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Walter Riddell

NEWCASTLE



FARMER.

VOL. I.—NO. IX.

COBOURG, APRIL 1, 1847.

TERMS.—2s. 6D. PER YEAR.

From the Northern Whig.

NOTES ON MANURES.

Through those curious changes, produced by the action of life, upon the dead and inanimate material which nature has placed on the crumbling rock, and pulverulent soil, the lime of our Belfast mountains, and the potash, and soda, which enter into the composition of the lofty granite highlands of the County of Down, are brought into the structure of our wheat and potatoes: the dead minerals become a portion of the living vegetables, and are destined in time to build up the temple of the human body, under the influence of a higher and nobler organization, the lime giving solidity to its bony frame work, while the other mineral elements of the soil contribute to the formation of its muscular covering. The growth of crops of wheat and potatoes must, therefore, remove from the soil a large amount of its mineral matters; the cattle which we send to England, to feed the smiths of Sheffield, and the spinners of Manchester, must, also, carry away, in their bones and muscles, a large amount of the ingredients of our fields. It cannot be too strongly impressed upon the mind of every farmer, that every crop he raises, that every weed that springs up in his field, robs it of something; and that, when he is disappointed to find that the seed which he placed in the ground in Spring, yields a starved-looking and unprofitable plant in the harvest, it is because the soil has been exhausted of the materials required to give strength to its stalk, and development to its head. To maintain the productiveness of our fields, we must give back to them the mineral matters taken away; if we succeed in replacing the amount lost, we will renew their fertility, and if we can increase the supply of the elements of nutrition, we will be rewarded by an increased produce. Our farmers, taught by centuries of experience, labour diligently to maintain the productiveness of their fields by manures; but, unfortunately, hitherto their sole attention has been given to the preservation of what is termed "farm-yard manure," while they have treated with neglect that great source of the food of plants, obviously provided by nature as a means of maintaining the unimpaired fertility of the earth, and of supplying food for its increasing population. But it is not the farmer that we should accuse of neglect, when our educated legislators, so directly interested in the soil, give no attention to this important matter, but are content to look to other lands

for that supply of food, which an improved agriculture, and proper attention to the preservation of the home supply of manure, would enable the husbandman to extract from the soils of his own country. How absurd, as I lately took occasion to shew, that we should tax ourselves to construct convenient means by which the very materials, capable, to a great extent, of obviating the deterioration of our fields, may be conveyed into the ocean, and washed away from our shores!

It is a wise and beautiful provision of nature, that the materials which our crops abstract from the soil, for their food—for our support—should not remain in the body for ever, nor even until the body itself be dissolved into its original elements of earth and air; every day, every hour, those materials, having performed the part assigned to them by the Creator, are separated from the living frame, converted again into dead matter, into a form capable of supplying new races of plants and generations of animals, with the materials for their existence. How exquisitely beautiful is this arrangement: and yet, in this country, with a strange indifference, we turn aside from this enormous supply of fertilising ingredients, which nature yearly provides for our use, and our public bodies seem to think it more judicious to send 5,000 miles for the mineral matters contained in the excrements of birds, than to construct reservoirs for retaining the far more valuable guanos which flow away from our cities, and pollute the waters of our rivers; we, however, prefer to perceive the lime, the phosphorus, and other matters, carried away from our cities, after they have made the circuit of the world; for, flowing into the sea, these substances serve for the nourishment of the innumerable plants which inhabit its waters, from the microscopic conferva to the gigantic kelp (*Fucus Giganteus*), which Darwin tells us, sends up a stem 300 feet in length; these plants of the sea, nourished by the substances dissolved in its waters, support countless tribes of fish, which are again devoured by the birds of prey, which, in some countries congregate in immense flocks, covering the islands, along the coasts which they frequent, with their excrements. Where rain is abundant, as on the islands along the Irish and Scotch coasts, it is impossible for this matter to accumulate to any great extent; but in latitudes where rain seldom falls, it has, as on the islands on the west coast of South America, in the course of centuries, produced immense deposits.—

It appears that the people of South America, long before the arrival of their Spanish conquerors, were acquainted with the value of these deposits, as manures, for fertilizing their soils; and that of the Incas, or rulers, of the Peruvians, enacted laws for their careful preservation. An old Spanish authority, Garcilasso de la Vega, whose commentaries were published in 1560, gives us an interesting account of the islands upon which the birds congregate, and the precautions adopted for their preservation:—"In the time of the Incas, the precautions observed for the preservation of these birds were so great, that during the breeding-time no one could land upon the islands, which served them as a resort without incurring the penalty of death—an enactment intended to prevent them from being disturbed and driven from their nests. At no time of the year was it lawful to kill them; and in cases of infraction, the same penalty was awarded. Each island was destined for the supply of a particular province; but, if large, was allotted to two or more. The guano deposits were then apportioned off, and boundaries fixed to each division, in order that the persons of one province or district might not trespass upon the jurisdiction of another. A subdivision under proper authorities was then made for each town, when the dung was distributed in allotments proportionate to the number of residents requiring it." How strikingly do the excellent arrangements of the ancient Peruvians contrast with the shameful negligence of a nation which boasts of her superior cultivation, and yet is forced to avail herself of the guanos preserved by the wisdom of the American Sovereigns, to restore to the fields of Ireland and England the matters squandered by the indifference and carelessness of many generations.

The first formal introduction of the guano of South America to the British public, took place at the dinner of the Royal Agricultural Society of England, at Liverpool, July 1841, when Lord Stanley gave an account of its valuable fertilizing qualities. Before that time, a few parcels had been introduced into the country, and were regarded as agricultural curiosities, but no one could have believed that, before many years, the people of England would, in a single year, expend more than a million of money in the purchase of this article. The successful results which followed the application of the cargoes which arrived in Liverpool and London in the end of 1841.

immediately arrested public attention; and the desponding farmer anxiously availed himself of its assistance, in recruiting his exhausted fields. So rapidly did the new manure rise in the estimation of our most experienced cultivators, that the discovery of deposits of a similar character at Ichaboe, a small island on the coast of Africa, in 26. 25 south latitude, and 14. 16. east longitude, was regarded as an event of the greatest importance to British agriculture. A new and extraordinary trade has, for the last two or three years, been carried on in this article, and the eagerness with which our merchants entered into it, may be estimated from the fact, that within six months after the discovery of Ichaboe, one hundred vessels visited it for cargoes, and carried away nearly a third of the deposit covering the island. The deposit at Ichaboe is now, I believe, entirely exhausted; but our traders have succeeded in discovering other deposits, of considerable importance, both on the African and American coasts.

JOHN F. HOGERS, M.D.

Laboratory of the Chemical-Agricultural Society of Ulster. }

MAXIMS OF UNIVERSAL APPLICATION IN FARMING.

From Mr. Blair's Essay on Small Farms.

Firstly, the ground must be thoroughly drained. To accomplish this, it is not enough to search out the springs and carry off all under water; a passage through the soil, for the water which falls from the clouds, must be obtained likewise.—To attain both these objects, Mr. Smith of Deanston's plan is now universally adopted. I must refer you to the Agriculturist for full instructions, but shall shortly allude to some indispensable requisites to be attended to. The drains must be made perfectly straight, and parallel to each other, in the direction of the furrow—from which it has obtained the name of "farrow-draining." If the fall is sufficient, they should be fully three feet deep, as narrow as possible, say four to five inches at bottom: to be filled 12 to 15 inches with broken stones, such as used on roads, and covered with a thin sod or scraw, the grass side down; and the subsoil, which has been thrown out, put over and tramped down, so as to prevent the water sinking down through the loose earth, at top, which would choke the drain—the water will filter in through the sides. The distance between the drains should be fifteen to twenty-five feet, according to the soil; where stones are not to be had, tiles must be used.—Many will tell you to make your drains slanting across the furrows, but do not attend to such suggestions. The advantages peculiar to this system are, that the ground becomes equally dry throughout, that the rain sinks where it falls, and as it finds its way into the drains, the ground, which has been swelled by the moisture, shrinks and cracks underneath the surface, which admits the atmosphere

ric air into the soil to fill the vacancies thus created; succeeding rains expel this air by the superior weight of the water, and in its descent is followed by the air again—and this operation is perpetually going on—until the quality of the soil, to the depth of the drain, is entirely changed—exactly on the same principle of the change effected in the nature of the earth thrown out of the gripe of a ditch, after being exposed to the air for a few years.* This change is expedited by the subsoil plough, or by trenching with the spade and graip; which is thus performed, and is the mode of proceeding best suited to the means of small Farmers:—with a spade he first throws off the surface earth from a stripe of the land to be trenched, about three feet wide, the full length of the field, and lays it on one side. He then takes a two-pronged graip, fourteen to fifteen inches long, and stirs the subsoil to that depth; after which, he begins on the stripe adjoining, and with his spade throws the surface soil, for three feet, upon the surface of that which has just been graiped; and this same process is again and again commenced, until the whole field has been gone over—after which the earth first cast aside must be carted or wheeled, to cover the last dug stripe which will have been deprived of its surface. Two or three men can be employed at the same time in this operation, following each other in succession; and the air being thus admitted to the depth of the drain, in a short time fresh soil may be turned up to that depth, of the most fertile quality. It may not here be irrelevant to observe, that one of the most beneficial effects of stirring the soil in the different operations of Agriculture, is to more freely admit air into the soil, without which vegetation cannot proceed. But the advantages of draining are not limited to the effects just stated; for, by freeing the surface from superfluous moisture, the temperature of the soil is most remarkably increased. It is a common expression among Farmers, "a dry, warm soil;" but I imagine few stop to consider why this should always be the case. But if any of you will make the experiment of wetting one shirt sleeve, keeping the other dry, and then hold up your two arms to a sharp north-east wind, you would soon find the additional cold that is produced by the wind

* It seems to me that the increased fertility of fallowed land is mainly attributable to that very turning which is sometimes complained of as an evil. By this, every part of the soil is exposed to the action of the atmosphere, the effects of which in promoting fertility may be estimated by observing the barrenness which follows from excluding its influence. Examine the ground under the back of one of the newly-levelled ditches, or what is called the seat of the ditch. Now, when the ditch was originally made, this was the surface productive soil, and the stuff thrown out of the gripe to form the back was perfectly barren till. But now you will find the case exactly reversed—what was then the fruitful surface soil is now rendered barren by being excluded, by the back of the ditch being heaped over it, from the action of the atmosphere, and the back, which was then barren, is now rendered fruitful by being exposed to it.

blowing upon a wet surface.* And this is precisely the same effect which is produced upon the land by the wind blowing over a wet surface, and accounts for the crops being always earlier where the land has been drained.

2ndly, The weeds must be destroyed, which in a little time will be accomplished by proper attention in collecting, as far as possible, all weeds, before putting in the crop, and by sowing the green crops in drills,† and carefully weeding them afterwards; and they may even be made worth the expense of gathering, as they will yield a valuable addition to the manure heap, if applied as bedding in the cow-house. For this purpose they should be collected before flowering. It is shameful to see, in many fields, the quantities of rag-weed ripening to seed, and improving the ground as much as a crop, which might if usefully applied as above directed, have brought nourishment to the soil in place of exhausting it. Where land is dirty or exhausted, no better plan can be pursued, than to take two drill crops of turnips followed by potatoes: this at the same time both cleans and enriches the soil.

3rdly, All cattle must be fed in the house or straw yard upon good food—such as rape, cabbage, turnips, mangel-wurtzel, potatoes, Italian rye-grass, clover, and vetches, in proper succession, will abundantly supply, according to the nature of the land—there being no farm in which some of these crops may not be raised in abundance, with the aid of manure, which the practice of house-feeding produces.

4thly, Never take two crops of the same kind in succession off the same land, although this is sometimes done with potatoes, to reclaim land that has never been in cultivation; but in other cases this is not advisable; and, in particular, two grain crops cannot be taken in succession without injuring the soil, and in the end a manifest loss arises from the practice, in place of that advantage which the needy Farmer looks for; because, by interposing a green crop, such as clover, &c., full as many grain crops may be had off the same piece of land and from the same manure, in any given number of years, by taking them in rotation, as by taking them in succession. But the rotation system has this

* This also shews the advantage of shelter, for the cold would not be so severe if there was no wind. In making the drains, the stones should be laid down before they are made, and every day as the drains are opened, they ought to be filled and covered in, to prevent the sides crumbling down by frost or rain.

† I have already mentioned the practicability of getting an early supply of the leaves of curled kale in autumn, by planting them with the potatoes in the edge of the ridges, and I should think that to be the best plan for such a purpose: but to plant the potatoes in drills is a much more effectual way of cleaning the land, and is, therefore, much to be preferred on that account; and curled kale or cabbage for winter use may be cultivated in this way, by planting them at the edge of the broad ridges, as hereafter recommended. Ridges are best in wet land, and drills when dry.

advantage, that while you get as many grain crops, you keep the land always in good heart, and between the crops of grain you get green crops equally valuable. This is accounted for by considering that no two crops derive the same particular nourishment from the land. The roots of some sink deep, and draw their nourishment from the bottom, while others spread on the surface, and it is generally believed that plants derive their food and support from as different ingredients in the earth, as the different kinds of cattle derive their food from the surface. Horses will eat grass which cows reject, and so with every description of cattle; and supposing the analogy to hold good in plants, it is easy to conceive that a change of crop may find the soil abundant in that kind of nourishment which it requires, although it may be, at the time, exhausted of that kind required by the crop which had gone before; and thus the ground may be as much restored by the introduction of a green crop after a grain crop, as if the field had actually lain fallow; and experience, in a great degree, justifies this reasoning.

I am fully sensible, however, that a system of over cropping with grain will extract every kind of nourishment from the soil, and leave it so that it will not even yield grass. This is the case with the land which is left to rest, as it is called by those who take three or four grain crops in succession; and the phrase is well applied, for the land is really not fit to do anything. The error of this class of persons is, that they turn the land to grass at the end, in place of the beginning of the course. Had grass seed been sown with the first crop of grain, there would have been a good crop of hay, and good after grass, and the second crop of grain would have been as good as the first; and this is what ought to be done by those whose land is not suited to clover, or who, from poverty, are not able to buy the clover seed; and even when two grain crops have been taken, it would be better to sow it with rye grass, which will yield a crop on very poor land, rather than leave the ground to be possessed by weeds and such herbage as may naturally rise. The fact is, the least exhausting crop should be put in upon green crops, the succeeding year, which crops then give the manure to restore it to a productive state; and by this means there is no land lost at all by what is called resting it.

5thly, The place for manure should be contrived so that it should not be exposed to any accumulation of rain water, but should receive the contributions from the sewers of the house, stable, cow-house, &c. The bottom should be paved, so that the drainage of the manure could run into a cask or well adjoining it.—Fresh earth should be regularly brought and spread over the manure, and the liquid in the well should be thrown over it; by which means the whole compost would be equally rich, and the quantity increased

to any extent that could be required; and the steam or smoke which arises from the stable manure, and which is the very richest part of it, would be kept under and imbibed by the earth so laid on, and the quantity of earth should be proportioned to the strength of the dung with which it is mixed. While speaking of manure, it may not be amiss to remark the great loss arising from the practice of letting off the water in which flax has been steeped, which, if sprinkled over, or made into compost with fresh earth, would be found most valuable.*

6thly. It would be the object of the Farmer, as soon as he possibly can, to have his fences made in straight lines, and of as great length as the farm will conveniently admit of. It is almost inconceivable the quantity of time lost by the frequent turning of the plough, and the quantity of land thrown out of cultivation, by having a crooked, irregular fence, the windings of which the plough cannot follow.

* At the time the flax is taken out to steep, all the rivulets in the country are strongly impregnated with the contents of the flax holes, and those through whose lands such rivulets pass, would do well to turn the stream, where it can be done, over their after grass, or use it in watering their cabbages, turnips, &c., the advantages of which would soon be perceivable. The richness of flax water is fully shewn by the growth and colour of the grass, where flax has been spread to dry. I have seen a most luxuriant crop of oats upon land irrigated with flax water, although a second crop; which shews, that if this manure was preserved, one of the greatest objects to the growth of flax would be removed. All scientific men agree, that the best manure to apply to land is that which contains the ingredients which the crop has taken from the soil. Flax water, therefore, ought to be applied to flax ground, and every particle of it should be preserved as being part of the substance derived from the soil. If the principle here alluded to is correct, how completely does it prove the propriety of the above directions for the management of the manure heap—for the farm-yard manure is derived from the hay, straw, grain, and green crops used by the stock; all which have been derived from the soil, and therefore the liquid portion, as well as that which the sun and wind extract, ought to be taken care of as much as any other portion whatever; and indeed more so, being by much the most valuable part of the manure.

From the Farmers' Gazette.

TO THE YOUNG FARMERS OF IRELAND.

LETTER IX.

ON FALLOWING.

MY FRIENDS—In this letter I propose to treat of the too prevalent but bad system of fallowing.

Fallow is derived from an old Saxon word, signifying pale-red, or pale-yellow. Fallow deer are so called from their colour, and fallow land from the colour of naked ground. The sense in which I shall use the term is that of bare and ploughed land in a state of complete rest; and by rest I mean the entire absence of the growth of plants of every description, which can only be obtained by ploughing or harrowing at intervals, and repeated so as to prevent the process of growth. It is obvious that weeds exhaust the land

as much as valuable plants, and if allowed to spring up, the object of fallowing is defeated.

Of fallowing there are two kinds, whole and half. The first is allowing the land to remain in a state of rest, for a whole year. The second, or half fallowing gives this state of rest for a shorter period, without occasioning the loss of a year's crop.

The history of whole or naked fallowing is of great antiquity; the Romans introduced the system into Great Britain, their idea being that land could not continually bear vegetable produce without rest, and their usage was to fallow after one winter and one spring crop of corn; they gave frequent ploughings, each of which they distinguished by a particular name, and for the purpose of having always a fallow in the third year, their farms were divided into three parts, one in fallow, one in winter corn, and one in spring corn. This was the oldest rotation known, and in some countries it was enforced by law.*

In some of the wild parts of North America, it is not very uncommon for the back woodsman and his family, having cleared land and taken some corn crops from it in succession, to migrate to a new district, or to leave the worn-out part to recover in some measure its previous fertility without any aid from him, whilst he is pursuing a like course of management with fresh land, trusting to rest and to the prolific nature of the vegetable mould formed by the long accumulation of rotten weeds and leaves, for the reward of his renewed labours in clearing.

Such a practice may be allowable in countries where land is abundant and manures are unattainable, and where men are "few and far between," but it is too defective and wasteful to be permitted in a country like ours,

"Where every road maintains its man."

I hope to be able to convince you that the whole fallowing, which necessarily causes the loss of an entire year's crop, should be discontinued, and is unnecessary for the refreshment of the land, which can be profitably recruited by half fallowing, by proper rotations and by manuring.

The practice in Ireland has been slovenly and imperfect, and I am so far fortunate in urging you to abandon an extravagance, that I have not to ask you to forsake that which has either the beauty of performance, or utility, to make it dear to your recollections. I shall best consult our national feelings, by not attempting to describe a real Irish fallow, where the weeds are allowed to flourish, and the land, but once or twice ploughed and unpulverised, derives little benefit from atmospheric influences.

Since the introduction of clover and turnips, the English who had previously whole fallowed in the best and cleanest manner, have learned the economy and

wisdom of half fallowing. By this system, land which had produced a spring crop—suppose of rye or vetches—is sufficiently worked in the two or three preceding months to be sown with autumnal wheat; the land is loosened and cleaned, is in a state of rest, and exposed to atmospheric influences, by which the stiff clay is pulverised and rendered fit for the future plants.

I am, however, far from denying that whole fallowing is beneficial; on the contrary, I admit it is, but I deny it to be necessary, and more especially to stiff clay lands.

I shall state seriatim the advantages generally ascribed to it.

1. To restore the fertility of worn-out soil.
2. To supply the want of manure.
3. To free the ground from weeds, such as couch-grass, (*triticum repens*) with which land is infested after successive corn cropping.
4. To expose the soil, especially if it be stiff and wet, to the sun and air, which tend to soften the harder particles, and hence by their solution, add their component parts, silica, lime, soda, &c., to the soil in a digestible form.
5. To blend the constituents of the soil, and the manures supplied to it, by constant ploughings and harrowings.
6. To afford convenient time for executing the operations of fallowing, between the hurried labours of spring and those of harvest.

Now let us see how far the foregoing pleas are admissible. I shall deal fairly with each of them, in the order in which they are stated.

1. I admit that a complete fallow improves the fertility of the soil by rest; and by rest I mean that the soil is not giving growth to any plants during the time; for weeds are as exhausting as valuable crops.

2. I admit that the pulverization of the soil, and its exposure to atmospheric influences, render soluble and digestible to plants, substances existing within it; and that they, therefore, provide fertile matter to a great degree, but are not substitutes for the elements which animals and vegetables alone can give.

There ought to be no want of manure on a well-cultivated farm; because clover and turnips, in their proper rotations, and in due proportion with grain crops (which supply forage and litter), and cattle sufficient to consume green crops, will sufficiently create manure; and if there should be a want in this important point, guano, bones, and other such manures may be easily and cheaply procured to meet the deficiency, and either mixed with the existing supply of farm-yard manure and compost so as to stretch them farther, or applied separately in aid of them.

3. A whole fallow is not necessary to clear the land, because the half fallow may do this as effectually. Repeated ploughing, harrowing, and forking can

alone extirpate weeds; and these operations may be effectually performed between the month of March and the late turnip-sowing season. The preparation necessary for turnips will clear and fertilize the soil as completely as the whole fallow could. By carefully hoeing the turnip crop in drills, and extracting the couch grass as fast as it shoots out, there is every facility afforded for entirely cleaning the land.

4. It is unnecessary, on this plea, to leave the ground naked fallow under the slow effects of the air; because the sowing of plants, which do not require those particular elements by which the preceding corn crops were nourished, obviates the necessity.

The late Rev. Mr. Rham, who was a good chemist and practical farmer, was of opinion that "in particular soils and situations, a scorching sun has a pernicious effect on the soil which is exposed to its rays; and where it is shaded by a crop which covers it completely, it seems to have acquired fertility which the exposed surface has not;" but I think that some soils which are of a wet nature, are greatly improved by being, as it were, baked in a hot sun. Not only are the weeds destroyed by the abstraction of moisture, but the soil thus becomes lighter and more friable. But in light, sandy soils it is probable that the only advantage of a naked fallow is to kill weeds, especially the couch grass, which is apt to infest light soils, and that the exposure to the sun in hot weather is not only no advantage, but, probably, detrimental.—Besides those considerations, I may add that though the sun is very beneficial to growing plants which require heat, it may not serve land in a state of rest, when the object is to prevent vegetation. Heat assists in promoting changes. In that way only fallow may derive benefit from exposure to the sun. If it be urged, wet land is improved it may be replied—Land ought not to be in that wet and stiff condition which requires fallowing. Thorough-draining and subsoiling alter the texture of clay soils, so as to render them sufficiently free and dry for turnips. I grant, and would strongly urge, the necessity of draining clay soils completely; but I deny the necessity of fallowing as an operation called for by the neglect of draining.

5. Granted, also; but turnip culture and half fallowing effect the same purposes.

6. This is no reason. Where there is a proper system of management there is time for every work.

Such are the supposed advantages of whole fallowing; but what are its losses? The loss of one crop every third year, and the non-introduction of green crops and house-feeding, by which so much more of actual produce might be obtained, so many more head of cattle supported, and, therefore, so much more nutriment obtained for the ground.

In fact, the advantages of fallowing

are reducible to a single point—rest; for every other good is equally attainable by half fallowing, manuring, and good farming; and this state of rest is attained at a considerable sacrifice.

My friends, if land be fairly treated, it will never require rest. Do with your lands as with your horses. Never overwork them, and you may give them constant work. Feed them regularly, and you may work them regularly. "Fair and easy goes far in a day."

The introduction of clean and manured fallow was a great improvement on the former bad practice of taking corn crops in succession, and then leaving the exhausted land under foul grasses; but this improvement, like many other things, which are improvements only until better are discovered, has been succeeded by the introduction of green crops instead of fallow—a greater improvement still. We have gained this positive good. Ten or twelve times more weight of produce are now obtained in three years by corn and green crops alternately, than used to be obtained from two corn crops, and a naked fallow, in the same period of time, and on the same space of ground. This surplus supply of heavy produce is converted into beef, mutton, and pork; and the increase gained in manure from each beast fed under the improved system is of great value for maintaining the condition of the soil, which yields the supply of food on which the increased number of those animals is maintained.

The triennial course of two corn crops and a fallow was very general in some of our principal wheat countries, while the high price of wheat rendered it a great object with the farmer to raise that grain as long as he could in preference to turnips, with the full value of which he was unacquainted. Now he is turning his attention to the fattening of cattle, for which there is, and will be, a demand which foreign countries cannot supply as they do corn; and to have fat cattle abundantly produced, there must be that system of alternate husbandry which alone supplies the means of supporting them in a profitable manner. White fallows, then, I expect, will be abandoned in our country, as they have been nearly in England, and when clover and turnips become their substitutes, we may begin to pride ourselves upon our husbandry, which, on the contrary, has so long been a subject of reproach to us.

But if an absolute necessity for fallowing should arise, do it effectually; and improve the soil at the same time by lime, marl, &c., according to circumstances. Do not spare either ploughs or harrows in dry weather. Land that has been well fallowed and stirred, require less manure than it would otherwise do. Fallowing, alone, will not make up for want of manure; nor will manuring be sufficient without ploughing and cleaning the land properly.—Your faithful friend,

MARTIN DOYLE.

From Bell's Weekly Messenger.

DEEP PLOUGHINGS.

It is only by gradual steps that we can hope to accomplish any valuable and extensive agricultural improvements, for in such efforts the operations of the experimental inquirer after knowledge must, in the far greater number of instances, be almost invariably modified, not only by the almost endless varying circumstances in which his farm may be placed, but by the peculiar chemical composition of the surface and subsoils with which he has to contend; and, moreover, in those cases in which (as in the instance of the subject of this paper,) a proposed improved mode of tillage appears at first to fail in its promised advantages, the labours of the research are still not concluded; the question is even then to be decided whether, under a modified mode of application, or combined with other improvements, a successful result may not still be attained. These remarks apply with very considerable force to the improvement of the depth of the surface soil.—The farmer is well aware that, from the days of the great Jethro Tull to the present time, long continued, and to a great degree successful, attempts have been made by the best friends of agriculture to induce a more general deepening of the cultivated soils of England. These efforts have been attended with no inconsiderable share of success. We have long seen in many districts the advantages of deeper tillage, both by the plough and by the fork, and we may safely conclude that the profitable application of both the common and the subsoil plough is yet to be extensively extended to soils in which little has been hitherto in this way accomplished. The advantageous use of the subsoil plough is too often at present rendered useless, by a neglect of the very essential preliminary improvement of removing (by improved drainage) the water to a greater depth from the surface, and from this neglect the success of a perhaps really valuable improvement is thence at once rendered impossible. It is in vain for the farmer, indeed, to deepen the soil, and thus endeavour to afford the roots of his crops a greater extent of pasturage, if that additional space is pre-occupied by water. It is also to be well remembered, as some encouragement to the farmer in his efforts to overcome any obstacles that may present themselves to the profitable attainment of this deepening of the soil, that he is, in the far greater majority of instances, only endeavouring to incorporate with the surface soil a greater extent of the same earths or rock from which, by the effect of natural and artificial causes, the surface soil is almost entirely composed; he is, in fact, generally labouring, not to add new materials to the land he cultivates, but merely to add to it an increased mass of the same substance of which the cultivated soil was originally formed. The common opinion that a heavy subsoil plough, and

the consequent employment of a very considerable horse power, is needed for the deeper disturbance of the subsoil, is a very erroneous conclusion. It is, in very many cases, only necessary to take off the mould board from the common iron plough, and a subsoil plough is produced, capable of being drawn by only two horses, and yet of penetrating to the required depth. In Scotland they have some time since adopted this plan. Mr. J. Wilson, of Eastfield ("Transactions of the Highland Society, 1847," p. 619), has evidently adopted this mode with very considerable success. He observes.—"The subsoil plough, from its great weight, I conceive cannot be expected in many districts to be much used, as it requires a greater number of horses to wield it than is kept on many farms; but, as a strong iron plough, drawn by two horses, has been found to answer equally well, at least where the soil is not very tenacious, subsoil ploughing may be performed anywhere, at a trifling expense." Mr. Wilson then proceeds to give the results of some comparative experiments with turnips, potatoes, and barley, which we think well worthy of the careful examination of our agricultural readers. The mode of subsoiling which he adopted was as follows:—"The soil of the field, of 13 acres, is described as "rather variable to clay, on a part subsoil; the rest a light soil upon a gravelly subsoil." The field was tile-drained when in clover lea (15 feet apart), in 1843: bore a crop of oats in 1844, and in the autumn of that year the subsoiling operations commenced. Previous to draining, the land had been, it seems, very wet, and proverbial for bearing bad crops. "We commenced," continues Mr. Wilson, "to subsoil it about the middle of October, and finished it about the 10th of November; it was performed across the drains, the common two-horse plough going first, taking a depth of six or seven inches, followed by the subsoil plough, taking an additional depth of from 7 to 8 inches (this was not, however, brought to the surface). This operation was performed on eleven acres of the field, and two acres were ploughed at the ordinary depth of six and a half inches, extending from side to side of the field. In preparing it for the green crop in the spring of the present year, we found the difficulty in getting below the hard crust or pan completely removed, and the soil could have been wrought to any depth required with the greatest ease; we preferred ploughing it, however, to the depth of 7 inches." The field, being manured with a moderate supply of farmyard manure and guano, was sown with yellow turnips between the 1st and 13th of June. The result, as ascertained when the turnips were lifted on the 28th of October, was decidedly in favour of the subsoiled turnips, although in the early stages of their growth these did not appear superior to those growing on the other portion of the field. Their

respective weights per acre were then found to be as follow:—

The subsoiled turnips, 26 tons. 17 cwt.
Those not subsoiled, 20 — 7 —

On this result Mr. Wilson makes the very just remark, "The increase from the subsoiling may no doubt be partly attributable to the wetness of the season; but this of course solves the problem, that furrow draining is comparatively deficient without the necessary auxiliary of subsoil ploughing." The experiments with potatoes were equally instructive; in these trench ploughing was also tried. In this case, the field was tile drained as in the previous case in 1844: "Its soil a deep earth, rather inclined to sand, upon a subsoil of sandy clay." Two acres were subsoiled to the depth of fifteen inches, two were ploughed to the depth of six or seven inches, "and to prove the effect of trench and subsoil ploughing upon this kind of soil, two ridges were trench ploughed to the depth of 13 inches."—The potatoes were planted between the 3rd and 6th of May (the field having been previously manured in the usual way), and on lifting the crop on the 22d of October, the following results per acre were obtained:—

Trench ploughed, 7 tons. 1 cwt. 2 qrs.
Ploughed, 6 — 14 — 1 —
Subsoiled, 7 — 9 — 2 —

FUTURE POTATO CROP.

The year which has past has been momentous to Europe from the scarcity of food occasioned by the preternatural abundance of the *Aphis vastator*. Let us now forget the sarcasms of the journals of the unsuccessful investigators, and take advantage of the knowledge acquired during the past year to regulate the measures for the ensuing season.

I examined the subject as a scientific recreation for the summer evenings, and having discovered the cause of the disease, it now becomes my duty to point out in the public journals how the crops are in future to be treated, as my work on the potato plant is not likely to be perused by the poorer Agriculturists; and, it is manifest, that those who were unfortunate enough not to see the insects cannot render information on the matter.

The *vastator* attacks many plants, and kills whatever it attacks. It destroys the potato, spinach, turnip, carrot, beet, and clover, &c. It will even live upon the wheat, and I am now writing with a wheat plant before me on which the creature is feeding.

Notwithstanding rain, snow, and frost, the *vastator* is still alive and active, and it is uncertain to what extent it may appear next season; on the one hand it may destroy all our crops, on the other, it may be swept from the face of the earth, and produce no further mischief.

The potato plant, like all organic bodies, when diseased, retains its tendency to disease in future growths, which is not singular, when we remember that the

COBOURG, APRIL 1, 1847.

scrofulous father is liable to produce a diseased off-spring.

The *vastator* has heretofore not appeared in profusion, till July or August; hence we say, in some degree, prevent its ravages by getting our potatoes ripe before the *vastator* comes in great abundance.

All succulent and cellular growths are prejudicial, as liable to favour the disease: but, on the contrary, the early disposition of fibre is calculated to enable the plant to resist the injurious action of the *vastator*.

From the above statements we may deduce the following line of treatment applicable for practice during the next two or three months:

1. Cultivate all crops to the usual extent.
2. With regard to potatoes, use sets from former healthy plants.
3. Select early varieties.
4. Plant early.
5. Use but little or no manure.
6. Choose a sandy or peaty soil.
7. Destroy the plants the *vastator* is now living on.

I call the attention of the benevolent to the above rules, and recommend them to circulate these short directions throughout Ireland, the poorer parts of Scotland and England. I also beg to recommend them as true charity to send sound sets of early kinds to those districts. I myself am against the overculture of the potato, for reasons which I have elsewhere stated; nevertheless, as a secondary crop, too little culture will always be attended with great privations to the poor.

At the early period of the year, it is desirable to destroy such plants as the creature likes. It lives freely upon the shepherd's purse, mallow, and turnip.—On this account the husbandman should destroy these plants as well as possible before spring advances, to furnish it with abundance of food. The *vastator* causes the first damage to vegetables it attacks, and is thus the cause of the disease from which all subsequent changes take place as a consequence. Every Farmer should know the form and habits of the creature, and every one should assist him to kill this destroyer of human food.—*Alfred Smece, 7, Finsbury Circus, London.*

DEEP DRAINING IN ESSEX.

To the Editor of the Essex Standard.

Sir,—I hope there is now no sane agriculturist in this county who disbelieves that water will drain freely through the strongest soils to a depth of five feet. If there is such a person I hope he will come now, and during any subsequent rains, and remove his doubts by an observation of the fact on my farm.

On the 24th ult., after a night's rain, I examined the 1-inch pipe drains, placed 5 feet deep and 40 feet apart, and found several discharging by measure more than one gallon per minute, or about one hogshhead per hour, and yet they only ran one-fourth full. The temperature of the water was 42 degrees, and of the air 36.

It appears to me that the inch pipes have the capacity to discharge four gallons per minute, or nearly four hogshheads per hour; and yet these are what my friend Dixon facetiously calls "Mechi's pencil-cases!"

I hope those who are doing drainage at various depths and distances will consider it their duty to communicate to their brother agriculturists statistical results.

It is a curious fact that the deep drains ran first, and that they continued discharging much water 48 hours after the 32-inch drains had done running, although the latter had larger pipes, and stones in addition. How important, then, is depth in draining!—I am, sir, yours obediently,
J. J. MERRI.

Tiptree Hall, Jan. 4, 1847.

P. S. Jan. 5. To-day, after the melting of the snow, the 1-inch pipes ran two, three, and four gallons per minute, equal in the last case to *one ton per hour!* The temperature of the water is 36, that of the air 39. I feel for those whose undrained land will be full of water, and no means of escape except by evaporation, during next summer.

WEALTH OF ENGLAND.

In the quarterly revenue returns, the amount received as income and property tax for the year is set down at nearly 5,500,000/. This return enables us to form a tolerably correct opinion as to the entire amount of the income, as well as of the property and capital of this country. Excluding, therefore, Ireland, which part of the kingdom this tax does not affect, the total income upon which the tax is leviable will amount, in round numbers, to 183,500,000/. To this must be added the amount of incomes under 150/. a-year, which we have no means of ascertaining, and must therefore take into calculation on supposition only. It must be something considerable, but to make our figures even, we will set it down low, say at 16,500,000/., making the total income of the country 200,000,000/. The per centage which constitutes this income is fluctuating and uncertain; but, taking the average interest of land and funded property at 3 per cent., the profits of the tradesman at 7½ per cent., and of the large merchants and manufactures at 10 to 15 per cent., we may safely estimate the average per centage on the property and capital of the country at 7½ per cent. This would show a total value of property and capital, of nearly 2,700,000,000/., or two thousand seven hundred millions of pounds sterling! And yet, large as this sum may sound, and vast as it is when considered as the "riches of England," if it were to be divided equally amongst the population of the country, which may be taken at 20,000,000 of souls, it would not amount to more than 135/. for each individual; thus showing that an equalisation of property, which has been at times the dream of theorists and enthusiasts, would reduce to a country of paupers this now rich and mighty kingdom.—*Cor. Morning paper.*

We are obliged by the favour of the Communication of "A Cavan Farmer," which we find inserted in the *Star*,—although, we presume, intended for the *Newcastle Farmer*, which should be the record of all such correspondence, containing as it does other Agricultural communications, and easier of reference from its more portable size, and will contain, at the close of the year, an Index for that purpose. We are truly glad to find that our brother Farmers seem determined on supporting an Agricultural paper of their own District, and right sure we are that there is a sufficiency of talent, information, and practical ability in our District, to sustain a paper of double the size of our little sheet. Information thus obtained is doubly valuable, from its suitability and adaptation to our District farm operations, for it must be apparent to all, that from our peculiar climate, seasons, and comparatively limited market for various produce, many of the best measures adopted by the English agriculturist are wholly inapplicable in our position. The "Cavan Farmer's" opinion as to the old method of fallowing, is in strict coincidence with our own; but we must differ somewhat from the method he proposes as a substitute, except under some favourable circumstances. We agree with him that much valuable matter is lost to the soil by disturbing the unfermented sward before decomposition is fully completed; the question is, will such a measure of decomposition be fully effected by his plan as to prevent the old grass from springing with the rains in the Fall, so as to choke out and usurp the place sought to be occupied by the grain sown? We conceive that for that purpose the soil must be dry, or at least partaking of but a slight measure of humidity, the ploughing need to be very carefully performed, and the sod turned much more flatly over than the usual method of ridging up "crown and furrow." This, with the operation of the harrow or cultivator, would, unless very favourably situated, leave the field in a condition to retain a vast amount of surface water, for unless the land was underdrained and subsoiled it would be impervious to any measure of superfluous moisture, and we greatly fear that the old plant of grass in possession

would gain the ascendancy. We should be glad to hear our friend's opinion on the subject.

The plan we intend adopting in the present year, and in which we have heretofore succeeded, (for we are a sworn enemy to naked fallows, except on foul and stiff clays,) is as follows: We have an old ley (the clover nearly run out,) which we shall turn down as early as convenient and sow with oats very thickly, say four bushels per acre; these will cause a thick smother on the surface, which always promotes fertility, and will keep down and prevent the growth of most, if not all annual weeds; and should there be any perennials, such as thistles &c., they will not come into flower before the crop is ready to mow, which will be done as soon as the oats show any sign of putting forth the head. A crop of green oats is thus gained for fodder, to the amount *when dried* of a ton or more per acre,* salted when stacked, or in the barn. The land then is subjected (with the stubble,) to either a heavy drag or cultivator *across the furrows*, and may afterwards be gathered into ridges for wheat in the usual way. Another piece of five acres which is infested with wild mustard, so prevalent in this part, I intend treating in like manner, and mow as soon as the weed begins to come into flower. This will in the ensuing season receive a hoe crop,—and should not this bring the weed into subjection, shall repeat the process; as the land, from being manured for the hoe crop and the oats not suffered to come to perfection, will be kept in good heart.—We should be glad of the opinion of “A Cavan Farmer” of this plan.

* A much larger amount will frequently be obtained, but the loss in drying is very great.

The advantages of intercourse, one with another, cannot be too highly estimated in any department of life, and in all scientific researches such intercommunication is invaluable, for in every department of science or art, errors, quite unintentional, are liable to creep in, and be disseminated, and for want of correction by experience or enquiry, are calculated to produce most evil results.

The more any man, in any department of science knows, the more he feels a necessity for information to support and confirm him in his just views, or to correct any errors into which he may have unconsciously strayed; and with reference to agriculture this more particularly applies, as, what may be an undi-

puted fact in some circumstances, may be a positive untruth in others.

Our best and most practical sources of information (generally speaking) are derived, doubtless, from the Agricultural proceedings in Great Britain, because her agriculturists hold so prominent a situation, but in many instances our practice must vary very considerably from theirs, although they may be the best farmers on the globe. Our difference of climate and of seasons, and the adaptation of our crops to soil and climate, will differ materially: The application of the various crops we raise, the demand they may meet in a market, together with the question of remuneration, have all to be taken into account. In England it is common to sow wheat in January,—to plant early potatoes early in February,—sow turnips after stubble in August,—grow beans for horse-feed as a preparation for wheat,—winter vetches for soiling (or house-feeding cattle), which are ready to cut early in April,—to leave turnips on the ground to be consumed by sheep during the winter months. All these practices, and many more, we are precluded the benefit of. The various climates, their varied produce raise sufficient for the wants of man,—their advantages in some respects, counterbalanced by disadvantages in others.

We are apt, when judging by comparison, to envy some, which we are inclined to think more favoured nations, favoured by climate, soil, produce, demand, and consequent remuneration,—losing sight of the disadvantages ever attendant on every locality. True, our winters are long and severe, our summers fervid, our soils and plants subject to great extremes of heat and cold, and we raise with difficulty, amidst these vicissitudes, a crop of each or any sort in a year. But turn over the leaf,—look at Sweden and Norway; here is the epitome of their year. A Norway or Lapland summer, including what, in other countries, is called spring and autumn, consists of fifty-six days, as follows:—

June 23.—Snow melts.

July 1.—Snow gone.

“ 9.—Fields quite green.

“ 17.—Plants at full growth.

“ 25.—Plants in full blow.

August 2.—Fruits ripe.

“ 10.—Plants shed their seeds.

“ 18.—Snow! again.

From this time to June 23d, the ground is everywhere covered with snow, and the waters with ice. In such a climate agriculture cannot flourish,—in fact it can

never be an agricultural country, for, added to the uncertainty of getting a crop at all, is the still greater uncertainty of securing and harvesting it safely. The grain is found exposed in the fields in October, laid on racks to dry, on land deeply covered with snow and ice. From such vicissitudes Canada is free, and sufficient may be raised by industry, for both man and beast. A supply is obtained of a more nutritious kind than can possibly be grown in less favoured countries, advantageous to the agriculturist himself, as well as to all the creatures dependent on him, and on whom he reciprocally depends, as a source of supply and profit; and the better any description of Stock is kept, the greater the return yielded to the farmer, by the prevention of casualties, the additional ability for labour, the intrinsic value of the animal, the decided improvement in the progeny, and also by the additional richness of the manure, to be again conveyed to the land, to renovate and cause it to yield an increased supply for an extended demand; and for this purpose, we think it will be admitted by all, that “root crops” will be held in more estimation than ever, for it must be remembered that land, once really prepared and fitted for such crops, and these properly tended and successfully raised, is, by the very process adopted, and mode of culture employed, in the highest degree fitted for any succeeding grain crop.

Of course every farmer is aware, that while the country is but thinly populated and large towns rare, that no market can be found of much extent for his description of produce, but it must be converted into butter, beef, pork, and mutton, and, in that form, yield a return (not always very remunerative,) for the labour bestowed; but the farmer must remember that the expense of raising such a crop is little more than what is incurred by the labour on an unprofitable, naked fallow.

In our next number we propose to advert to the question of other root crops as a substitute for the potato,—not having room for it in the present number.

To the Editor of the Newcastle Farmer.

BREAKING UP OLD MEADOW & PASTURE AND NEW CLOVER LAYS.

SIR,—Unless you are as *thin skinned* as a *genuwoyne* Yankee, you will not feel offended at the observations which I am about to make relative to the manner in which, according to my opinion, an agricultural paper should, in this country, be conducted. To be extensively useful, it ought to be adapted to the understanding and instruction of the *many*, and not, chiefly, to the comprehension and taste

of the erudite few. Abstruse theories and chemical analyses are so far from generally benefiting the agricultural population of this Province, as at present constituted, that they frequently excite, in the unscientific reader, repugnance and distaste; indeed a farmer, of much more than average intelligence, whom I lately recommended to take the *Newcastle Farmer*, objected that it contained so much matter which he could not understand, that he did not feel inclined to do so, and added that his neighbours, who were subscribers and had lent him all the published numbers, were of the same opinion.

I would by no means eschew science or scientific investigation, but all theories should be practically and intelligibly illustrated. Such letters as those of Mr. Vernon and "A Cavan Farmer," (altho' I cannot entirely agree with the latter,) are calculated to impart or produce, by eliciting discussion, more useful information, "in these diggings," than all Sir Humphrey Davy's analyses of soils and vegetables. I fear that many practical men are too modest, or, like myself, too idle, to impart their experience to their brother farmers through the medium of the *Newcastle Farmer*. This letter will, however, shew that I am not incorrigible, and I hope others will be induced to make a similar manifestation. There are several important subjects upon which it is my intention to address you; among others, on the erroneous principles upon which Agricultural Societies are conducted in this and most other countries,—the course of crops and management of moderate sized farms,—the best modes of preparing land for certain crops,—Fall ploughing,—the culture of valuable roots and plants almost or quite unknown in this Province, and other matters of equal importance. Of one thing you and your readers may rest assured, namely, that all my communications will consist of facts.

Having intimated that I do not entirely agree with "A Cavan Farmer," it is proper to state in what respect we differ, and I shall feel great pleasure in discussing any subject with so intelligent a Correspondent. I will in the first place remark, that his observations relative to the preparation of old meadow and pasture for the production of a crop of wheat, are so expressed that some may suppose he considered a single ploughing thereof a species of fallow. I have two or three times tried the method which he recommends, but never with success, and much prefer a crop of early peas, in the first instance, thickly sown and supplied with plaster at the rate of a bushel per acre; for although they might run too much to haum to be very productive of grain, they would not only yield an abundance of valuable fodder, but by completely occupying and shading the ground, render it clean and in good order for a crop of wheat, which would be much more benefited by the plaster than if it were applied fresh, in which way it has little effect upon wheat, oats, or barley.

I will now relate the result of an experiment upon a clover lay, which is one of the best preparations for a crop of wheat if it has been properly laid down, and is not more than one season old; some years ago, in the month of April, I purchased and entered upon a farm which had been for a well cultivated. I found thereon a twelve acre field of clover, one year old; the soil was a sound loam, sufficiently heavy to produce good wheat; the crop of clover proved muddling, about a ton and a half per acre. In the beginning of September I broke it up, preparatory for wheat. One half was ploughed with two ploughs, the first of which turned a furrow nine inches wide and about five deep; the second followed immediately in the same track, at the depth of five inches, throwing the earth upon the furrow just turned, and thus making the moved soil about eight inches deep; the remaining six acres were well turned over by a single plough. The whole crop ripened nearly at the same time, but there was an immense difference in the produce; the part which had been prepared with two ploughs yielding an average of twenty-six bushels per acre, the other less than sixteen; three barrels of plaster had been spread upon the clover, and certainly improved the wheat. If "A Cavan Farmer" would try the experiment of two ploughs upon the next old meadow or pasture which he may break up for wheat, it would perhaps be found successful.

Wishing you a large increase of practical correspondents and every possible success, I remain,

Your friend,

AN EX-FARMER.

Hamilton, March 23, 1847.

To the Editor of the Newcastle Farmer.

SIR,—Having a few leisure moments to write, and being desirous to communicate to my brother farmers, at this season of the year, some hints that may prove beneficial to those who have sown winter wheat—and particularly to some of your correspondents who desire information on the subject of the suffocation of wheat.—I now take up my pen and say that in all places where snow accumulates to a great depth, the success of winter wheat is rendered uncertain, owing to the liability of its being winter killed.

When the ground is unfrozen, there is always, owing probably to the slow thawing going on, a space between the earth and the overlaying snow; and as in this space the air cannot circulate, it speedily becomes deteriorated. The more dense and solid the snow becomes, as it always does towards the spring of the year, the more urgent the danger. At this time of the year the wheat plants, if dug down to, will be found a fine healthy colour; but as soon as the snow goes off and it becomes exposed to the same light, it speedily turns yellow, and then white and dry. If the snow continues to accumulate or we have no thaw to bare the ground before the snow is carried off in the Spring, it can

hardly fail of suffering more or less. For this danger there appears to be no available remedy. I never knew but a single instance in which it was attempted.

A farmer had some five or six acres of wheat, on which the snow lay equally till late in the spring; by digging through the snow he found there was no frost, and thus his wheat was in danger of suffocation.

The snow was there about a foot in depth and very compact, but by taking advantage of its softness in the middle of the day and driving his stock of cattle repeatedly over it in every direction, he filled the snow with hobs, partially expelled the vitiated air, and gave an opportunity for its replacement by atmospheric air, and in that way saved his wheat, while others similarly situated, yet who neglected such precaution, suffered a total loss. Perhaps this preventive might be resorted to of ener than it has been, and it might be successful. At any rate, when practicable, no injury could result from attempting it where the wheat is similarly situated.

Yours truly,

A SUBSCRIBER.

Cavan, 18th March, 1847.

To the Editor of the Newcastle Farmer.

SIR,—In answer to the enquiries of "A Cavan Farmer," I would state that the Wheat to which he alludes, was sown the first week in September, on a sandy loam, a summer fallow.

"A Cavan Farmer" seems rather doubtful of Plaster doing good, so on land in the autumn; he alludes to his having sown Plaster in the Spring and it doing no good, and therefore concludes that the Plaster was worthless. This might be the case, as it has too often happened that we have been greatly deceived in the article of Plaster. But it does not follow because its effects were not visible on the crop the same season that it was sown, that the plaster was bad; in proof of this, I will mention a circumstance that came under my notice. I sowed a pasture field, its soil sandy, with Plaster in the Spring, and could perceive no good effect arising from it whatever that season. I pronounced the Plaster to be worthless. The next year I did not notice it at all, as I did not expect any good from it; but the next Spring I broke up the field and sowed peas on it, and to my surprise the effects of the Plaster that I had previously condemned, were strikingly visible on the Peas; it showed where the Plaster had been badly spread, for between each cast the peas were of a yellow colour, and the rest were dark green. This striking difference caused me to notice it, for at that time I never dreamt of receiving any benefit from plaster after the lapse of two years.

Your's &c.

CHAS. H. VERNON.

Haldimand, March 1, 1847.