, and consequently augmented in price.

A poor widow, left with a young family, will struggle very hard to keep her children from the parish, when she is in possession of a small farm, or a dairy, and will teach them the way to be industrious betimes; but if she be deprived of the means of support, her spirits are broken, and she and her children sink at once into poverty, and become burthen some to themselves, and the public. Nor is this the worst of the matter. The increase of large farms has a generally bad tendency. For as soon

as the little schools of industry are grasped, into the hands of an over-grown, rapacious farmer, the former occupiers are, at once, all reduced to the state of day-labourers ; and when their health, or strength fails, there is but one resource ; they, and their children, are thrown upon the parish. This has undoubtedly swelled the rates, to their present enormous height, more than any cause whatever.

The mechanic and manufacturer next feel the blow. The market wears a different face. The vast number of poultry, the quantity of pork, and a variety of other small articles of provision, are no longer supplied in their former abundance. The great farmer raises no more of these, than are necessary for his own consumption ; because his wife, and children, will not take the trouble, and
care

care of them, or condescend to attend the market, like the wives, and children, of little farmers. His views are formed upon a large scale, and every thing flows from him in a wholesale channel. And as no man can execute any very extensive business, so well as that which lies in a more contracted space, he must, when he has a great deal upon his hands, neglect many small objects, partly for want of time, and partly because they appear trivial in their nature: and many trifles added together, make a large deficiency upon the whole.

The case is different upon the small farm. Here the tenant's great dependence rests upon trifles merely; and therefore it behoves him to make the most of every thing. As he has no great space to superintend, it lies under his

eye at all times, and seasons ; he seizes all minute advantages ; cultivates every obscure corner ; generally accumulates more manure in proportion to his land ; and considering his animal as well as vegetable produce, has likewise in that a greater proportion.

He does great part of his work with his own hands ; and every man works more chearfully, zealously, and diligently for himself, than for another. His wife and children are likewise of great service to him, especially if his gains depend much upon a dairy. And, in general, the children of these little farmers prove, the most useful people the country produces. The girls make the best dairy-maids ; the boys the best gentlemen's bailiffs ; the best head-men in larger farms ; the best persons to super-

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intend,

intend, and manage cattle; and, in a word, the most regular servants, in most capacities.

Having said thus much of large and small farms, I shall venture to describe the sizes, which I think would be most conducive to public and private benefit. And in doing this, I wish to avoid an extreme; for though a reduction be essentially necessary, it ought not to be made upon too low a scale; because I am convinced, that the nature of our soil will not admit of that *universal plan*, of farms so low as twenty and thirty acres, which subsists in *Flanders*. For though it be our interest to imitate them, I wish not to copy them exactly. It is undoubtedly proper, and beneficial to a country, that farms should vary in their size, as much as possible; but, in my opinion, which I deliver with defer-

ence, the highest ought not to exceed a hundred and sixty pounds a year. But though there should be some of these, to promote emulation, to reward particularly-industrious men, and to employ a middling *capital*; yet their number should be inconsiderable, in proportion to the number of smaller ones. As I have mentioned an hundred and sixty pounds as the yearly value of the highest farms, I think it right that none should be under thirty pounds; and that from thirty to fourscore, the number ought to be much greater than of the largest sort; to enable industrious servants, who have saved their wages, or whose good conduct entitles them to credit, to establish themselves, oftener than they do, in business; and likewise to afford settlements, for the children of greater farmers to begin the world with. Farms, varied in their
size,

size, between these lines, would have an excellent effect, as they would play into each other's hands, more than they now do; for they would have, almost every one, somewhat of a different object in view. Many of the smallest farms would breed cattle to more advantage, than they could fat them; and others would fat them with more convenience, than they could breed them.

Upon an estate of one thousand pounds a year, I wish to see something like the following proportion: One farm of 160*l.* one of 120*l.* one of 100*l.* two of 80*l.* two of 60*l.* two of 50*l.* three of 40*l.* and four of 30*l.* each. This would be sixteen farms, upon a thousand pounds a year, and would be a profitable division to an owner, and to the public. But, instead of this, the generality of large estates do not support above a third part
of

of these families. And I will venture to assert, that the poor rates will be much higher in the latter, than in the former mode of allotment; because a great many families, which would get a decent livelihood upon the farms of 30*l.* 40*l.* and 50*l.* a year, come to the parish, as I have before observed, when they are deprived of this method of supporting themselves.

If large estates were divided, in a manner somewhat similar to the preceding plan, it would be a means of crushing another real grievance which at present subsists, *viz.* the exorbitant price put upon land, by the owners of small estates. A great farmer often lets a small bargain, which he has picked up, in the same parish where he rents a large estate himself, at the proportion of one
third

third more than what he gives his own landlord. If these little places were in greater plenty, and let by gentlemen of fortune at only fifteen, or twenty per cent. more than their large farms, the more inconsiderable owners of estates would not be able, to obtain their present exorbitant terms; but, while those places are so few in number, people who are in absolute want of them, must give whatever is asked for them; and the rent is often so high, that industry itself cannot get a livelihood upon them.

The better regulation of this important concern, affords an extensive field, in which gentlemen of fortune may laudably exercise their talents, of every kind; and, upon reflection, they must be convinced, that it is the number of useful inhabitants, that stamps a high value on
land,

land, which has no intrinsic value in itself; and that when these inhabitants decrease, the land must proportionably sink in value. Their interest therefore is inseparably connected with the comfort and prosperity of the people where their estates are situate; and when they lend an hand to the depopulation of a country, they sink, at the same time, the value of their own property.

There are, however, two very material points to be attended to, by every person, whose humanity, and liberal mind may induce him to adopt this plan, for the regulation of his property.

The one is, to make choice of industrious tenants; such as have been bred up in farm-houses, or country-business from their infancy; whose hands have been accustomed to labour. There are
always

always enough of these to be found. But great care must be taken, not to accept of idle fellows, who have been bred to little trades. Such people are very desirous of getting into small farms, and wanting the judgment, and industry which the others have, generally ruin themselves, and bring these little places into disrepute.

The other point is, to contract old buildings, in proportion to the size of the farm; and when new erections are made, to build upon a small, suitable scale; for too much building augments the expence of repairs considerably, and does the tenant no real kindness.

I shall quit this subject, with an anxious wish that the destructive practice of engrossing farms may be carried no farther; and as the stab already given
to

to plenty, and population, has greatly affected the prosperity of this country, I hope some reparation will be made for the injury sustained.



THE GREAT BENEFIT OF CHURCH
AND COLLEGE TENURES TO POPU-
LATION AND SOCIETY.

ESTATES held under ecclesiastical lords, collegiate, and corporate bodies, are at this time one of the greatest supports this country has for its population. Notwithstanding little farms are engrossed, and cottages demolished upon other estates, theirs, from the nature of the tenure, still remain nearly the same; and continue to yield their proportion of that advantage, which this country formerly derived from smaller farms than now subsist.

Upon manors where any of the before-mentioned bodies preside, a life no sooner drops, in an estate held under them, than they are ready to fill up the vacancy, in
favour

favour of the heirs of its former possessor; for having only a life-interest in it, or perhaps not so much, as preferment often removes them, they are glad to seize all immediate benefits which accrue, and never look forward, like a lay-lord, to the future advantage which his family may acquire, by waiting for the reversion after the existing lives. For these reasons, upon manors of this sort, population must, and does wear a better face, than in other districts.

When a man is a copyhold, or a life-leasehold tenant, it gives a stronger spur to his industry, than when he is tenant at will, or on a short term of years, to the same quantity of land. He will be encouraged to undertake improvements, and will obtain a much greater produce. He will also be better enabled to marry, and much encouraged to do it; because
 he

he has the means to support a family, and to make some provision for them, in case any accident should happen to himself.

When young women are left with little estates of this sort, they are the better enabled to provide themselves suitable husbands.

These estates, preserving their original form more than any other, and being, in general, of a small size, produce more poultry, pigs, and dairy-articles, than larger estates; and are much more beneficial to the community. Many gentlemen of landed property are so fond of freehold, that they affect to despise every other tenure; and I have heard some lament, that there was such a thing existing as copyhold, or leasehold. These are generally the greatest advocates for large farms; but if these were

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to

to prevail universally, we should soon feel the dreadful consequence ; for then every source of plenty would be checked, and population receive an irrecoverable blow.

Since little farms have been swallowed up in greater, there are thousands of parishes which do not support so many cows as they did, by fifty or sixty in a parish ; and the inhabitants have decreased in proportion. If church and college-tenures were set aside, this devastation would spread the wider.

These tenures, and all copyholds under lay-lords which are not liable to revert, have another advantage. They are purchased at a smaller price, compared with freehold, which makes it easier for a man of a small capital, to procure an inheritance ; and as the title is always
clear,

clear, this is another great recommendation of them.

The good effects I have enumerated, which flow from copyhold, and leasehold tenures, shew the benefits resulting from small farms, in a very strong light; and those who persist in the ruinous practice of throwing too much land into one man's hands, are blind to their own interest, and deaf to the cries of humanity.



REFLECTIONS ON THE GREAT IMPORTANCE OF COTTAGES.

ESTATES being of no value without hands to cultivate them, the labourer is one of the most valuable members of society; without him the richest soil is not worth owning. His situation then should be considered, and made at least comfortable, if it were merely out of good policy. There is certainly no object so highly deserving the country gentleman's attention; his interest, and his duty equally prompt him, to do all he can, to place him upon a better footing than he is at present.

The first point to be taken under consideration is, the state of the cottages, which these useful people inhabit;
and

and next, how far their condition can be improved, by better regulation.

The shattered hovels which half the poor of this kingdom are obliged to put up with, is truly affecting to a heart fraught with humanity. Those who condescend to visit these miserable tenements, can testify, that neither health or decency, can be preserved in them. The weather frequently penetrates all parts of them; which must occasion illnesses of various kinds, particularly agues; which more frequently visit the children of cottagers than any others, and early shake their constitutions. And it is shocking, that a man, his wife, and half a dozen children should be obliged to lie all in one room together; and more so, that the wife should have no more private place to be brought to bed in. This description is not exaggerated, offensive

as it may appear. We are all careful of our horses, nay of our dogs, which are less valuable animals; we bestow considerable attention upon our stables and kennels, but we are apt to look upon cottages as incumbrances, and clogs to our property; when, in fact, those who occupy them are the very nerves and sinews of agriculture. Nay, I will be bold to aver, that more real advantages flow from cottages, than from any other source; for besides their great utility to landed property, they are the greatest support to the state, as being the most prolific cradles of population.

Cottagers are indisputably the most beneficial race of people we have; they are bred up in greater simplicity, live more primitive lives, more free from vice and debauchery, than any other set of men of the lower class; and are best
formed,

formed, and enabled to sustain the hardships of war, and other laborious services. Great towns are destructive both to morals, and health, and the greatest drains we have ; for where many of the lower sort of people crowd together, as in *London, Norwich, Birmingham*, and other manufacturing towns, they are obliged to put up with bad accommodation, and an unwholesome, confined air, which breeds contagious distempers, debilitates their bodies, and shortens their lives. Since therefore it is apparent, that all such towns must cause a diminution, or waste of people, we cannot be at a loss to trace the spring, which feeds these channels. The country must be the place ; and cottages, and small farms the chief nurseries, which support population.

I am far from wishing to see the cot-

Q 4

tage

tage improved, or augmented so as to make it fine, or expensive; no matter how plain it is, provided it be tight and convenient. All that is requisite, is a warm comfortable plain room, for the poor inhabitants to eat their morsel in, an oven to bake their bread, a little receptacle for their small beer and provision, and two wholesome lodging apartments, one for the man and his wife, and another for his children. It would perhaps be more decent, if the boys and girls could be separated; but this would make the building too expensive, and besides, is not so materially necessary; for the boys find employment in farm-houses at an early age. For the better explanation of what I mean, I subjoin plans, elevations, and estimates of two sorts of cottages; and as elm and oak-pollards are of little value in many countries,

countries, and may often be converted into scantlings, suitable to, at least, half the purposes of small buildings of this size, I have likewise shewed the difference in the expence, between erecting them with brick, and wood: considering pollard-timber at six pence a foot, and deal (of which the greater quantity will be required) at fifteen pence, which are fair prices for them in most counties. These estimates which I exhibit, will of course vary a little in every neighbourhood; but as it cannot be any thing considerable, I shall calculate upon them as at a medium price. The smallest of these cottages, built of brick and covered with tile, amounts to sixty-six pounds, the other, of the same size in wood, covered with tile likewise, to fifty-eight pounds. As the buildings will be quite new, built of good materials,

rials, and likely to last a great many years, and the estate where they are built, will be very considerably benefited, by having good labourers planted upon it; the landlord ought to be satisfied with four per cent. interest for his money; which will be, 2*l.* 12*s.* 9*d.* rent for the brick-cottage, and 2*l.* 6*s.* 5*d.* for the wooden cottage. To each of these comfortable habitations should be added half an acre of land, at the same rate which the farmers give; we will suppose this to be eighteen shillings an acre. This would bring the whole rent to 3*l.* 1*s.* 9*d.* for the former, and 2*l.* 15*s.* 5*d.* for the latter cottage. This quantity of land would be of great use to a poor family, in the produce of a little fruit, and vegetables of different sorts; and would assist them likewise in keeping a pig; as they might, and would raise
more

more potatoes and carrots upon such a spot, than would be sufficient for their own consumption.

The larger sort of cottage, which may sometimes be preferred, will cost, when built of brick and tiles, 70*l.* and when with wood, 66*l.* 10*s.* These might be appropriated to the use of labourers of the most industrious disposition. And as it would have an excellent effect, to make some gradation among cottages, as well as farms; it would be highly proper, and useful, to lay (besides the half acre of garden-ground) a small portion of pasture-land, of about three acres, to each of these last cottages, to enable the occupiers of them to support a cow; which would be a real comfort to their families, as milk is the natural food of children. If we value these three acres and an half of land at a guinea

near an acre, upon an average, and add it to the rent of the house, it will bring the rent of the former to 6*l.* 9*s.* 6*d.* and the rent of the latter to 6*l.* 6*s.* 9*d.* The value of the cow, if her produce were even sent to market, would at least amount to four pounds; but being used in the family, would, with the assistance of the garden, enable them to keep a sow, or two store-pigs, which would at least double the market-price. As one acre or more of this ground might be mowed every year, for hay, the cow might be kept in good order with this quantity; and it would be better worth a cottager's while, to give this rent for this lot of land, than to trust to the precarious advantage of a common, which always starves his cow in the winter. If it should be alledged, that there is not one cottager out of twenty who can afford
to

to buy a cow ; this difficulty may be easily obviated, by the landlord's letting him a cow, as well as the land, in the manner that dairies are generally let.

This would be dealing with the poor as we would wish to be dealt with ourselves, in a similar situation ; but instead of this, cottagers are chiefly left by gentlemen to the farmer's disposal ; and when they are accommodated with a small quantity of land, are obliged to pay, at least, a double proportion of rent for it, to what the farmers pay themselves.

Warm cottages of this sort would require much less fuel, than those in the present stile, which is a very considerable article to a cottager.

The next consideration is, to choose a convenient situation for cottages. Great farmers are very unwilling to admit them
close

close to their farms; and nothing is more common, than for a poor labourer to be obliged to come a mile, and sometimes more, to his labour, and return home again at night, in all kinds of weather, after he has done a hard day's work. Cottages should therefore be erected, if possible, on some sheltered spot, near the farm where the labour lies; and true policy points out, that every farm ought to have a sufficient number of such useful appendages, in proportion to its size. Such cottages, under some such regulations as these, would be of great use and ornament to a country, and a real credit to every gentleman's residence; as, on the contrary, nothing can reflect greater disgrace upon him, than a shattered miserable hovel at his gate, unfit for human creatures to inhabit. Upon encouragement like this good tenants would never
be

be wanting. Industry would meet with a reward, the poor rates would necessarily be lightened, and population increased. A farm thus provided, with such a sufficient number of labourers as might, at all times and seasons, be depended upon, would be of more value on that account. The tenant of such farm would not be subject to pay exorbitant wages, as he otherwise must, on particular occasions. He would not be obliged to court the vagrant, to lend him a precarious assistance, or to have recourse to towns, to pick up disorderly people. In summer, besides the usual business of hay-making, he might employ even the women, and children, in weeding, and other useful business.

Almost every parish is, in a great measure, subject to some particular gentleman, who has sufficient power and in-

fluence over it, to correct the present grievance, and to set a better example. Such gentlemen should consider themselves as guardians of the poor, and attend to their accommodation, and happiness : it is their particular business, because they, and their families, have a lasting interest in the prosperity of the parish ; the farmers only a temporary one. If a gentleman's fortune be so large, that he cannot attend to objects of this sort, he should, at least, recommend the cottagers to the attention of his agent ; and give him strict instructions, to act as their friend and protector ; for unless some such check be put upon great farmers, they are very apt to contribute to the demolition, instead of the protection of cottages, and when the nest is destroyed, the bird must emigrate into some other parish. A cottager, in this case, has no

other choice, unless it be to make application to the neighbouring justice of the peace, for his order to the parish-officers to find him some other place to lay his head in. If it were not for this excellent law, which obliges parish-officers to find habitations for their poor, I am sorry to remark, that in many parishes, they would be literally driven into the open fields.

There is another plan relative to cottages, which generally answers extremely well, and that is, to lease them off to industrious labourers, for the term of three lives, at their nomination; taking a very moderate fine, not exceeding ten or twelve pounds, upon a cottage worth about forty shillings a year; reserving a small quit-rent, not exceeding half-a-crown a year, and making it a point to renew any life which drops off,

R upon

upon one year's value only. This scheme is beneficial for landlord and tenant ; for though the former does not let his cottages for so much as he might at rack-rent, yet what he does get, is all clear money ; and by this means he preserves the value of all other parts of his estate, by keeping up a proper number of inhabitants. The latter finds his account in it, because he makes a settlement for his family ; and can repair, and improve his cottage at leisure hours with his own hands ; and if he be an industrious man, he can generally find a friend to lend him his first fine, on such an occasion, if he cannot raise it himself. Sir *Charles Cocks* has lately put all his cottages upon this footing, on his estates under my care in *Gloucestershire*, and *Worcestershire* ; and as he was chiefly influenced by a humane disposition, to make the poor, in his fe-

veral districts, as comfortable, in their respective situations, as possible, the object of fines was made so easy to them, as to be exemplary.

I shall suggest a few hints to the builder, and conclude this subject with the plans, elevations, and estimates before alluded to.

First, I recommend that the cottages should be built double; because it will be a considerable saving in the expence of their erection.

Where pollards are plenty, and bricks scarce, it will sometimes be proper to prefer the wooden-lath and rough-cast cottages, because half the quantity of timber may be pollards; but, where they are built with brick, the following particulars should be attended to.

The walls should be fourteen inches thick to the bottom of the chamber-floor,

R 2

except

except in the window-spaces, and the upper part of the walls nine inches. In these brick buildings no framed timber should be used ; but the lintel of the windows is to be laid the whole length of the building, nine inches scantling by two and a half ; and then the same piece will serve to lay joists upon, which should be pinned with oaken pegs, which will prove a great tie to the walls. The joists should be cut, eight inches by two and an half, and laid edge-ways. The length of the spar to be ten feet, being a proper pitch for tiling ; and to be cut two inches and a half thick, five at bottom, and three and a half at the top. The lower rooms to be seven feet high, in the clear, under the joists. In the largest-sized brick-cottages, the roof to be hipped in at the ends, which will save the two peaks of brick-work, and

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will

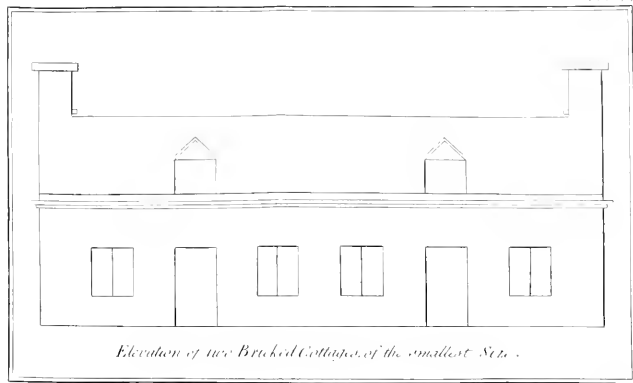
will not require more tiling, than would be made use of without it. One great advantage derived from hiping, is, in the building's being better braced together, and more secure from the effect of tempests; for where the gable-ends are carried up in peaks, to any considerable height, without chimnies to strengthen them, they are not so well fitted to resist an end-wind.

The ceiling should be between the joists, nailing first a few laths at about a foot apart, cross-ways, and the other laths length-ways over them; otherwise the mortar has nothing to get hold of. This makes less expence than ceiling over the joists, and is besides better calculated to retain the mortar, and will afford more space; for the joists being left naked, will be very useful to hang many things to. The ceiling joists upon

R 3 the

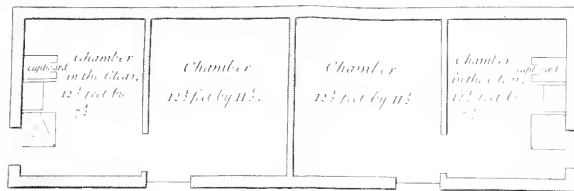
the top of the chamber need be only five inches by one and a quarter, and may be nailed to the spars-feet, and not pinned. The other scantlings are as follow. The partition studs three inches by two. The lower cills six inches by five. The window-frames three inches by three. Lower door-cafes five inches by four. Cross mantle-pieces for the chimnies eight inches by eight.

In the wooden cottages, the frame-studs are to be six inches by five. The intermediate, or smaller studs five inches by three. The girt-pieces six inches by five, and the upper cill five inches square.

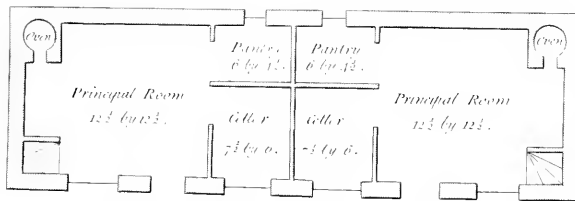


Elevation of two Brick Cottages, of the smallest Size.

Chamber Floor



Plans of the Two Bedrooms, the smallest size.



Ground Floor.

'AN ESTIMATE of the Expence of building the two Bricked
Cottages, of the smallest Size.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
R 4 Bricklayers Work	The walls 166 square at 4 <i>s.</i> 6 <i>d.</i> per square	—	37 7 0
	Pan-tiling with small-sized deal lath and sparkled within side,	}	11 11 0
	ten square and an half at 1 <i>s.</i> 2 <i>d.</i> per square		
	Partitions lathed, and plaistered on each side with two coats	}	4 9 0
	of mortar, 107 yards at 1 <i>d.</i> per yard		
	Plastering the walls 144 yards at 6 <i>d.</i> per yard	—	3 12 0
	Paving with white bricks 125 yards at 1 <i>s.</i> 4 <i>d.</i> per yard	—	8 6 8
	Ceiling between the joists 125 yards at 6 <i>d.</i> per yard	—	3 2 6
	Two ground-floor chimnies and two fire-places in the cham-	}	9 2 0
	bers and two ovens and oven-lids		
Foot-lacing in the chambers	—	—	1 1 0
	Two flag-stones for the chamber-chimnies	—	0 4 0
	Carried forward		78 15 2
			[247]

		<i>l.</i>	<i>s.</i>	<i>d.</i>
	Brought forward	78	15	2
Glaziers Work	{ Sixty-nine feet of glafs at 8 <i>d.</i> per foot	2	6	0
	{ Flashings of lead for the roof-windows	0	10	0
	{ Two large casements at 6 <i>s.</i> 6 <i>d.</i> each	0	13	0
	{ Four small ditto, at 4 <i>s.</i> each	0	16	0
Smiths Work	{ Chimney-irons to hang pots on	0	7	6
	{ Two fives for chamber fire-places	0	13	0
	{ Four tons of pollard timber at 1 <i>l.</i> per ton	4	0	0
	{ Five tons of deal timber at 2 <i>l.</i> 5 <i>s.</i> per ton	11	5	0
	{ Nine square and forty feet of roofing, at 9 <i>s.</i> per square	4	4	6
Carpenters Work	{ Six square and an half of flooring-joists at 7 <i>s.</i> 6 <i>d.</i> per square	2	8	0
	{ Six square of flooring with white wood deal at 18 <i>s.</i> per square	5	8	0
	{ Twelve pair of door-cases at 2 <i>s.</i> a pair	1	4	0
	{ Twelve doors at 4 <i>s.</i> each	2	8	0
	{ Eight windows at 2 <i>s.</i> 6 <i>d.</i> each	1	0	0
	Carried forward	115	18	2

248

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought forward	115	18	2
Two winding stair-cases at 1 <i>l.</i> 5 <i>s.</i> each	—	2	10 0
Five square of stud-partitions at 6 <i>s.</i> 6 <i>d.</i> per square	—	1	12 6
Two pieces of timber to lay on the chimnies	—	0	2 0
Two roof-windows at 6 <i>s.</i> each	—	0	12 0
Nails and irons for doors	—	1	12 0
Eight window-boards at 1 <i>s.</i> each	—	0	8 0
Shelves and work to pantries	—	0	12 0
Carriage of materials estimated at	—	8	0 0
Add to make the calculation even	—	0	13 4
		132	0 0
The amount of the two cottages	—	66	0 0
The amount of one	—		

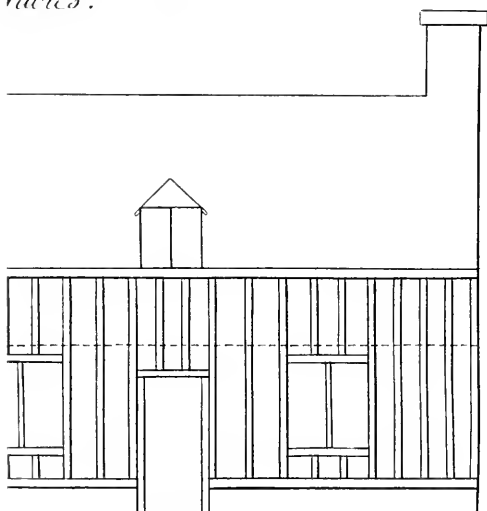
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An

AN ESTIMATE of the Expence of building the two Stud-Work Cottages, of the smallest size, with Brick Gables.

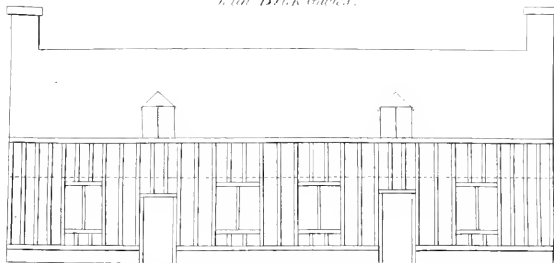
	<i>l.</i>	<i>s.</i>	<i>d.</i>
Four tons of pollard timber at 1 <i>l.</i> per ton	—	—	4 0 0
Five tons of deal timber at 2 <i>l.</i> 5 <i>s.</i> per ton	—	—	11 5 0
Eight square and fifty feet of stud-work on the sides at 10 <i>s.</i> } per square	—	—	4 5 0
Nine square and forty feet of roofing at 9 <i>s.</i> per square	—	—	4 4 6
Six square and an half of flooring-joists at 7 <i>s.</i> 6 <i>d.</i> per square	—	—	2 8 0
Six square of flooring with white wood deals at 18 <i>s.</i>	—	—	5 8 0
Twelve pair of door cafes at 2 <i>s.</i> a pair	—	—	1 4 0
Twelve doors at 4 <i>s.</i> each	—	—	2 8 0
Eight windows at 2 <i>s.</i> 6 <i>d.</i> each	—	—	1 0 0
Two pair of stairs at 1 <i>l.</i> 5 <i>s.</i> each	—	—	2 10 0
Five square of stud-partitions at 6 <i>s.</i> 6 <i>d.</i> per square	—	—	1 12 6
Carpenters Work			
			2 5 0
			—
Carried forward	40	5	0

stages, of the smallest size,
tables.

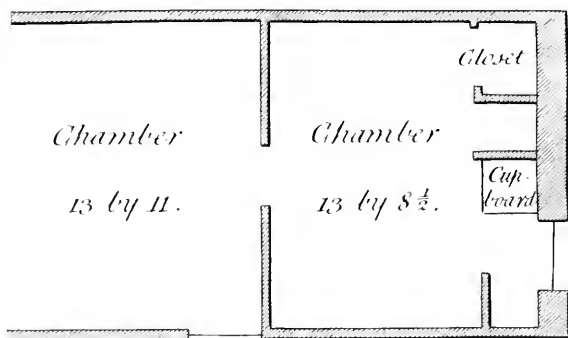


run quite up to the Wall Plate it
to support the flooring Joists,
awn, and the Joists, must be

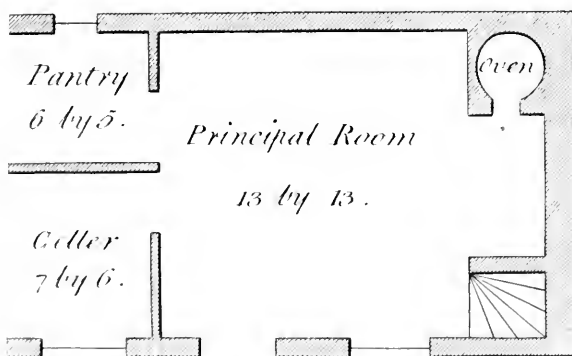
*Elevation of two Stud Work Cottages of the smallest Size
with Brick walls.*

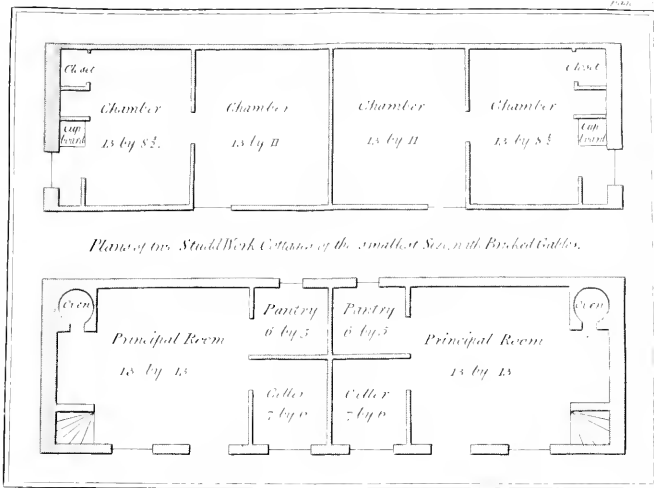


Note. As the Studs in these Cottages are run quite up to the Wall Plate it is to be observed that a Girder sufficient to support the flooring Joists, must be laid where the dotted Line is drawn and the Joists must be fastened to the Studs.



the smallest Size, with Bricked Gables.





		<i>l.</i>	<i>s.</i>	<i>d.</i>
	Brought forward	40	5	0
Carpenters Work	Two pieces of timber to lay on the chimnies	—	—	—
	Two roof-windows at 6 <i>s.</i> each	—	—	—
	Nails and irons for the doors	—	—	—
	Eight window-boards and shelves, and work to pantries	—	—	—
Smiths Work	Two large casements at 6 <i>s.</i> 6 <i>d.</i> each	—	—	—
	Four small ditto at 4 <i>s.</i> each	—	—	—
	Four chimney-irons to hang pots on	—	—	—
	Two fives for chamber fire-places	—	—	—
Glaziers Work	Sixty-nine feet of glass at 8 <i>d.</i> per foot	—	—	—
	Flashings of lead for the roof-windows	—	—	—
	Forty-four yards of 14 inch wall at 4 <i>s.</i> 6 <i>d.</i> per yard	—	—	—
Bricklayers Work	Two flag-stones for the chamber-chimnies	—	—	—
	Two ground-floor chimnies and two fire-places in the chambers and two ovens and oven-lids	—	—	—
	Outside lathing and plaistering 94 yards at 1 <i>s.</i> per yard	—	—	—
	Carried forward	72	14	6

[251]

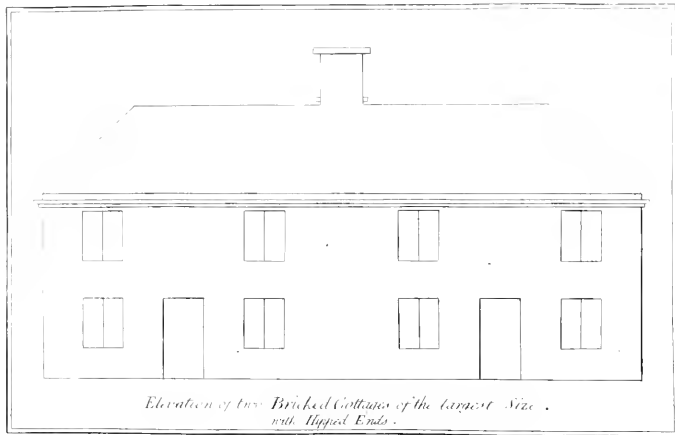
	<i>l.</i>	<i>s.</i>	<i>d.</i>
	72	14	6
Brought forward	—	—	—
Twenty-five yards of foundation nine inches at 3 <i>s.</i>	3	15	0
Pan-tiling with small-sized deal lath and sparkled within-side	11	11	0
ten square and an half at 1 <i>l.</i> 2 <i>s.</i> per square	—	—	—
Partitions lathed and plaistered on each side with two coats	4	9	2
of mortar 107 yards at 10 <i>d.</i> per yard	—	—	—
Ceiling between the joists 125 yards at 6 <i>d.</i> per yard	3	2	6
Lathing and plaistering the inside of the studs 144 yards at 6 <i>d.</i> per yard	3	12	0
Paving with white bricks 125 yards at 1 <i>s.</i> 4 <i>d.</i> per yard	8	6	8
Carriage of materials estimated at	8	0	0
Add to make the calculation even	0	9	2
Amount of these two cottages	116	0	0
Amount of one cottage	58	0	0

Bricklayers Work

[252]

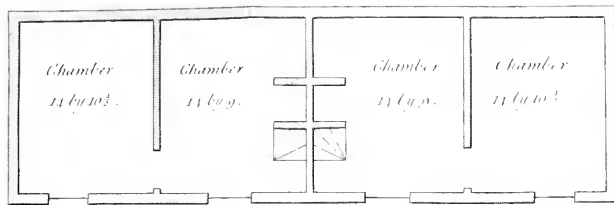
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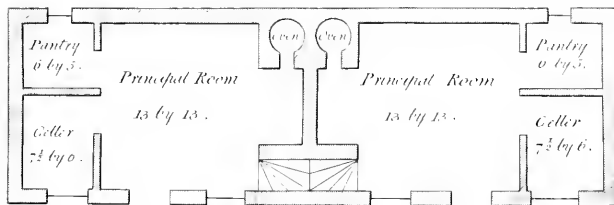




Chamber Floor.



Plans of Two Bricked Cottages, of the largest Size, with Hipped Ends.



Ground Floor.

An ESTIMATE of the Expence of building the two Brick Cottages, of the largest Size, with hipped Ends.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Bricklayers Work	The walls 181 yards at 4 <i>s.</i> 6 <i>d.</i> per yard	—	— 40 14 6
	Pan-tiling with small-sized deal lath eleven square at 1 <i>l.</i> 2 <i>s.</i> } per square ——— ———	—	12 2 0
	Double stack of chimnies and two fire-places in the cham- } bers and two ovens and oven lids ——— ———	—	10 2 0
	Two flag-stones for the chamber-chimnies ——— ———	—	0 4 0
	Paving with white bricks 125 yards at 1 <i>s.</i> 4 <i>d.</i> per yard —	—	8 6 8
	Partitions lathed and plaistered on each side at 10 <i>d.</i> per yard	—	3 15 0
	Ceiling between the joists 125 yards at 6 <i>d.</i> per yard ———	—	3 2 6
	False ceiling in the chambers under the joists two coats 130 } yards at 1 <i>s.</i> per yard ——— ———	—	6 10 0
	Plaistering the walls 169 yards at 6 <i>d.</i> per yard —	—	4 4 0
	Carried forward	89	0 8

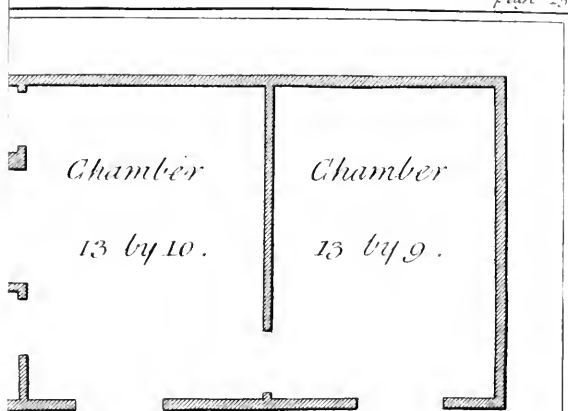
		<i>l.</i>	<i>s.</i>	<i>d.</i>
Glaziers Work.	Ninety feet of glafs at 8 <i>d.</i> per foot	89	0	8
	Brought forward	—	—	—
	Four large cafements at 6 <i>s.</i> 6 <i>d.</i> each	3	0	0
	—	—	—	—
	Two fmall ditto at 4 <i>s.</i> each	1	6	0
	—	—	—	—
Smiths Work	Two floves for chamber fire-places	0	8	0
	—	—	—	—
	Chimney-irons to hang pots on	0	13	0
	—	—	—	—
	Three tons of pollard timber at 1 <i>l.</i> per ton	0	7	6
	—	—	—	—
	Three tons and an half of deal timber at 2 <i>l.</i> 5 <i>s.</i> per ton	3	0	0
	—	—	—	—
	Nine fquare and forty feet of roofing at 9 <i>s.</i> per fquare	7	17	6
	—	—	—	—
	Five fquare of fludded partitions at 6 <i>s.</i> 6 <i>d.</i>	4	4	6
	—	—	—	—
	Six fquare and an half of flooring-joifts at 7 <i>s.</i> 6 <i>d.</i> per fquare	1	12	6
	—	—	—	—
Carpenters Work	Six fquare of flooring with white wood deals at 18 <i>s.</i>	2	8	0
	—	—	—	—
	Twelve pair of door-cafes at 2 <i>s.</i> a pair	5	8	0
	—	—	—	—
	Two pieces of timber to lay on the chimnies	1	4	0
	—	—	—	—
	Twelve doors at 4 <i>s.</i> each	0	2	0
	—	—	—	—
	Carried forward	2	8	0
		122	19	8
		[254]		

	<i>l.</i>	<i>s.</i>	<i>d.</i>
	122	19	8
	Brought forward	—	—
Eight windows at 2 <i>s.</i> 6 <i>d.</i> each	—	—	—
Two pair of stairs at 1 <i>l.</i> 5 <i>s.</i>	—	—	—
Nails and irons for the doors	—	—	—
Two pieces of timber the whole length of the building for }	—	—	—
lintels to lay the joists on	—	—	—
Six square and an half of ceiling joists at 6 <i>s.</i> 6 <i>d.</i> per square	2	2	3
Eight window-boards at 1 <i>s.</i> each	—	—	—
Shelves and work to pantries	—	—	—
Carriage estimated at	—	—	—
Add to make the calculation even	—	—	—
Amount of the two cottages	—	—	—
Amount of one	—	—	—
	122	19	8
	1	0	0
	2	10	0
	1	12	0
	0	6	0
	2	2	3
	0	8	0
	0	12	0
	8	0	0
	0	10	1
	140	0	0
	70	0	0

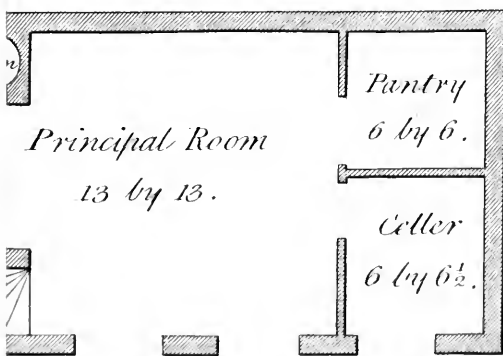
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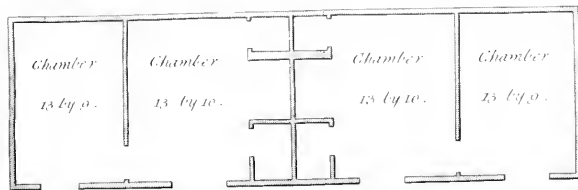
An ESTIMATE of the Expence of building the two Stud-Work Cottages, of the largest Size, with hipped Ends.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Five tons of pollard-timber at 1 <i>l.</i> per ton	—	—	5 0 0
Six tons of deal timber at 2 <i>l.</i> 5 <i>s.</i> per ton	—	—	13 10 0
Sixteen square and sixteen feet of stud-work on the sides at 12 <i>s.</i> per square	—	—	9 13 6
Five square of stud-partitions at 6 <i>s.</i> 6 <i>d.</i> per square	—	—	1 12 6
Six square and an half of flooring-joists at 7 <i>s.</i> 6 <i>d.</i> per square	—	—	2 8 0
Six square and an half of ceiling-joists at 6 <i>s.</i> 6 <i>d.</i> per square	—	—	2 2 3
Nine square and forty feet of roofing at 9 <i>s.</i> per square	—	—	4 4 6
Six square of flooring with white wood deals at 18 <i>s.</i>	—	—	5 8 0
Twelve pair of door-cases at 2 <i>s.</i> a pair	—	—	1 4 0
Twelve doors at 4 <i>s.</i> each	—	—	2 8 0
Eight windows at 2 <i>s.</i> each	—	—	0 16 0
Carpenters Work			256
Carried forward	48	6	9

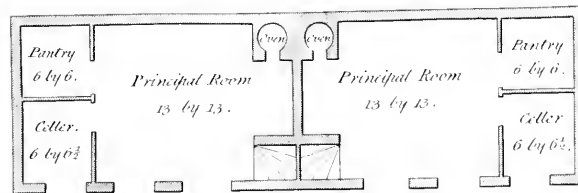


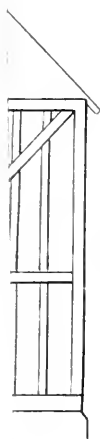
largest Size, with Hipped Ends.



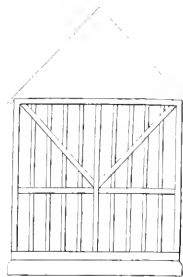


Plan of two Studd Work Cottages, of the largest Size with Hipped Ends.

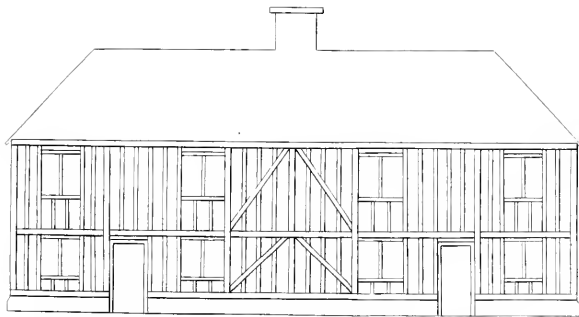




The Hipped End.



The Hipped End .



Elevation of two Studd Work Cottages of the largest Size, with Hipped Ends .

	l.	s.	d.
	Brought forward	81	19 9
Ten square and an half of tiling at 1 <i>l.</i> 2 <i>s.</i> per square	—	11	11 0
Inside partitions lathed and plaistered on both sides	—	3	15 0
Two ground-floor chimnies and two fire-places and two ovens and oven-lids	—	10	2 0
Paving with white bricks 125 yards at 1 <i>s.</i> 4 <i>d.</i>	—	8	6 8
Lathing and plaistering the inside-studs two coats of mortar 169 yards at 1 <i>s.</i> per yard	—	8	9 0
Two flag-stones for chamber fire-places	—	0	4 0
Carriage of materials estimated at	—	8	0 0
Add to make the calculation even	—	0	12 7
Amount of these two cottages	—	133	0 0
Amount of one	—	66	10 0

REFLEC-

REFLECTIONS ON THE DISTRESS OF
THE POOR, AND THE INCREASE OF
THE RATES FOR THEIR ASSIST-
ANCE.

“*THOU shalt not muzzle the ox when he treadeth out the corn,*” is a divine law, figuratively signifying, that the poorer race of people, who are the instruments by which the earth is cultivated, ought to enjoy a reasonable portion of its produce.

The landlord, tenant, and labourer are intimately connected together, and have their reciprocal interest, though in different proportions ; and when the just equilibrium between them is interrupted, the one or the other must receive injury. At present the balance is considerably against the labourer ; and yet, though it seems a paradox, the other

parties ultimately derive no advantage from it.

The great increase in the Poor-rates may be accounted for in a few words. The rise upon land and its produce together is at least sixty per cent. the rise upon labour not above twenty. The difference is, of course, against the working hands; and when their earnings are insufficient for the absolute necessities of life, they must inevitably fall upon the parish; which is bound, in that case, to make up the deficiency. So that if we consider this matter properly, we must discover a great want of policy in beating down the value of labour, not to mention the inhumanity of such an action. For it is much better for a farmer to give an industrious man, who has a large family, half-a-crown a week more than is generally given, being only 6*l.* 10*s.* a year, than to load a farm
with

with that additional incumbrance in the rates; because when once a poor man is obliged to have recourse to the parish, he thinks it no greater disgrace to be beholden to it for a crown, than a shilling; and therefore, when he cannot wholly support his family by labour, he will not care how little he contributes towards it.

If owners and occupiers of land would consent to raise the price of labour, in proportion to the increase of their profits, a great part of the distress among the poor would be removed. At present they cannot live by their labour; let us examine their condition. We will first suppose that the rent of the cottage is paid, by the extra-earnings of the family, in time of harvest; and then we may allow fourteen pence a day, as a medium of wages for the man, which is nearly the present rate of wages, taking one place with another. The wife we
will

will suppose to earn three pence a day besides attending upon her children. This will be eight shillings and six pence a week between them. If they happen to have five small children, which is no uncommon number, how are they to support themselves? If we allow the man a pound and an half of bread every day, and the wife and children three quarters of a pound, one with another, which is about the quantity they will require, this will be forty-two pounds a week; and the price of it cannot be estimated at less than three halfpence a pound. This brings the article of bread alone to five shillings and three pence a week; and there remains only three shillings and three pence for all the other necessaries of life, which must be greatly insufficient. While the present high price of provisions continues, it is impossible that such a family can eat any

thing except bread, which is a very cruel case upon a poor man, whose whole life is devoted to hard labour. On the contrary, were he allowed eighteen pence a day, which would be nearly the same proportion as the increase in the value of land, and price of provisions, their income would be together ten shillings and six pence a week; which, under proper management, would enable them to cloath themselves decently, and add about eight or ten pounds of coarse meat to their bread, which they are surely entitled to by the laws of nature, and the ties of humanity.

There is still another cause which greatly heightens this distress, and that is, the disadvantage these poor objects labour under, in carrying their dear-earned penny to market. Formerly they could buy milk, butter, and many other small articles in every parish, in what-
ever

ever quantity they wanted. But since small farms have decreased in number, no such articles are to be had; for the great farmers have no idea of retailing such small commodities, and those who do retail them, carry them all to towns. A farmer is even unwilling to sell the labourer who works for him a bushel of wheat, which he might get ground for three or four pence a bushel. For want of this advantage he is driven to the meal-man, or baker, who in the ordinary course of their profit, get at least ten per cent. of them, upon this principal article of their consumption; which they might save, if their employers would supply them with corn at the common market-price. In short, they labour under every discouragement. For the very persons who have the advantage of their labour, and whose duty it is to make their situation comfortable, are often their
greatest

greatest oppressors; and as the principal farmers of every parish are generally the overseers of the poor, their complaints are frequently made to a deaf ear.

It will doubtless be asked, how shall we obviate all these evils, and where is the remedy for them? To these questions every one has a different answer, according to the difference of his ideas. My answer is, Let gentlemen of fortune take upon them the superintendance, and regulation, of country-business more than they do. Let them act as guardians to the poor, by considering their estates as in good, or bad condition, only in proportion to the comfortable, or miserable condition of the labourers who cultivate them. Let them reduce the size of their farms, in order to increase the smaller articles of provisions, and to throw them into more channels. Let them increase the price of labour, in proportion to the

T rise

rise upon land, and the price of provisions. By such encouragement, the industrious poor will find a comfortable support. I say the industrious; because I do not know any scheme, or any law that can alter the disposition, and force people to be industrious, whether they will or no. And from hence, I conceive, it has, in part, happened, that much wiser heads than mine have been puzzled how to make any effectual amendment to our Poor-Laws. The late Earl of *Hardwicke*, and Sir *Richard Lloyd*, it is well known, had this point long under consideration; and the result was, that with all their large experience, and confessed abilities, they were obliged to leave the matter just as they found it. The loud cries of the poor have now afresh excited the attention of the legislature. Houses of industry, as they are called, seem now to be the favourite object;

ject ; and they have lately been recommended with a spirit of ingenuity, and humanity, that will ever do honour to the able author of “ Observations on the Poor-Laws, &c †. I wish success to every scheme that tends to spread general happiness ; and if houses of industry should be adopted by Parliament, may no untoward accident prevent the good design of the projectors ! May the diligence and zeal of future overseers ever keep an even pace ; and a good intention not fail, as it has sometimes done, with the novelty of it ! In the mean while, a such as capital change must be a work of time, let it be endeavoured, to make the poor, as comfortable as may be, in their own parishes. From the general demolition that has happened, other houses will be wanting for

† Written by the Reverend R. POTTER.

their

their accommodation, besides houses of industry; and the poor are not less attached to domestic endearments than the rich. Let mine, or any other plan be adopted for this purpose. It matters not who is the projector, provided the industrious man receive due encouragement to continue his labour. But I am persuaded that every gentleman will find his account, in pursuing the humane and just measures I have ventured to recommend. His estate, by being so materially eased in the article of the poor's tax, will not pay him a farthing less than it does at present; and he will be honoured, and distinguished in his neighbourhood, by the noblest appellation, superior to all titles, that of being the POOR MAN'S FRIEND.

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