

AGRICULTURAL JOURNAL,

AND

TRANSACTIONS

OF THE

Lower Canada Agricultural Society.

VOL. 2.

MONTREAL, AUGUST, 1849.

NO. 2.

We have ever been of opinion that there is no trade or profession which requires more skill and information than that of the farmer. In any other business or profession there is generally only one particular study required; but a farmer has a vast variety of matters to understand before he can be acquainted with the most proper kind of crops for the various soils he may have to manage—the best method of draining sufficiently—the selection of suitable stock, and the proper management of them, and of their produce. All these are to be perfectly understood before farming can be practiced to the best advantage. The management of cattle requires much experience and skill to make them profitable. In the first place, each particular breed have their advocates, and then there is of en a difference of opinion as to the best mode of keeping and feeding. Some recommend confining cattle in yards and sheds, and feeding them on green food during the summer; others prefer keeping them at large on good pastures, and we agree with the latter, unless parties who have only small farms of a few acres, that may all be in excellent cultivation. Where the pastures are good, one acre will keep a cow very well for the summer, and this, we conceive, is the best and cheapest way to keep her. Pastures should have shade, by hedges or some large trees. In such a country as this, in a good pasture, properly watered, and having sufficient shade, we think that cattle will do much better than confined in yards or sheds, and we believe they will give a better and sweeter milk, and be in a more natural and healthy state. There are not many

experiments made here to ascertain what a good pasture may do for the summer. We have, however, ascertained that an acre of what we consider good pasture will keep a cow in ordinary seasons from May to September, when there should be after-grass to assist. The cattle to be of the middle size—a cross of the Canadian, with imported breeds, which we have found to be a most useful stock for any purpose, particularly the dairy. The management of stock with us is generally very defective, and cannot be profitable until there is a great change in that management in almost every respect. When there is a good pasture capable of supporting a full stock, they improve it very much, by the dropping of the cattle; but where the pastures are poor, and require from three to six acres to support a cow poorly, they do not improve much by the cattle manure. Fertile pastures become rapidly more fertile. Poor pastures kept very bare, and exposed to the great heat of our summers, take a long time to improve. On the contrary, when the pasture is good, and well covered with grass, they are not injured by the heat of ordinary seasons, and improve every year more than they would in any other state. Farmers are often deceived when they have expected lands to be greatly improved by pasturage that is constantly kept as bare as a public road. In such cases the very roots of the grass are dried up, and cannot extend or become large roots in soil that is as dry and hard as a brick. When the roots are large, and the surface covered with herbage, the soil cannot fail to improve rapidly. Summer fallow improves the soil by frequent

ploughing and exposure, but the improvement depends upon the frequent stirring of the soil. It is said that by taking a portion of the poorest soil that can be found, and stirring and exposing it constantly for a year, it will become so fertile as to grow tropical plants. By loosening and opening soil to the sun and air, it must imbibe fertility from the atmosphere, and certainly does do so, however incredible it may be to some parties. A poor miserable pasture, kept as bare as possible during summer, is not good for either the cattle or the soil, and cannot be profitable for the farmer. We submit these observations for the consideration of farmers, and if what we state is correct, it may be imagined how greatly improvement is required in Canadian agriculture. There is one circumstance in our favour that we may improve to a considerable extent, without incurring any great expense, so far as regards our pastures and stock, and by this means the lands will be sure to be gaining fertility every day, if covered with a good coat of grass. Every farmer in the country might introduce this improvement, by sowing grass-seed, and not over-stocking; and as trees are of such rapid growth, there might soon be shade provided, by planting a few in convenient places on every farm that requires them. We put off improvements that might be very easily made, from indolence or neglect, or because we have inherited the farm from our fathers in this state, we do not see any necessity for change. We had an opportunity lately of seeing a gentleman from the United States, who had made a short tour in Lower Canada, and he expressed great surprise at the state of our agriculture, considering the fine land we have, and he particularly mentioned our bad pastures and inferior stock. Our stock certainly must appear to great disadvantage to a stranger, mixed, as they are, of all ages and sizes, and half starved as they frequently are upon our wretched pastures.

We copy the following extract from a very sensible letter which appeared in the May

number of the "American Agriculturist." We agree *in general* with the writer, in regard to moderate-sized, well-shaped cattle, being much the most profitable for almost every purpose of the farmer. Very large cattle, standing high on their limbs, are difficult to keep; and we are certain that their bones and offal form a large portion of their entire weight. It is never profitable to feed animals with highly-nutritive food while young, and not keep up their condition subsequently with equally nutritive food. We, however, have no fault to find with those who constantly feed highly, and keep their animals, of whatever size, continually improving. Those who do this, should, by all means, have their animals as large as they think proper, and find profitable to them. All we desire to do, is to warn the inexperienced, not to enlarge the size of their animals beyond their means of feeding them, until they have proved, by experiment, that the largest-sized animals are the best and most profitable for a farmer to keep, under any, and every circumstance:—

REARING CALVES.

In noticing the remarks of Reviewer, at p. 246, in your seventh volume, on an article previously written by me, on the "Management of Calves," I have been led to address you again on the subject. Notwithstanding his general display of good sense, I am still of the opinion that the smallest calves invariably grow up to the finest animals; and I venture to say, that, what he would call "a runt of a calf," when fully grown, would far exceed one of the same breed, that was the largest and the finest looking when first dropped from the cow.

I am also convinced that raising calves on the richest food, neither improves their symmetry nor their quality, only to the eye of an inexperienced person. No reasonable man expects to see a lot of store cattle fit for the butcher. Still, I am willing to admit that an animal forced from its birth until five years old, will add much to its size, and excite the wonder and admiration of judges and spectators on show grounds; but I cannot admit that such an animal is a profitable one. I am certain that many a breeder, by adopting this *forcing system*, has not only ruined his reputation, as a breeder, but has actually lost money, even when his animals have been sold at high prices. The kind of food consumed, and the time and care required for such an animal to develop itself, costs far more than such a

breeder is willing to place to its debit. Nor can I reconcile myself to a large beast of any kind for profit. I will appeal to any practical breeder, who has tried the experiment of raising fat heifer calves, whether they have proved the best milkers.

Again, flesh will very much diminish the milk vessels in the early stage of their growth, from which, I feel assured they will never recover; but when a cow has been economically brought up, and the milk vessels have once been fully developed, they will never deteriorate. Such a cow will hold out much longer than the forced animal, and will give an increased quantity of milk. I hope Reviewer will try this, and then state the result of his experiment. On the other hand, a forced bull, after three or four years old, generally becomes useless for service.

The fashion, of late, for overgrown animals, has been so ragingly prevalent, that symmetry and quality have been very much overlooked, and such breeders now find themselves in a labyrinth, surrounded by a coarseness, raggedness, hardness, and shapelessness, in their animals, from which they cannot extricate themselves. I would advise such breeders to dispose of their stock, and commence a new career, by selecting a herd possessing symmetry and quality, and let size evaporate in the atmosphere with the rest of the grasses.

I was very much amused at a large calf shown last fall, at the State Fair at Buffalo, called by the owner a shorthorn. When he walked, you might have seen his shoulder blades work as loosely as possible above his crop, which was as hollow as you can imagine. He had an exorbitant paunch, was coarse in the bone, narrow at the hips, and his carcass was covered with flabby flesh of the very worst quality. Had I been a shorthorn man, I would have preferred a Buffalo amongst my herd. For then, I would have had something extraordinary. This calf was sold for \$100, and the owner was very much *offended* because he did not gain the first premium. But the judges had too much sense to notice him. He had been forced the whole of the summer entirely for the show, and to sell. It must have been an inexperienced farmer that purchased this animal, and not a shorthorn breeder. I think he will have some difficulty in disposing his offspring; and I should like to see this farmer and the calf together, after he has wintered him on hay, so that he might point out to me his beautiful symmetry. As I have said before, it takes all kinds of animals to make a world. Therefore, there must be *large calves* as well as *great men*.

W. H. SOYHAM.

Black Rock, N. Y., Feb. 18th, 1849.

DRAINING.

In digging drains, their opening at the surface of the soil should be made large enough to enable every part of the operation to be conveniently carried on. In large undertakings, it is customary to make use of a plough having a double purpose of commencing the opening of a drain. Two furrow slices are thrown off by this instrument—the one to the right, and the other to the left—and a strip of earth about 15 inches wide left between the furrows. This strip is subsequently divided with a strong plough having a double mould board. The first time this instrument passes through the soil, it is made to penetrate to the depth of about a foot, and the second time it is so arranged as to turn up the soil to at least six or eight inches lower down. The earth is immediately removed from the sides, lest it should fall back again into the ditch during the operation. The excavation is then continued with manual implements. A common spade is first made use of, which is a little narrower at the bottom than it is at the top; and subsequently another is had recourse to, the upper part of which is scarcely so wide as the lower part of the former, and its extremity not more than three inches wide. By digging successively with these two instruments, and exercising a little care and skill, the drain will speedily become properly shaped. The walls must then be united, and all the loose earth which has fallen to the bottom removed thence with a curved shovel. The part of the drain through which the water has to pass must then be lined with stones or with branches, according as the one or the other can be procured with the least trouble and expense. If the stones can be obtained from a neighbouring field, they are to be preferred. The large and small ones are mixed together; but in placing them in the drain, care must be taken to pile the largest and flattest along the sides. When branches are made use of, they are sometimes tied up in bundles: but it is much better to gather them in one by one, the largest being placed at the bottom and the smallest ones above.

Experience has proved that light, equated wood is better adapted to this purpose, and more durable than hard wood; thus the branches of alders, willows, and poplars are preferable to those of firs, the juniper and other resinous trees. It is, however, highly essential that the branches made use of shall have been fresh cut, or, in other words, green, and full of sap. It is generally found that the drains lined with branches, remain open longer and are more durable, than those in which stones have been made use of; even after the wood has rotted, the drain retains its form, if the soil be of an argillaceous nature. The stones or branches with which the drain is filled must be covered up, with smaller branches, or some other material, in order to prevent the earth from sinking in between the interstices; or they may be simply covered with the turfs raised from

the surface of the drain, turned bottom upwards, and pressed down with the feet to render them close and solid. When the drains are covered in, the soil immediately over the drain ought to be left a little higher than any of the other parts, because it invariably sinks down and diminishes. Drains must be placed nearer together or at a greater distance from one another, according to the degree of humidity of the land which they are intended to dry. In thorough draining in England, the intervening space is generally from 18 to 36 feet. The deeper the drains, the further they may be apart. Whenever the requisite materials for filling up the drains, are procurable upon the spot, the expenses of the operation of draining are trifling compared to the advantages the land derives from it. It is very desirable in draining, that the bottom of the drains should rest upon a hard stratum, and it would be best to sink them deeper, even to fully four feet, if this hard stratum cannot be obtained at a less depth. In any attempt to drain, it is essentially necessary to understand clearly the cause of the wetness, and the nature of the soil and subsoil. When this is ascertained, if the work is executed properly, it will generally repay the expenditure, but if not properly executed in every part, the whole expenditure may be so much capital thrown away. Before the work is commenced, the probable expense should be ascertained, and it should not be commenced, unless there is means to complete the work properly.

“THAER.”

SELF IMPROVEMENT.

“The proper study of mankind, is man.”

So thought an old poet, and undoubtedly he was right. But, if we were to judge by the studies pursued by the great mass of mankind, we must come to a different conclusion. The acquisition of wealth seems to be the study of the present age, and gold is sought, it may be as eagerly, and at the same expense of health, happiness, and life, by him who digs the soil, or wields the hammer, as by the individual that “leaves all” and seeks treasure on the brilliant banks of the Sacramento, and both may be equally deaf to the exhortation of the wise man—

“How much better is it to get wisdom than gold”

Human nature is the same everywhere, its study is the same, and a knowledge of it is of great importance.

“Know thyself.” This should be engraven as with the “print of a diamond” on every one’s heart, and kept continually before the mind. Such a study, rightly conducted and persevered in, would lead to the important duty of self improvement. That should be the object of study. Wiser and better, should be the sentiment. To labor with our hands is not our whole duty. The

intellect must not be neglected. To improve in the management of business, is well; to improve the mind is better; being a greater result, and which will lead to the other.

How shall we improve?

Train the mind to right reasoning. There is a class of persons that are sadly deficient in this important faculty. Rising up early and sitting up late, and laboring hard, they can scarcely keep free from pressing want. The fault is not in their labor, but in their plans,—in the arrangement of their business. They do not adopt the best method to perform their labor, and consequently work to disadvantage. It is of no kind of use to be “hurried to death,” from early in the spring till late in the fall. Sit down and calculate, taking all things into consideration. See how much you can plough, plant, hoe, and harvest, and then go to work systematically. Not only estimate the amount of your labors, but to do everything the best way, and do one thing at a time. It is folly to commence a piece of work and leave it half finished or something else, to be left incomplete. What ought to be done should be finished, and what ought not to be done should be let alone.

Cultivate order. “Order is Heaven’s first law.” How much pleasure there is in contemplating a well ordered family, or a *well ordered farm*. But some men are “terrible slack!” Look at their farms and you see it at once. Every thing is at loose ends. Their implements are scattered around, and exposed to all the variations of the weather. The space around their front door, may be, is a repository for hay carts and harrows, sleds and slabs, apple tree brush and ash barrels, and all the odds and ends that accumulate during the labors of the whole year. Where an article was last used, there it may be found. Having “a place for every thing and every thing in its place,” will remedy all these evils. But an apple tree is no place to winter a scythe, nor the road side a place to summer a sled. All tools and implements when not in use should be kept under cover.

Be observing. Look around you and see the various methods in which your neighbours perform their labors. Do not suppose for a moment that you know more or can calculate to better advantage than others. Learn from the superior knowledge and tact of all with whom you are acquainted. Make your observation and experience available for your future improvement.

Read, study, and think. Every farmer should take an agricultural paper,—and that is not enough. Neither is his duty done when he pays for it. Nor should he be satisfied by simply reading it. It should be studied. Its suggestions should be reduced to practice whenever they can be made beneficial. The knowledge it contains should be treasured up, that we may compare others’ experience with his own, and

other theories with ours, so that if there is a "better way" we may adopt it. Reason must be exercised in all our labors, and

"How can we reason but from what we know?"

how can knowledge in relation to our business be acquired easier or cheaper than from agricultural journals. I range that so many are blind to their own interests in this respect. The farmer that keeps a dog, or uses tobacco, or takes a political paper, has no valid excuse for not taking an agricultural paper.

Thus I have introduced an important subject and glanced at some of its points. To those accustomed to think, it may be suggestive, and can be considered as its importance demands. W. L. EATON. *East Weare, N. H.*

COST OF MAKING PORK.

EDS. CULTIVATOR—Having been a constant reader of *The Cultivator* for some time past, and being anxious to know the cost of making pork, I have looked with anxiety for articles on that subject, which would, in some measure, solve the problem; but as yet I have found none. I think the only way by which the farmers can demonstrate it, is, by experiments with various kinds of grain, and on different breeds of hogs, and by preparing the food in various ways, to ascertain what way it will yield the most nutriment—that is, make the most pork. In hopes of inducing some of your numerous subscribers to make experiments, and publish the results, or to publish some already made, by which something may be elicited that will, in some measure, solve the above, I now give the result of feeding 100 bushels of good peas to sixteen hogs, of various mixed breeds, as found in this section. The peas were boiled until fine, making what I call thick soup. After having fed the hogs on the same kind of food for two weeks, I gave them their morning feed, and weighed each one separately noting the weight. Twelve of them were about eighteen months old; one was a three year old sow, and three pigs were seven and a half months old when weighed. I found their total weight 4267 lbs., and after consuming the above amount, which took forty-two days, I weighed them again, and found that they gained 1353 lbs., and on the supposition that as they gained in flesh they shrunk in offal, I estimated their net gain to have been fourteen hundred pounds. Their drink consisted of ten pails of whey per day. It was allowed to stand forty-eight hours and the cream was skimmed off.

I find that there is a great difference in breeds of hogs. The three year old sow was small framed, and pretty full-fleshed, weighing 504 lbs. Her gain in the forty-two days was 66 lbs. The three pigs were from her, and showed traces of three distinct breeds of hogs. Their first weight and gain were as follows:—the first weighed

253 lbs.—gain, 97 lbs.; the second, 218 lbs.—gain, 75 lbs., the third, 171 lbs.—gain 46 lbs. When butchered, the smallest one was the best pork, being the fattest. Two of the most inferior of the hogs gained one and a half pounds per day. Six, a mixture of the Berkshire, (I should think about one-fourth,) gained 1½ lbs. per day. Three of the common stock of our country, gained 2½ lbs.; and one of a superior kind, weighed 318 lbs., and in the forty-two days, gained 134 lbs. They were weighed on the 20th September, the first time. They were kept confined in a close pen, except once a week, I let them out for exercise, and to wallow, for the most part of a day. I fed them all they wanted to eat, without any regard to fear of cloying. PHILIP WING. *Farmersville, C. W., February 2, 1849.*

REARING AND FEEDING STOCK.

The following is a summary of remarks made by Mr. LYON, in a lecture before the *Derby Farmer's Club*. The principles laid down are worthy of attention:

Young animals grow more quickly for a given amount of food than older. By high feeding, a lamb of Southdown breed (not a large sort) may be 15 or 16 pounds a quarter at a year old; at the same age, a young ox may be from five to six score a quarter. This produce, from the smaller quantity of food which animals consume while young, is equal to what they will yield in any subsequent year, from a larger quantity.

If young animals be reared well, or kept fat from the beginning, they acquire a constitution which ensures their growing more in subsequent years from a less proportion of food. The progeny of well-reared stock improves from generation to generation.

When an animal is in good condition, it yields a greater produce for its food than when it is poor and lean.

If, therefore, an animal be first fed on good pasture till it is fresh and fat, and then removed to poor keep, so as to lose its condition, not only is the food wholly lost on which it declined in flesh, but all the good food which it may consume for some time afterwards has very much less effect.

The feeding of animals should therefore be quite continuous, as well as liberal, in order to be fully profitable.

All animals pay best for that amount and kind of food which causes them to produce most largely. That which makes rearing stock grow and thrive fastest, that which makes feeding beasts or sheep fatten most quickly, and that which makes milking beasts milk most profusely, and for the longest time, is the most profitable kind of food.

The principle of continuous feeding is espe-

cially applicable to milking cattle. For if the milk be suffered to fall off, it cannot be brought fully to return, like the fattening propensity; and if, during the interval between the cessation of the milk and calving, the state of constitution which promotes the flow of milk decline, it requires a long period to bring out the full effect of the liberal food given afterwards, and the cow never yields so largely as she otherwise would have done.

It is always profitable to grow on land a succession of nutritious food for all stock kept on it. But in those cases where the natural produce of the land is deficient in richness, or where much straw, in proportion to other forage, is grown, or where the casualties of season cause crops of cattle food to be deficient, it is always advantageous to add a portion of artificial strong food, such as cake, or corn, or linseed, to the food of animals, whether rearing, feeding, or milking stock.

INFLUENCE OF AGRICULTURAL PERIODICALS.

That a great improvement has taken place among the agricultural population of the United States within the past ten or fifteen years, but more particularly in the eastern and middle sections, is a fact which I believe will not be denied. To what is this improvement chiefly to be attributed? I answer, and I think correctly, to the influence of agricultural periodicals and papers. Agriculture, although one of the noblest of callings, has been in times past grossly neglected. Like many occupations by which a subsistence may be obtained without much exercise of the mind, it began to be taken for granted that the exercise of the mind was not required, and was a matter of but little importance. Men farmed as their grandfathers had farmed, half a century before them. Agriculture, instead of improving, stood nearly still, or retrograded somewhat. Lands became worn out by bad tillage; and most of those who could escape from the plough, left their homes to seek out employment by which more money could be made with less hard physical labor. Here and there a man was to be met with who had become rich through trade or commerce, and had retired to a farm; but it was not the profit, but the pleasure of farming he had gone to enjoy. Matters were somewhat in this condition about the time of the establishing of the first agricultural papers. From that period to the present time, there has been a steady progression in agriculture.

Let us glance at some of the benefits arising from these papers. I know not how other minds may view it, but for myself I may safely say, that as a practical farmer, the opportunity afforded for the interchange of thought, through agricultural papers, is one of the greatest enjoyments I have. I welcome the monthly receipt of my

paper with no common interest, for from it I always expect to derive some improvement. The suggestions, coming, as most of them do, from practical men, are all worthy of consideration, and although they may not all be adapted to the particular situation in which we may reside, yet they will doubtless be found of value somewhere through our widely extended country. There is an amount of useful general information to be gained from the perusal of these papers scarcely any where to be met with in the same space. We not only gain knowledge on agricultural subjects, but we become acquainted with the geography, geology, climate and productions of our vast country from Maine to Florida. We learn among other things, the important truth that even in the cold and mountainous regions of our land, by the aid of science and improved tillage, farms are made to produce crops which will compare favorably with those raised upon the smoothest plains.

The farmer is a man whose business is *at home*; he can wander but little, but it does not follow that he must be ignorant. Sitting by his cheerful fireside of a winter evening, he takes his paper in hand and begins *his travels*. At one time he is among the best farms of New England, then in western New York—then with the rapidity of the magnetic telegraph, he visits the western and southern states. For the trifling expense of a dollar or two a year, he becomes familiar with almost every portion of the Union.

There is a sociability too, so to speak, about agricultural papers, which is truly delightful. You become acquainted not only with their editors, but with a hundred others. Situated in some remote district, where perhaps most of those around you have not yet awakened to the importance of *book farming*, and are looking with doubts and misgivings upon your mode of farming, it is indeed, truly delightful to be holding mental intercourse with many of the best farmers of the best farmers of the land. There is many a man among that goodly fellowship of farmers, who should I chance to meet with, strangers to me though they might be, yet would I clasp them by the hand as friends. And are they not friends? Yes—friends in the cause of agriculture. They have labored to elevate that calling, great and noble in itself, but too long neglected and trampled in the dust.

Much has been done for agriculture, but much remains to be done. Some of the recent statements before the agricultural societies, show an improvement in culture and tillage that was not even dreamed of a few short years ago. The men of New England and the middle states need these statements to encourage them onward. What are we to do by and by? is a question sometimes asked by farmers of these parts. How are we to compete with the great west? Railroads and canals are multiplying—facilities are becoming greater every day for bringing produce

from those markets to our seaports. They can raise every thing cheaper than we can. What are we to do? Not sit down and mourn over our fate—not sell our farms and move there too—but stay where we are, and work head work. Raise 100 bushels of shelled corn where we formerly raised 20; raise 2 tons of hay where we used to grow one; keep 10 cows, and good ones too, and keep them well, where we formerly did 5.

We may not be able to do so this year, or next, but begin the good work and it will not be many years before we can. Industry, science, economy—must be brought to aid us in the fulfilment of our purpose.

Who are the men destined to rise in the agricultural world? I answer, those who read and reflect. Now, more than ever, has a time come when the farmer must think. He that worketh ever so hard with his hands, if he work not with his head too, will find his intelligent neighbor far outstripping him, with half the physical labor he exerts. And those men, so wise in their own conceit as to suppose that they can learn nothing from a book or paper, on farming, will discover their error, perhaps too late to retrieve it. H. C. W. *Putnam Valley, N. Y., Feb. 1, 1849.*

TO PREVENT THE RAVAGES OF THE CUT WORM.

EDS. CULTIVATOR—Most gardeners have experienced a great deal of vexation from the destruction of their plants by the cut worm. The cabbage plant appears to be in special favor with these destructives. They are much more abundant I think in southern gardens than at the north, and in many gardens, the plat devoted to cabbages has to be often almost entirely replanted. There is a simple and *efficient preventive* which requires only to be known to be universally practised when necessary.

On the site of your intended row of plants dig a narrow trench three or four inches deep, and in the bottom of this trench set your plants as usual, and the cut worm will not go into the trench to injure the plants. The experiment was fully tested the past summer by the writer, and proved perfectly satisfactory. When the plants have become a little stout and able to resist the enemy, the earth must be gradually gathered about them until the whole plat once more becomes a level. The plants will head with this mode of culture quite as well as by any other. I have left about half of the plat at times, to be set in the old mode, and from one-fourth to two-thirds of the plants have been destroyed, while not one in the trenches has been injured in the least. I had but little faith in the plan when first pointed out to me, but repeated experiments have satisfied me that it is an efficient one. I don't pretend to give the reason of the thing, though I am convinced of its efficacy. Wm. N. **WHITE.** *Athens, Geo.*

MIXED CROPS.

The principle upon which our rotary system depends is, the different proportions of elementary constituents required by the several families of plants; these they are supposed to absorb in solution by their roots, but this involves a difficulty which has been attempted in various ways to be got rid of. Some have supposed that a plant returns to the soil as excrement those matters which it does not assimilate, there to repose till a plant of another family takes them up; others have given its roots a power of discrimination, and that they only take up such matters as the plant can appropriate. The first has been contested if not confuted, and I believe now is generally abandoned; the latter gives to the vegetable higher powers than those possessed by the animal world, and is destitute of proof and contrary to it; for vegetables are formed to absorb poisons by their roots which are injurious to them, and colouring matters which are unnecessary to them, and which they do not appropriate but get rid of at their leaves. If plants do then discharge at their leaves some matters which are injurious, and others that are not required for them, as forming no part of their organization, it is fair to assume that they do so get rid of all those elementary matters which they imbibe by their roots and which they do not assimilate; and that having this outlet for such matters, they do not require a discretionary power in their roots as to what they will drink up. The matters offered to the roots of plants must exist in a state of solution in the water they absorb; and we might as well suppose a drunkard extracting the spirit from the punch he drank, and rejecting the sugar, as the mouth of roots extracting any peculiar elements from the water of their solution, and rejecting others. How then do plants deprive the soil only of such matters as they can assimilate?

It has been said, that the capability of the grain-exhausted soil to reproduce grain crops, is restored by the larger-leaved plants absorbing from the size of their leaves more organic matters from the air, while by their roots, as not requiring them for their organization, they take up less inorganic ones from the soil, which I think is questionable, for they are plants of soft tissue, and therefore appropriate less carbon from the air; while from the same cause they take up more water by their roots with such matters as the water holds in solution, which power of absorption is increased by the extended surfaces their leaves expose to evaporation.

Again it is said, that by the covering their leaves afford in preventing evaporation from the soil, they promote the absorption of aerial matters; yet neither does this account for their leaving a surplus of inorganic matters in the soil, it rather indicates a production of them by atmospheric action on crude matters, in a state fit

for absorption by the roots, which is the gist of my argument in advocating the continuous fallow.

It is in the frequent stirring of the soil, rendering it ever in a state to receive and retain that which falls on its surface, that consists one of the principal benefits of our usual fallow crops; another one lies, I have reason to believe, in an action that has hitherto escaped us; *the return to and absorption by, the soil of such matters as these crops do not assimilate, and which are thrown off by the leaves in the water of evaporation, and which from their superior gravity are disposed to precipitate.* In salt and other works in which minerals enter we have an analogic action, for though a large mass precipitates in the water of solution and remains in the pans, a quantity not very minute passes off and is precipitated from the air, encrusting surrounding objects; so in the leaves of plants, their salt pans, a large quantity of inorganic matters remains, while much must be thrown off.

And here I may be permitted to observe, that the great Liebig and other chemists have fallen into error in their calculations of the quantity of inorganic matter taken up by plants, which they have only taken at the amount found in the ashes of matured plants; they have not reckoned on the quantity drawn from the soil through the whole period of their growth, and which has passed from them through their leaves into the air. The deductions, then, from this calculation of the quantities of any matters to be returned to the soil as manures are false. This error or omission in Liebig appears the more extraordinary, as he has forcibly demonstrated such action in all evaporations, in which the consideration of the vegetable economy does not enter.

In the passing off from the leaves of plants of matters not assimilated by the plants in the water of their solution, and in the repeated stirrings of the soil fitting it to receive their precipitates, may be found a better solution of the causes of the increased fertility of the soil, by the introduction of our usual fallow crops, than in any foregone conclusions.

That plants can get rid of matters they do not appropriate, and by their leaves, is well known, for in the sunlight they appropriate the carbon of carbonic acid, and throw off by their leaves its oxygen; while in the absence of sunlight, when the decomposition cannot take place, they throw off the acid entire.

It has long been held an indisputable fact, that plants receive through their leaves carbonic acid from the air; and as we can no more ascribe a discriminative power of choice in the leaves than we can in the roots, we must admit that the leaves of plants receive whatever is offered to them, in a dissolved or suspended state in the surrounding atmosphere, provided it is sufficiently minutely divided to enter their air-vessels.

If then the atmosphere is charged with inorganic as well as organic matters, and we know it

is, plants must by their leaves, as well as by their roots, take in indiscriminately these matters both inorganic and organic; and they also throw off by their leaves those matters which they do not require, which they cannot assimilate. A plant then becomes surrounded by an atmosphere surcharged for it with excremental matters; but these matters are the essential elements of another family of plants, which reciprocally throws out as excrements the elements that to the former are essential.

Hence the advantage that may be derived from interlining families of plants of the most opposite elementary constitutions. Each feeds upon the excrement of the other. The same objects are obtained in some degree by our rotary system; the excremental matters thrown off by the leaves of one sort of crop, when not swept off by high winds, and in this perhaps lies much of the superior richness of low and sheltered over high and exposed lands, fall on and are absorbed into the soil, and render it fitter to feed another sort of crop; but as several months intervene between the two crops, much of the elementary difference thus caused in the soil must have disappeared, both from the inflow of fresh matters and the evaporation of old ones, and from the new combinations that have thence taken place; whereas from the co-existing collocation of such different crops, the excremental matters of each are immediately taken up by the other. If we place flesh meat and vegetable food in quantities sufficient for the sustenance of two animals, the one carnivorous the other granivorous, both will have enough; but if the two animals are of the same species, they will be both only half fed.

Hitherto the interlining of crops has rather been a garden operation than a field one, and has consequently been limited to crops of slightly different natures; it has also been attended with a crowding together, which was injurious. Notwithstanding these false cultures, the system, by those who have tried it, is said to be a productive one. From such experiments as I have myself made, and I go back as far as twenty-eight years I have every reason to draw favourable inferences. The failures of my early days are ascribable to crowding and intermixing in the rows, the great errors of all attempts in double cropping. *Every crop should be in distinct rows, and the rows be at distances as great or nearly so as though it were a single crop—at reasonable hoeing intervals.* Mixed or rather interlined crops may be divided into simultaneous, or so for a large part of their growth, and successive, or where only the early growth of the succeeding crops occurs before the removal of the preceding one.

The former appears to have been long practised in the isle of Jersey. Mr. Girard, of Bellevue Cottage, St. Peter's, writes in January, 1846:—"There is nothing new in growing two crops together and at the same time. We have in our

island followed the system with success ever since I can remember, and that is upwards of thirty years. We dibble beans in double rows, the beans four inches apart, with an interval of six or eight feet to the next rows, after which we sow the parsnip seed. In every third row of cabbage we dibble beans between each cabbage. We often follow the same system with our crops of potatoes. The beans seem to thrive amazingly by this manner of planting, and the main crops are not in the least injured by it."

The Earl of Lovelace, in the Journal of the Royal English Agricultural Society, states, that he dibbles in beans in February in double lines four inches apart, and with an interval of three feet to the next row, in which he plants cabbage in May and June. The success has been complete, and it has never been omitted for a single year since its introduction at Oakham, in 1838; and so far from the bean crop being diminished (in consequence of the greater distance at which the row are planted to admit the cabbages between them), it has, on the contrary, been increased from thirty-five to forty-one bushels, the average yield for five years since the cabbages were introduced.

The practice of mixed cropping has hitherto been limited to the leguminous plants; but if it is found, with these plants varying so slightly in their elementary construction, to exert so beneficial an influence, what may it not be expected to do when it is applied to plants so opposite as the cereal and leguminous.

The distances we have adopted between the rows of our crops do not depend upon the deductions of scientific men, nor upon the experience of practical ones; they have been regulated by the space required by the surface-stirring implements we have employed. It has been found that the drum-head and flat Dutch cabbages, planted in rows four feet asunder, yield as heavy a return as when planted in rows only two feet asunder. In field tillage, where wider rows are used than in garden, the returns are as great in turnips, parsnips, potatoes, &c. Grain, in rows twelve inches apart, has been found to yield as well as at much less intervals. It was ever a common remark with the humble tillers of potato ridges, that the outside plants were more productive than the centre ones. It is notorious that turnips in drills give better crops than broadcast. Numerous instances are recorded of immense returns from isolated plants, and I verily believe our puffed-off-mummy wheats, our seeds in sailor's jacket pockets, &c., owe whatever merit they possess of productiveness, to the same principles, room for development and careful tillage.

REPORT ON THE BREAD STUFFS OF THE UNITED STATES, made to the Commissioner of Patents. By Lewis C. Beck, M. D., 1849. This brief report embodies much valuable information on the

comparative value of different varieties of wheat, Indian corn, &c., grown under a variety of circumstances. It also contains the results of several analyses of sound wheat, produced in our own country and elsewhere, the extremes of which stand thus:—

	Lowest.	Highest
Proportion of water, in 100 parts,	11.75	14.05
" Gluten, " "	8.31	16.00
" Starch, glucose and dextrine, "	68.65	79.34
" Bran, " "	0.20	2.90

The highest proportion of gluten was found in a sample of Kubanka wheat, grown on the Kuban River, in the southern part of Russia. A sample from Floyd & Co., Georgia, afforded 14.36 per cent.

The result of these investigations corroborate what we have before ascertained, that the *gluten, the nutritive portion of the grain*, is more fully developed in a dry, hot climate, and wheat grown upon a rich soil.

The value of wheat for nutritive purposes does not depend upon superior whiteness, as much of that which is of dark color contains a large proportion of gluten. Spring wheat, that uniformly brings a much lower price in market, is rich in gluten, and frequently of equal value with the best winter wheats, which sell at 15 to 30 per cent higher. We regret that Dr. Beck has omitted all investigation of spring wheat in this report, as well as the comparative nutritive properties of rye, maize, buckwheat, barley, &c. We shall hope for full and minute information on each of these valuable grains, which he intimates he may give, in part at least, hereafter.

ARTIFICIAL FISH-PONDS.

The *Ohio Cultivator* gives the mode of constructing fish-ponds, as practised by Jacob Hoffner, near Cincinnati. He says much care should be taken to prevent leakage, especially when craw-fish abound. These animals make holes through embankments, and let off the water. To guard against this, the sides should be lined with lime cement. The ponds should be made of irregular shape, having shallow bays and estuaries, where the smaller fishes can sport out of the reach of the larger ones, which seek to destroy them. It is observed that, unless the pond is quite large, so as to afford them sufficient range to gather insects and vegetable substances, the larger kinds of fishes must be fed two or three times a week, with scraps of bread, meat, and other refuse matter from the table and kitchen; but the gold fish, and other small kinds, even though confined to limited space, seem to thrive best without any other food than that derived from the water, and the small animal and vegetable substances that may be found therein.

AUTUMNAL MANURING.

It is sometimes objected to the plan of applying the manure for the turnip crop on the oat-stubble in the autumn, that the volatile part (as the ammonia) will be dissipated, and that the soluble part will be washed away by the winter rain. I have every reason to believe that this impression is erroneous, or that at least the waste is not more than takes place in the best-managed manure-heap, and must be much less than the loss which now takes place in ninety-nine out of every hundred farm-yard in the country. The investigation of Kuhlmann shows that no fermentation takes place at 32° F. in manures, and that it requires about a moderate summer heat to carry on the process with vigour. There is, I believe, little or no ammonia in the dung or urine of animals when it leaves their bodies—the ammonia is generated by fermentation; so that, if we can keep the dung or urine at 32° F., the fermentation and consequent production and waste of ammonia is avoided. Every one knows that for many weeks in winter the temperature of the soil does not greatly exceed 32°, or that of freezing water.

When large quantities of manure are heaped together, a great heat is speedily evolved by the fermentation, and the ammonia, in consequence of the rise of temperature, is entirely drained off. On the other hand, when the manure is spread over the land and ploughed in in the autumn, it is in too small quantities together even to raise the temperature to an injurious height by its own fermentation. Besides, the ground, by the frost and snow of winter, is seldom much above the temperature of 32°, which effectually stops the decomposition of the manure, and the production of ammonia. Should this gas be produced in small quantities, it will be absorbed by the clay and charcoal present in the soil.

Nor will there be such a waste of the inorganic or mineral part of the manure as might be expected. This is protected from the action of the winter rains by the vegetable matter with which it is in combination. If any one, by a very simple experiment, digests *fresh* straw in water, he will soon satisfy himself how completely insoluble it is; but if straw be allowed to rot, or what is nearly the same, if it be burnt, all its constituents which are soluble in water, can be easily dissolved.

The practice of applying the farm yard dung in a fresh state before the autumn ploughing, is

becoming very general on the strong lands of the best part of Scotland, where it is found very useful, not only by producing good crops of turnips, but also by saving time in the spring, or more busy part of the year.

M. B.

FRESSENIUS ON MANURES.

In no part of Fresenius' work do we see so good an example of his style, as in the portion under this head. He observes that—

The business of an agriculturist consists in producing greatly increased vigour of growth, as compared with that produced, when the plants he cultivates are in a state of nature. Besides this, he at one time grows a plant for its seed, as the grain crops,—at another for its leaf and stem, as clover or tares,—at another for its fibre, as hemp or flax—and at another for its root, as potatoes and turnips.

It must be obvious that there is but little soil in which these different purposes can be obtained by a farmer, year after year, by the unaided efforts of nature. The soil must be maintained, in a certain degree of richness, with regard to the mineral (and perhaps the vegetable) part of vegetation; and if it has not this necessary condition, the farmer must endeavour to supply it,—or, in other words, he must add manures.

Before we can estimate the value of a manure to a certain soil, we must be able to answer the four following questions;—

1st. What nourishment or food does the plant we intend to cultivate draw from the soil?

2d. What mechanical state of the soil is best suited to each plant?

3rd. Does the soil contain the necessary constituents of the plant?

4th. What does the manure contain or consist of?

1st. *What nourishment or food does the plant we intend to cultivate draw from the soil?* We have here four points to decide:—

a. What are the ashes of the plant composed of?

b. How much of this ash does the plant require?

c. Can the plant draw the nitrogen it requires from the atmosphere?

d. And can the plant draw the carbon it requires from the atmosphere?

The first and second of these questions have been answered by chemistry; and though the application of the information thus obtained, may not seem very clear to the practical man, there can be no doubt but that the advance of education and science must speedily place it within the reach of every one interested in the matter.

The other two come more especially within the province of the farmer himself to answer, as

they obviously cannot be answered by chemical analysis, but by comparing the growth of plants under varied circumstances.

From these questions, however, the following one arises, and is of special importance to the farmer: Is a certain supply of inorganic matter in the soil alone sufficient, or must we add to it a certain quantity of decaying vegetable matter, and animal matter or ammoniacal salts? And, even supposing the application of the vegetable and animal matter should be found profitable, it is interesting to ask the question, how do they benefit the plant? Does the decaying vegetable matter not act a double part? In addition to supplying carbon, does it not chemically, by decomposing and rendering soluble the insoluble silicates and phosphates?

Suppose this matter clearly understood, I would then know that the plant A requires a certain salt, in a certain quantity, and in a certain state of chemical combination. I know that it can, without prejudice to the crop, draw all the carbon and azote necessary for its growth from the atmosphere; I may also expect a good harvest if even the soil contains no carbon and azote, provided the necessary salts are so supplied as to be soluble in water, or at least in water containing carbonic acid. Further I would also know that a certain other plant B, can grow in a soil where the salts necessary to its growth are supplied in the soil, but the crop will be increased if the carbon and azote are supplied to it by the soil also, and not, as in the previous case, by the atmosphere.

2d. *What mechanical state of the soil is best suited to each plant?* This is a question which every farmer learns from experience to answer for himself. For instance, he knows very well the soil which is in a fine enough state to grow wheat, would not grow a single turnip, and so on.

3d. *Does the soil contain the necessary constituents of the plant?*

This question can only be exactly known by chemical analysis, and great steps have already been made by the chemists of the present day; but it is evident that it is impossible for every farmer to have his soil analysed, nor indeed is it absolutely necessary; for as soon as he has learnt to pay proper attention to geology, he must be aware that his soils are formed from the remains of the rock on which they lie. Now, as the chemical constitution of the principal geological formations, as chalk, clay, slate, granite, &c., are accurately known, the well-educated farmer will obtain for himself a tolerably accurate analysis of his soil, by consulting any of the numerous works containing analyses of these rocks. It is therefore to the careful and laborious examination of these rocks that I would direct the attention of all scientific men.

4th. *What does the manure contain or consist of?*

All substances which have hitherto been used as manures, may be divided into two classes—

Inorganic manures, or those of inorganic origin. These are either (A) a simple chemical compound, as gypsum, common salt, or phosphates of lime; or (B) a mixture of various substances, as marl, the ashes of plants, and many others. The composition of these latter is now well understood, and a tolerable approach has also been made to an estimate of their value.

2. *Organic manures, or those from living animals.* These latter are very numerous, as the dung and urine of men and animals, bone-earth, guano, leaves, &c. The question naturally arises—to what is farm-yard manure and the above substances indebted for its value? The answer is—they contain the ashes or mineral part of the plant, &c., which have been the food of the cattle producing the manure. In farm-yard manure this can hardly surprise, if we consider its origin; it is but the food of the cattle altered, or, in other words, consumed by passing through their bodies. Chemical analysis has shown that these manures consist of—

1st. Salts soluble in water,

2d. Salts containing nitrogen, and nitrogenous substances, and—

3d. Decomposing carbonaceous matters.

It becomes of importance to the farmer to ascertain whether these substances can be so combined and prepared, by the aid of chemistry, as to be of the same value to him as farm-yard manure, or even as an auxiliary to it.

We are old enough to remember hearing old farmers laugh very hard at their neighbours for using bones, alleging that it was impossible for so small a quantity to be of any use to the crop; and yet we may venture to assert that no one, between Land's End and John o' Groat's House, will now be found who is ignorant of their value. Here there is one auxiliary to farm-yard manure; for bones cannot be a substitute, as they consist of only phosphoric acid and lime, whilst farm-yard manure consists of phosphoric, sulphuric, and muriatic acids, in combination with potash, soda, ammonia, lime, magnesia, &c.

The next substance introduced into English agriculture was guano, or the dung of sea-birds. This was an improvement over the bones, as guano contains many more of the constituent parts of the plant than the former.

The third attempt will, if properly carried out, be of infinitely more importance than any of the others; we alluded to the so-called artificial manures which are now so freely advertised. The foundation of this great step is certainly due to Liebig, as we believe that he was

the first to propose to dissolve bones in sulphuric acid. It is difficult to explain this action without showing it by experiment. We will, however, do our best. When sulphuric acid is mixed with bones, a certain proportion of the phosphoric acid, previously in combination with lime, is at once set at liberty. Before the sulphuric acid was applied, the phosphoric acid was insoluble; but, after its application, one-half of it is rendered soluble in water. This is an important step gained, as one of the requisite ingredients is thus rendered immediately available to vegetation.

Muriatic acid has precisely a similar effect as sulphuric acid, only the muriate of lime which is formed has an injurious, or at least an uncertain effect on vegetation, whilst the sulphate of lime which is formed, when sulphuric acid is added, is itself of recognised value as a manure.

Carbonic acid has also the same effect; and we here at once recognise an important part which this acid, and the substances producing it, must take in vegetation. It has already been remarked that bones are quite insoluble in water; no sooner, however, are they covered up in a soil containing vegetable matter, than a decomposition takes place, and carbonic acid is slowly and gradually eliminated, and the acid slowly and gradually acts upon the phosphate of lime, and sets the phosphoric acid at liberty for vegetation.

So that we see the same process going on in the soil containing bones and carbonic acid, as takes place when sulphuric acid is added to bones; only, in the latter case, there is an immediate effect, whilst in the former it is slow and gradual; consequently a smaller quantity will be sufficient.

REMITTANCES FROM IRISH EMIGRANTS IN AMERICA.—ONE of the most remarkable circumstances connected with the condition of Ireland is the large amount of money still received from Irish settlers in the United States by their relatives in this country, to enable the latter to emigrate. According to the estimate of the late Mr. Jacob Hervey, of New York, the sums thus transmitted, within a single period of twelve months, amounted, in the aggregate, to £200,000; and there can be little doubt that the remittances are now on a still greater scale. By every American mail a considerable number of bills of exchange for small sums varying from £5 to £20, but seldom higher than £10, are received in Dublin, and transmitted to the various

country post-offices. In general, those bills are drawn by New York, Philadelphia, or New Orleans firms on banks in this country, and a large proportion of them are made payable by the Provincial Bank of Ireland and its branches. In consequence of the great number of persons of the same name—the Ryans, O'Briens, O'Connells, &c,—in the different districts, much difficulty is often experienced in ascertaining the parties for whom the money is really intended, and the banks are frequently under the necessity of deciding between rival claimants. Some frauds are often committed by persons who watch the arrival of the American mail, and take care to obtain possession of letters at the post-offices. In one instance, recently, the mail-bag, forwarded to a village in Westmeath, was seized upon and the letters purloined. A few of the bills of exchange thus obtained were actually paid, and the swindlers were enabled to take shipping for America before notice of the robbery was given to the banks. The post-office authorities have caused an investigation regarding the robbery of the mail-bag.—*Dublin Correspondent of the Morning Chronicle.*

RUST IN WHEAT.

The Directors of the Saint John (N. B.) Agricultural Society, in their report for the year 1848, make the following remarks as one of the causes of rust in wheat. They observe that the ideas are thrown out rather as a supposition than an opinion, and are designed to excite inquiry;

“The oat draws nutriment from the earth by side roots which spread over the ground. The wheat plant has similar rootlets; but in addition thereto, when about to head, sends down a tap root into the earth, for the purpose, it may be presumed, of procuring that additional nutriment which its large rich ear requires; and this tap root has been known to go down to the depth of four feet. We may observe, that up to the time of sending down the tap-root, the wheat is the hardiest and thriest of all the cereals, but afterwards the most liable to disease. This delicacy is readily accounted for, when we consider that land is generally undrained—that not more than a few inches of soil get the benefit of sun, air and manure, and that, therefore, the root must encounter in its downward travel, nothing but disappointment. It comes in contact with the cold clay, or a sour, wet subsoil, turns back in despair and dies. In accordance with the laws of nature, insects or rust, which is itself a fungus, or vegetable insect, comes to finish the work of devastation on the dying plant. The forlorn farmer rails at the climate, and cries out that his wheat is killed by rust, while in fact it has died from starvation—from the want of that food which, as a provident husbandman, it was his duty to have provided for it.

AGRICULTURE :
ITS INFLUENCE ON MAN.

"Nihil est agricultura melius, nihil uberius, nihil dulcius, nihil homino libero dignius."—Cicero.
Nothing is more excellent than agriculture, nothing produces greater plenty, nothing more salutary, nothing more honourable for a free-born man.—J. T. D.

SIR,—In a late essay, I laid before your readers the "Rise and Progress of Agriculture," in this I intend showing its influence on man and the face of nature. Its poetical and moral effects, and the causes which tended to check or advance it in several states, &c. Philosophers show us the rude and savage life which mankind led before they adopted agriculture as the chief means of their sustenance :—

"Like beasts they lay in every wood and cave,
Gathering the easy fowl that nature gave;
Soft acorns were their first and chiefest food,
And those red apples that adorn the wood.
When thirsty they did purling streams invite
To satisfy their eager appetite.
They knew no use of fire to dress their food;
No clothes, but wander'd naked o'er the wood.
When drowsy night came on they naked lay,
Spread o'er the ground, and rough as they.

CÆCILIUS LUCRETIVS, lib. v.

Such was the primeval state of man in many nations after their dispersion. The knowledge of husbandry derived from Noah and his children was either forgotten, or neglected so long that scarce a vestige of it remained. Hunting, fishing and pasturage, were progressively adopted. The precarious subsistence afforded by these was found insufficient as population increased. Men of greater intellectual faculties than their brethren, prompted by necessity, tradition, or some impulse from the deity commenced agriculture. The plenty and blessings that attended the cultivation of the earth were soon manifest. Societies were formed; architecture commenced; the natural impetuosity of man subsided: laws were established :—

Then man grew soft, the temper of his mind
Was changed from rough to mild, from fierce to kind
Then neighbours by degrees familiar grown,
Made leagues and bonds, and each secured his own.

CÆCILIUS LUCRETIVS, lib. v.

Permanent divisions of the land took place; geometry was invented, and the extent of *meum* and *teum* was established. Herodotus, a Greek historian who flourished about 400 years before Christ, refers this to the reign of Sesostris, King of Egypt, who opened numerous canals, and divided the land among his people. A spirit of industry, observation and inquiry was abroad, The sun's apparent annual progress through the signs of the zodiac was remarked. The seasons of sowing and of reaping, &c., were regulated by his course. The stars were named, and constellations called, not so much from their configurations as from the various incidents of the months

that occurred when the sun entered them. Thus in March he entered Aries, or the ram, that being the time of sheep-yeaning; Taurus, or the bull, showed the time of ploughing; Virgo, or the virgin, with the sheaf of corn, the time of harvest, &c.; 'hus astronomy began. In the Book of Job, probably the most ancient record in existence, allusion is made to some of the most remarkable stars, as pointing out particular seasons of the year—see the ix. c. 9 v., which in our characters may be thus expressed from the original Hebrew :—*ngosch ngash, ve-hisil, ve-himah, ve-hadre tenun*, which may thus be translated into English, according to Dr. R. Grey, and Mr. Dougall, viz. :—*He (the Creator) who made him who travelleth round by night, and the sluggish constellation, and the warm and the secret chambers of the south.* These, in our common Bibles, are very improperly rendered *Arcturus, Orion, and the Pleiades*, but without any authority from the original Hebrew text. Mechanics, and several other sciences, were invented, as auxiliaries of agriculture. The face of nature was changed; the forest, the desert, and the fen were reclaimed. Huts became hamlets, hamlets increased to cities. Tribes that wandered about became fixed; mighty nations arose; and man, at length, seemed to have completed his claim to the sovereignty of the world.

The rudest and most barbarous nations of antiquity have thus been humanized and rendered happy by the introduction of agriculture among them. The conquest of the Romans, as Pliny, lib. ii. 5, justly boasts, tended greatly to advance a knowledge of its blessings, and that of other useful arts. When Cæsar's victories established its practice in Gaul, how soon the forests and marshes of that country were converted into saubrious and fertile fields.

Those cold and barren regions that Strabo describes in his 4th book, by cultivation have long since enjoyed the most genial climate and productive soil. The very air is improved by the cultivation of the earth. Silius Italicus tells us how even Averna, a lake in Italy, which from its noisome, poisonous vapours, was considered the mouth of hell, and over whose deadly stench no bird could fly, even in Hannibal's time; however, in his days (Silius) it was quite free from such noxious steams, because Agræppa, in the intermediate time, had cut down the woods and reclaimed the country that encompassed it.

Stagna inter celebrem nunc mitia monstrat Avernum, &c.

SIL ITAL., lib. xii.

Averno next he show'd his wand'ring guest,
Averno now with milder virtues blest.

We know how the poor Eremites, by toil and industry, brought the drear and comfortless Thebais into a land of beauty and fertility, as they did several other places, when, in the third century, they fled to avoid the Decian persecution

against the Christian religion.—See *Miss Aikin on Monas. Institut.*

What has become of the Hereinian forest that, in ancient times, covered almost all Germauy, and several other forests? The hand of industry has converted them to fruitful plains of mild and genial temperature. An instance of this we have also in North America, where, through vast tracts of ground, nothing but woods were to be seen, which rendered those parts excessively cold; but since they have been cultivated, the air (and this we presume must be owing to the earth reflecting the sun's rays, and not absorbing them in forests) has grown as mild as that of England, or rather as that of the northern part of France.

The moral and political influence of agriculture can be proved from living as well as historical testimony. The industrious natives of Peru and Mexico were found living under a system of jurisprudence; and, though far removed from the arts and refinement of the eastern hemisphere, yet, still the plain agriculturists there, exercised and revered the principles of justice, affection, and morality. Even in those islands embosomed in the wide Pacific Ocean, where agriculture is practised, there love, harmony, and subordination reign. How different the Tartars from these, located though they be in the midst of science and refinement; constituting as they do, the great central belt of Asia; yet still being nomadic or wandering savages, devoid of justice and principle, and retaining all their pristine barbarity.

As agriculture has been the primary means of civilizing mankind, so is it also the surest support of national power, wealth and happiness.

The increase of population need never be dreaded; the more numerous the people, the better the land will be cultivated. The world is in as great danger of a scarcity of clothing as of corn, but the increase of sheep has kept pace with the increase of people, and dispels all fears on that subject. If population increases in an arithmetical progression, provisions will increase in a geometrical ratio, provided the improved mode of agriculture be adopted, and the waste lands properly reclaimed.—See Dr. Jarrold's Reply to Mr. Malthus's Essay on the Principles of Population. We know a great deal depends on the industry of the inhabitants; "Much food is in the tillage of the poor, but there is that is destroyed for want of judgment."—Prov. xiii. 23. The earth, reclaimed by superior skill and superior diligence, will never fail to support the utmost exuberance of numbers. New modes of cropping and cultivation will be invented, and old ones, perhaps, revived. The spade might yet, as Lord Knims remarks, supplant the plough, and additional produce attend the change.—*Agricultura proxima sapientia*; that is, experimental farming and sound philosophy are near allied.

But we will now take a rapid glance at the advantages the farmer possesses over the manu-

facturer and the merchant; the commodities derived from agriculture consisting, as they do, of the common articles requisite for the sustenance of life, are ever sure of a uniform demand, and often of a very remunerative market. It is not so with the produce of manufacturers, or those luxuries which traders bring us from beyond the seas; those depend, in a great measure, on the patronage of fashion and opinion, and their value can scarcely ever be predicted beyond the present day. From this it is evident that the fortune of the agriculturist is far surer and safer than that of the manufacturer or trader. A gale of wind may strip the merchant of all his delusive splendor, or the bankruptcy of one he trusted. What have become of the commercial cities of Phœnicia?

The discovery of a navigator drained Venice of her opulence and importance: many other cities renowned of old for commerce, present at present a wretched contrast of their former riches and grandeur.—See "Smith's Wealth of Nations," and "Mitford's History of Greece."

Financial resources, it is true, constitute a great part of national strength; but the character, subordination and good conduct of the great body of the people, tend more to the stability of a kingdom; and what wins and endears a man's country more to him than his industrious resources and the social connections he supports. When the scene all round us bears the marks of our culture and our care—when we reflect on the blessings and plenty that will accrue from our labour, we cannot but love our native land; as Byron says, "He who loves not his country, can love nothing." If we read history we will find that the strongest instances of local attachment have ever been displayed by those who practised and supported themselves by agriculture. Messina was the only district of the Peloponnesus that was cultivated by free citizens, and not by slaves; so we find that they were never given to emigration, like the other parts of Greece; when, after having been 15 years forcibly banished from their native soil, they gladly and eagerly embraced the offer of the Theban general to restore them to their country.—See "Pausanius," lib. iv., c. 16.; "Anarchars," &c

It is providence implants this love of home and country in the breast of the poor agriculturist and rural labourer—they love their natal soil "even in extremity of ill." Their first and best regard is for the land that reared them. The poor man, though poor be his means, poor his tenement—

—Though the rocky crested summits frown,
These rocks, by custom, turn to beds of down.
Dear is that shed to which his soul conforms;
And dear that hill that lifts him to the storms.
E'en the loud torrent, and the whirlwind's roar,
But bind him to his native mountains more.

GOLDSMITH'S TRAVELLER.

If such be the love of the poor mountaineer for his Alpine home, what love must animate the

breast of the comfortable and wealthy residenter, embosomed in a vallambrosa, sweeter than vaucluse or temple famed of old, where unobserved time fleets with silken tread, like a lamb on the brow of a declivity gliding onward. The thought awakens the blissful visions of other days, and the scenes of my childhood arise from the ocean of the past, like a dim mist before my dreaming fancy.

The imperfection of agriculture, in ancient countries, arose partly from local circumstances or defects in their civil institutions. The frequent migrations that drained the districts of Greece arose from an insufficient supply of food. If her increasing numbers had been directed to the cultivation of the soil, plenty would have blessed their toil, and the wealth and stability of her states would have increased. But, instead of this, her people kept in perpetual wars—the lands neglected, the piracies practised along her sea-coasts, as Thucydides remarks, Lib. i. c. 7: The haughty spirit of Sparta, that disdained to pollute her sons with manual labour, and abandoned it to slaves. The vicious refinement of Athens, who also used slaves, and by an unwise law drew a line of distinction between citizens and farmers, unfavourable to the latter; add to these the injudicious restrictions on commerce, and an ignorance of those sciences now used as helps to improving the soil, and you will clearly perceive why agriculture declined in ancient Greece.—*Vid. Dion. Hal. Lib. i. c. 8. Diod. Sec. Lib. i. p. 17. Anacharsis, &c. &c.*

In the early ages of the Roman republic the husbandman was esteemed and honoured. Greece trained her youth to hardihood and vigour, in the exercises of the gymnasium; but the Roman soldier owed his manly strength and superiority in the field of battle, to a life of useful labour in rural concerns.—*See Falconer and Cato in Præfat. de re Rustica.* He quit the sickle for the sword, and when the trumpet of war ceased to sound, he returned and whistled after his plough. The superfluous population of the city were settled by an agrarian law in the country, and enjoyed those peculiar privileges. By this means the proceedings of the senate were not interrupted by tumultuous mobs. *See Græv. Thes. Rer. Rom. v. 1.* The spirit and genius of the people were directed to the favoured pursuit of agriculture: the farmer was looked upon as the bulwark of the state. We trace the love and respect that was shewed him in their religion, their military rewards, and even in the very names of their families—*Plin. Nat. Hist. xviii. c. 3.* But when farmers got above their business and committed it to stewards and slaves; when intrigues and civil wars laid waste the Italian plains; when leading men corrupted the virtue and simplicity of the people, and lured them to their standards, the populace flocked to the capital.—*See Sallust de cong. Cat. Varro, Lib. ii. Sucton. in August.* Add to the above, the re-

strictions on the exportation of corn, and you will see what paralyzed agriculture in the Roman state in such a manner that all the writings of Cato and Varro vainly endeavoured to recall its fleeting spirit, and even the divine strains of Maro only served to retard its progress till vice, venality, and, lastly, broils and barbarous invaders drove it from the rich Saturnian plains.

Under the horrors and glooms of the feudal system no art or science flourished; even agriculture was neglected and degraded; land was prized, not for its produce, but as being the vehicle of power. The laws of primogeniture and entail arose and their long train of evils.—*See Smith's Wealth of Nations.* The tyranny of many governments, the oppression of inferior knights, were, for a long time, an obstacle that impeded industrious exertions. One tyrannical prætorship stifled the bounties of Sicily, and made a scarcity even in the granary of Europe.

The Ottoman empire, by a barbarous policy, desolated the plains of Bessarabia; and the same policy overwhelmed the fertile fields of Greece with want and misery. On the other hand, behold a spirit of liberty clothing the bleak and barren mountains of Switzerland with an artificial soil, teeming with cereal crops, and beautiful vineyards.

But let us behold what our own government of late ages has done, and is doing. Agriculture is encouraged and preserved unmolested in her course. The reliques of the feudal system have nearly disappeared, unless what remains for the support of an honourable aristocracy—commerce affords outlets to our superfluous produce—the gentry are expending vast amounts of capital in the improvement of the soil—agricultural societies are established in every part of the empire—rewards are bestowed on the industrious occupiers—schools are established, where husbandry is taught, and every science is encouraged that can expedite its progress—chemistry is employed in analysing the various ingredients of soils and their combinations—botany, natural philosophy, &c., warmly recommended. See an essay on agriculture by Mr. Copleston, late A. B. of Oriel College, Oxford, to whom I am indebted for much of the matter in this communication.

I have now fulfilled what I promised at the commencement, and in a particular manner showed you that "agriculture, by cherishing in us a love of independence, an attachment to our country, and a purity of moral principles, proves the best preservative of our liberties, the firmest pillar of our strength, and the most powerful corrective of the contagion of luxury and of that growing mercenary spirit which trade is ever apt to produce, and which undermines, by slow decay, the virtue of a nation.—*COPLESTON.*

Thus, we see, agriculture is worthy the attention of the philosopher and statesman; it possesses all the charms and attractions that a liberal art can possess—that employment which Ze-

nophon, Cato, and Cicero deemed worthy their patronage and attention, will never be, I trust, neglected or underrated, but ever diffuse its salutary influence over personal and public interests, and bestow happiness to our people and energy to our state. Wishing it to be so, I remain, &c.,
 JACOB THOMPSON DUNNE.

Agricultural Journal

AND

TRANSACTIONS

OF THE

LOWER CANADA AGRICULTURAL SOCIETY.

MONTREAL, AUGUST, 1849.

In our last we gave insertion to an article on "*Associations of Agricultural Credit*," with a view of bringing the subject before the public for their consideration. The same system as that adopted in Prussia and other countries in Europe might not be exactly suitable for Canada, but we feel persuaded that a modification of the Prussian system might be established here with great advantage to the agricultural interests and to every other interest in the Province. So long as the productive class in this country are left powerless to introduce required improvements in their agriculture, there is no hope that the country can be prosperous. Associations of Agricultural Credit, properly conducted, would give a new capital to the people, secured upon the landed property of the country, to the extent of not more than a third or a fourth of its actual value. There could not be any better security, particularly as there would be a sinking fund provided that must pay the debt in a given number of years, with the interest. We cannot conceive that any material objection can be made to Associations of Credit based upon the security of the landed property of the country. If the improvement of our system of husbandry, and of our farm stock, might be greatly promoted by affording a trifling and easy accommodation to our farmers, on what principle we would ask should this accommodation be withheld, when

it might be safely granted, and a certainty that it would be repaid? The United States has made astonishing progress in improvements and in wealth within the last few years, and there is no question that a system of credit has been the means of enabling them to produce this improvement. We have frequently heard objections urged against this system, but it was replied that through means of this credit the country was vastly improved, and real wealth created, that would permanently remain to the country, of which she could not be deprived. These improvements of course produce the means of replacing the capital expended, and so it would be with us if we did not expect to produce improvement without capital, and neglect to provide ourselves with any. Canada would be in a much better position to borrow money, if she required it for any great public purpose, if her lands were under a good system of cultivation, her stock of good quality, and all yielding an abundant and excellent produce. This would be unquestionable security for the country to offer, and the *best* she could offer. Associations of Credit would also be the means of encouraging home manufactures, and we would much prefer our own manufactures to any other, as the persons employed in them would be our customers for our produce in exchange for their manufactures. We would be delighted to see our agriculture and our manufactures in a flourishing and healthy condition, assisting and employing each other.

We believe that doubts have been entertained that the Canadian white-thorn could not be propagated here from the berry or haws. Mr. Sheriff Boston, however, has assured us that he has raised them from the haws without the slightest difficulty. The berries should be gathered before they become frozen, and preserved until the following spring, and then sown in drills, about a foot apart. Perhaps it might be as well to sow them in the fall immediately after they become ripe, and cover the soil with stable litter until spring, when it

should be removed. We would like to see this thorn propagated extensively for hedges; they come up so rapidly that they would make a good fence in half the time that the English thorn would require. If there was any objection to the shelter produced by high hedges, they might be clipped to any height or form that would be desired. The appearance of the country would be infinitely improved by the substitution of live thorn hedges for the present dead fences. Many other trees and shrubs might also be planted in fences that would, in two or three years, make a good fence. We do not know exactly what it might cost to plant a fence of shrubs and thorns, but if they could be had conveniently, we do not suppose that the expense of taking up the roots and planting again would much exceed the making of a new fence of dead wood. A live fence may last for ages, and require very little repair except trimming; not so with the common dead fences—they are constantly going out of repair and decaying. We do not admire the common fences here, and conceive that almost any change must be for the better. Live fences are wanted in many places where there is not a tree left to afford shade and shelter to cattle.

We are often surprised to see the loose manner in which reports are prepared and inserted in Agricultural papers. In a late number of the Cultivator, some remarks upon a farm in the State of New York were inserted, and speaking of the milch cows kept by the gentleman, 95 in number, it was stated that 2000 bushels of carrots were grown upon the farm, and that each cow had half a bushel daily. Now it appeared to us at once that this quantity of carrots would only give each of 95 cows half a bushel a day for 42 days. What would be necessary to make up the deficiency might be purchased of course, but this would be a very considerable additional expenditure. To feed 95 cows for five or six months of the year with half a bushel of carrots each daily, would require near 8000 bushels

for five months, and over 9000 bushels for six months. Reports of this kind, to be useful and instructive, should be very carefully made, and no material circumstance left to the imagination of the reader, or they are worthless. This report should have informed us whether all the cows got half a bushel of carrots daily, and for what length of time, and how the carrots not grown upon the farm were obtained, and the cost of procuring them. The quantity of cheese sold from this dairy, 30,000 lbs., was not extraordinary, as there is nothing said of any buttersold. In a well managed dairy a gallon of new milk is said to produce one pound of cheese, and we believe it would. This number of cows in 160 days, provided each cow produced a gallon of milk daily, should make 30,000 lbs. of cheese. It is much to be regretted that experiments and reports are not more carefully made, if it is intended to instruct or encourage by their publication. When this essential point is not attended to, we are certain that their publication is much more hurtful than useful. To a practical farmer who has experience, there cannot be much injury, more than to disgust him with book-farming; but to others it may lead them into error that would be most injurious in various ways. If insertion is given to reports or communications that will not bear the most strict examination, we should think it our duty to give our own opinion on the subject, and such explanation as would prevent our subscribers from being led into error. This caution is necessary to support the useful character of every agricultural publication. •

A churn of excellent construction has been brought to the Rooms of the Lower Canada Agricultural Society, and we believe it will be found to answer the purpose of churning as well or better than any churn that has ever come under our notice. It consists of a square box, having a hollow perpendicular shaft with two hollow arms or tubes at the lower end. The shaft rests on a pivot and is turned by a small crank and cog wheel, the motion causes

the air to rush down the tube into the milk and produces a commotion like boiling water. The butter began to come immediately, and after it was made the milk was as sweet as new.

Mr. Hagar, of St. Paul Street, having purchased the right of selling these churns, will in future be enabled to furnish them to the public.

AGRICULTURAL REPORT FOR JULY.

The month of July was remarkable for heat and drought, and with the exception of a few heavy showers, there was not a day's rain from the beginning of June up to the 30th July. The hay crop, as we stated in our last Report, will be a very light one, and far below an average. The straw of the grain crop will also be very short, generally. The grain crops, notwithstanding the long drought, look very healthy, and may turn out well if the remainder of the season is favourable. The showers we have had have produced a most beneficial effect upon the late sown crops, but if they had occurred at an earlier period, it would have been much greater. Wheat in general was not in ear previous to the middle of July, and consequently is not likely to be much affected by the fly, as we have seldom seen the insect subsequent to the 15th of July. We were surprised to see in an article published in the Canadian Agriculturist, on the natural history of the wheat-fly, that it did not appear previous to the latter end of July—a period that it has altogether disappeared from our fields, or it would be useless for us to adopt the plan of late sowing, that our wheat might not be in ear until after the fly had disappeared. We conceive there must be some mistake, as we invariably have seen the fly before the end of June, and it makes its appearance about the same time in the British Isles. It would, indeed, be well for the farmers of Lower Canada if the wheat-fly did not visit their fields before the latter end of July, as they might then be perfectly safe from them, and defy their ravages. The maggot of the wheat-fly which destroys the grain, falls out of the

glumes of the wheat immediately after it has accomplished its work of destruction, as it does not appear to be able to prey upon what remains of the grain after it becomes a little hard, or out of the milky state. We have never seen the maggot continue in the ear of wheat after it had become nearly ripe, and we believe it to be a great mistake to suppose the maggots are carried in the wheat to the barn, at least in Lower Canada. If this was the case, we might readily get rid of the fly, as the maggots could be destroyed. We have had sufficient proof to satisfy ourselves that the maggots fall upon the ground, and remain in the soil until they become flies in the latter end of June, when the wheat is coming into ear. We have found the maggots in the soil; on one occasion, that our crop of wheat was destroyed, we had potatoes the following year upon the same field, and about the 25th of June, we noticed wheat-fly in millions about the potatoe-stalks in the field, although there was not any wheat within a considerable distance. We have anxiously watched the habits of this most destructive insect since 1835, the first year we observed it, and we could not see any change in its habits. The only check we think possible is to sow our wheat at a time that will bring it into ear before the fly appears, or after it has left us. We may imagine, and correctly, that the fly is not so numerous now as it has been, but this circumstance we attribute to the precaution adopted of not having our wheat in a state suitable for them to prey upon when they are present. We know they visit us regularly, and fear that, were we to return to the old time of sowing, we should have them as numerous and destructive as ever. If the ear of wheat is shot out fully only two or three days, they cannot injure it much, if any. The extreme top and one side of the ear is invariably most injured. This year we had a very small quantity of wheat sown the 9th of April, and we find only a few grains at the top and side of the ear injured by the larva of the fly. Another remedy may be possible, and that is, to

procure a wheat that the fly cannot injure ; but we fear that such varieties of strong-eared wheat are not the best quality of grain for flour. We trust efforts will be made, this year, to have a new supply of pure black sea-wheat imported for next spring sowing. This wheat if grown clean and unmixed with seeds of weeds or different varieties of wheat, and on good land to produce a full grain, we have no doubt, would meet a ready sale in England for various purposes, and for seed. As an encouragement to sowing fall wheat, we think it right to state a circumstance which occurred with us this year. In the spring of 1848, we were short of seed to finish the head ridge of a field, and had to purchase a bag of Upper Canada oats at a store. *The land was seeded down for grass with the oats*, and in harvesting the oats last fall, we did not notice plants of any other grain. This spring, however, several plants of wheat and rye have appeared, and are now nearly at maturity, with very little injury from the fly, and we intend to collect them for seed to be sown this fall. The seed must have been put in with the oats in May, 1848, and the plant remained in the ground—both wheat and rye being of the fall variety. This only strengthens our hopes that fall wheat might succeed here if sown in time, about the 1st September at the latest. It should be sown in drills, as the most certain mode to give it root in the soil, or if not, the furrows should be shoveled after the seed is harrowed in. Wheat should ever be the staple produce of Canada, and every effort should be made that this staple produce should be creditable as well as profitable to us. We regret to have seen, this year, the general prevalence of wild mustard in the grain crops, and in some new meadows, the latter evidently produced from the crop grown upon these lands not having been weeded last year, but the seed of the mustard allowed to mature and sown upon the land. We know that the seed of many weeds is sown with the farmer's grain, and this is from neglect alone, because such seeds might readily be separated by a proper

screen or sieve. The farmers this year, we suppose, consider it too great an expense to weed the mustard out of the crop, from the prospect there is of very low prices here and in Britain, and the scarcity of money to pay wages. We regret the more the great prevalence of weeds in Canada, because it is a certain indication of neglected agriculture. In improved husbandry weeds are not to be seen ; indeed it would be utterly inconsistent to allow weeds to rob the crops that had been carefully and expensively cultivated. In such a year as this, that the drought has been so great, and long continued, it would be of great benefit if crops were sown in drills and hoed. In dry weather, the stirring of the soil about the plants is of great advantage, and gives them vigour and greatly improved appearance. It allows the air and dew to enter the soil, that without stirring and hoeing would be impenetrable to either. We are always in such a hurry to get over our work here, that we are not very particular about whether it is done in the best manner to produce a good crop or not. We have no doubt that sowing grain in drills, particularly wheat, barley, peas and beans, would pay the farmer, provided hoeing and weeding were executed properly. If, however, we introduce an improved system of husbandry, and expect it to succeed and be profitable, every part of the system must be carried out properly. It will not do to cultivate expensively, and neglect the crops subsequently, or cultivate carelessly, and expect to remedy this defect afterwards by anything we can do. Any good system of agriculture consists in a regular course that must not be neglected in any one particular, or it may cause the failure of the whole, and then the farmer may find it convenient to blame the entire system instead of his own neglect, and this we know to have been the case in numerous instances. Fortunately, however, an ignorant, careless or negligent farmer, cannot change a good system of husbandry into a bad one, any further than he is himself concerned, and those who practice a good

system will enjoy all the advantages of it. Hay-making has gone on prosperously since it was commenced; but several farmers have allowed the meadows to remain uncut as yet, in expectation that the grass would yet improve. Clover and Timothy, however, will not make much improvement, as both are now at maturity. Old meadows and natural grasses may improve. Potatoes look well, and do not exhibit any appearance of disease. The season is very favorable for Indian-corn. We have no reason to suppose that our crops will not yet be a full average, with the exception of the hay. We have always found a dry season favourable for wheat, and if the next month is favourable, we may have a much better crop of wheat than last year, although none of our crops may have so much straw. The late showers will act beneficially upon the pastures, and it was very necessary they should, as they were become very bare. The markets are abundantly supplied, and the prices of butchers' meat and dairy produce moderate. There is not much variation in the prices of grain since our last report, except in oats, that is a shade higher. Hay is also considerably higher in price, and we believe has sold this month from 40s. to 50s. the 1600 lbs. old hay. We have not seen much grain assuming the hue of ripeness as yet, and there is no prospect that the grain harvest will be early. Much will depend upon the sort of weather we may have for the next two months, but we have every encouragement to hope for the best from the Giver of all good. Except for barley, it is not probable the grain harvest will commence before the 1st of September. During the time of harvest, that farmers and their workmen are exposed to the heat of the sun, to hard work, and to the cool dews of the evening, great caution should be observed not to drink too much cold water while in a heat, nor expose the body without sufficient covering to the cold dews of the evening after being greatly heated during the day. This caution is always necessary, but particularly while cases of cholera are occurring

in town and country. During the cholera of 1832 and 1834, although we had constantly over twenty persons employed, and chiefly Irish emigrants, not a case of cholera occurred in either year amongst them. Their food was boiled milk with bread for breakfast and supper; meat, bread and potatoes for dinner, and their drink during the day, milk and water. Not by any means to encourage the use of wine, beer or spirits, we think it necessary to state further, that we allowed two or three glasses of wine, beer or spirits to each man daily, whichever they choose, with a lunch of bread and cheese in the evening at four o'clock—the third glass was only given in case they had to work very late. We do not pretend that this particular food and drink was the means of saving them from the cholera, but we have often thought it had that tendency, and we submit this statement now for the consideration of those who understand the subject much better than we do; but we can safely recommend the experiment.

We have frequently urged the necessity of sowing unmix'd seed of grain of whatever species, but from the careless manner of managing grain in most instances, it is almost hopeless to expect to have clear and unmix'd seed without picking it in the sheaf before it is thrashed, which we would strongly recommend. If each farmer would only sow one acre of clean and unmix'd seed of each kind of grain, he might subsequently keep his grain clean. Different varieties never ripen together or make a good sample. We have heard many complaints lately of a new variety of wheat sold this spring at Montreal at a high price for seed, that has proved to have been very much mixed with other varieties. This we consider very inexcusable in those who sold the wheat, as it must be very annoying to those who bought it, in expectation of harvesting a new and clean variety of wheat to sow next spring, to find it now mixed with two or three other varieties, as we have seen it. We have seen some grain

imported from Britain this spring for seed, and although it cost a high price when laid down here, yet it was worth all its cost, as perhaps there was not a single grain of mixture of any other variety in either oats, barley, or beans, but the one which was named in the bill of sale. These circumstances are sufficient to show the different manner in which agricultural matters are transacted in Britain and in Canada. In the former country, the most careful attention is given to the seed sown, while, on the contrary, in Canada, we can scarcely ever see a field of grain that has not more or less of mixed varieties growing together, and samples of wheat have frequently both white and red mixed. If farmers were to bind in small sheafs as much as would produce a few bushels of seed, it might readily be picked before thrashing, and then we would recommend that the grain should be separated from the straw by striking the sheaf upon a barrel or round log of wood.

We copy in this number a "Report" of an "Industrial School Farm" in England. This "Report" fully establishes the fact, that such farms may pay their own expenses, and render immense benefit to the country in which they are established—not so much by the actual produce raised, but by the training of youth to agricultural labour, that is so much required in Canada. We have, for a long period, advocated the expediency of introducing such establishments here, and also Model Farms; but what is the use of proposing or suggesting plans if no action is taken upon them, more than a simple assent that they might be useful. It is exceedingly discouraging to all attempts to study what might be useful to our agriculture, when nothing is done to produce this benefit. Can there be any doubt that a country producing abundantly within itself, from the skilful industry of its own people, must be in a more flourishing condition than it ever could be by external trade, or trade with other nations? Indeed there can be no such thing as profitable

trade or commerce for a country that does not produce largely within itself the means of supporting trade and commerce. We have no objection to an extensive carrying trade, and we rejoice to think we shall have it, but we never shall regard it as more than a *help* to our prosperity, not as the main-spring of prosperity to the Canadian people. Our own productions must be the means of our wealth, and the largest amount of revenue we ever can collect upon foreign productions would be as nothing compared to the increased produce that would result from the improvement of our agriculture. The revenue of England is over £50,000,000 annually, but this great amount is chiefly paid from the productions of the British Isles and the industry of their people. Model Farms established upon a good principle, and under judicious superintendence, would, we have no doubt, soon pay their own expenses, and over. Suppose it otherwise, and that a considerable outlay would be required for their establishment, should that deter us from introducing what could not fail to be of immense benefit to this country, and every interest in it? It would only be applying a portion of the revenue for education and the instruction of the people in the best way to obtain their future living, and in the surest mode of augmenting the general wealth of the country. A farmer or laborer not properly instructed, wastes a good part of his time, because he does not know his business, or how to execute it to the best advantage. We might just as well expect that a man could become a merchant or manufacturer of any article you might set him to, without any previous training or instruction, as that a man can make a good farmer, or expert laborer, without due instruction and training. We every day have experience so far as regards farm laborers at any particular work, such as ploughing, hoeing, and many other works on a farm, that cannot be executed expertly or efficiently by those who have not been trained to such labour. This circumstance acts as a bar to the introduction of the most improved system of husbandry, as

a certain loss would be incurred by attempting to work it out with laborers without experience, and at high wages. We know by experience that this is the case, and we know farther the great advantage of training up young lads from the time they are able to do anything upon a well managed farm, that when they become men, they were able to execute double as much work, and in a much better manner than those who had not the advantage of early training and instruction. The difference of the value of trained and untrained labour to an agricultural country is more than any one could imagine that had not ascertained it by experience. It amounts in general to having a good crop that would pay expenses, and a profit, or a crop that would not even pay the expenses without any profit. This will be the case, in particular, with those who hire and pay for labour. It would be a very different affair in farming in this country, if all farmers were well instructed in the art of agriculture, and all laborers employed by the farmer able to execute every work required of them in an expert and efficient manner. This would soon produce a vast amount of benefit to the country, and improved husbandry would prevail throughout every part of Canada. This is what we anxiously wish to see, or measures adopted that would be likely to produce this good.

DRAINING TILES.—A Patent has been obtained in Scotland lately for making "Drain Tubes from Peat Moss," dried in the open air, and have been proved to be perfectly durable, and suitable for all soils. The cost for making, including the Patentee's right, will not exceed four shillings per 1000. The cost of the machines is from £14 to £16 each, and dies for making clay tiles can be added if desired. These machines are to be had at No. 8, India street, Edinburgh. Tiles and soles can be had in Ireland at 15s. the 1000 of 3½ inches, and 10s. the 1000 2½ inches, and tube tiles of the same dimensions can be had for about the same prices. It is a great drawback to agri-

culturists in Canada that draining tiles should be so much more expensive here than in Ireland, and we cannot well understand the cause. We have seen a report of thorough draining done on the estate of the Duke of Devonshire—the drains at 18 feet apart, done with well broken stone and flags, and cost £4 15s. the English acre. The drains 3 feet deep, 2 feet wide at top, and 9 inches at bottom, cost for opening 3½d. per perch of 5½ yards; those 3 feet deep, 2 feet 4 inches at top, and a foot wide at bottom, cost 4½d. the perch; the stones and flags cost 4d. per perch, and the sodding over the stones and the filling cost 2½d. per perch; the stones were laid 12 to 13 inches deep. The whole work was said to be well executed. The labour, however, did not cost more than half what it would here per day, but we believe much more work would be executed here in a day. On the Marquis of Bath's estate, 4d. per perch was paid for opening the drains of about the same dimensions as those of the Duke of Devonshire—2d. per perch for closing; 1½d. per perch for breaking stones; ½d. per perch for sodding; ½d. per perch for quarrying or collecting stones, and ½d. per perch for carrying stones every 50 yards after the first 50 yards; the stones were filled in from 10 to 12 inches deep in the drains, and all the work well executed. We give these prices in order that some idea may be formed of the cost and mode of draining adopted at home. We have no doubt that in many parts of Canada land might be drained with small stones at the above prices. Tiles are about the same expense as stones in Ireland, according to the above report. It requires about 17 tiles to make a perch of drain, and these cost about 3d., and stone cost exactly the same price. Tiles or stones carted a considerable distance would, of course, increase the expense something in proportion. Wood or branches might be made use of here with good effect. We recommend this subject to the consideration of farmers, as draining is so necessary for them.

In England, the chaff and waste about the barn doors is considered generally to contain some seeds of weeds, and careful farmers throw up this manure into separate heaps for the purpose of undergoing sufficient fermentation to destroy the vegetating power of such seed-weeds before it is employed as manure. This practice is very much required in Canada, as we have no doubt that an immense quantity of seed-weeds is put out with the manure, and sown with our seed-grain to grow again in our fields. We would earnestly recommend farmers to be more cautious about these matters. It is a public, as well as an individual loss, to propagate weeds instead of useful plants, and we are convinced that much of the weeds that abound in our fields are produced from seeds placed there by the farmers. It is a very general opinion in England that manure will produce much more effect by placing it in the soil as soon as possible, than by reserving it in heaps until a certain time, with the exception we have already stated as to manure containing seeds of weeds. The soil in which manure is to be placed should, of course, be properly drained. We have not the same opportunity here, certainly, of ploughing in manure in a great part of the winter that they have in England; but in our fall ploughing we should endeavour to put in all the manure we have at our disposal. It mixes with the soil, keeps it open, and in a much better state for working, or sowing in the spring. In fact, unless we plough in in the fall, we cannot well do so in spring for our grain crops. These matters are of great consequence to the farmer, and are deserving his serious attention.

At a late meeting of the Royal English Agricultural Society, it was stated that one acre of land, dressed frequently with liquid manure, was computed to have yielded during the summer, of Italian rye-grass, in five cuttings, 118 tons per acre of green food, a quantity that would have been sufficient to keep five cows. This is a most extraordinary produce from an

acre of land, and proves what may be done by high cultivation, and a constant supply of manure. A gentleman stated at this meeting that he had, last year, succeeded in growing a large crop of potatoes, with scarcely any loss by disease, on very poor soil, manured with half-inch bones, and planted early. From the first appearance of the potatoe disease, we felt persuaded that rich soil, or large quantities of manure applied in planting, tended materially to produce disease in the crop, and our experience up to this moment confirms us in this opinion. Potatoes should be planted early in dry light soil, with special manure rather than that from the farm yard. We should be content with moderate crops, and we believe planting beans or Indian-corn in every alternate row would be a good plan.

Industrial School Farms--Mr. Whitmore had much pleasure in detailing to the Council the particulars of the industrial employment of children in farming occupations, to which the Hon. Mr. Cive had made reference. The school-farm is situate at Quatt, and belongs to the Bridgenorth Union, the children being separated from the workhouse at Bridgenorth. It is managed by a master, acting in the double capacity of master of the house and schoolmaster, and his wife is matron. Their united salary is £50, with rations. The house is capable of accommodating 49 children: there are now (March 25th, 1849) 32 boys and 17 girls; of these 19 boys are above 10, and 13 from 5 to 10; of the girls 5 only are above 10, and 12 under 10 years of age, many of them under 7 years. Of the 19 boys above 10, one is a cripple, and unable to use the spade. The school is industrial; the boys being employed in the cultivation of $4\frac{1}{2}$ acres of land, and in the management of cows, pigs and poultry. Three, and occasionally four, cows are kept, and from four to eight pigs. The girls are employed in the house and dairy work, in washing, ironing, and baking, together with sewing, knitting and making their own clothes, &c., &c. The produce is disposed of--first, in supplying the inmates of the school with what skim milk and potatoes are required for their consumption, charged at market prices, and the rest, such as butter, pigs and calves, are sold at Bridgenorth. The children, like all others in a workhouse, are clothed and fed by the union. Their time is usually thus employed; they rise at half-past 5 in the summer, and at a quarter before 7 in the winter; they work till 8; school from 9 till 12; dine at 1; and at 2 p.m. they go

to their work—the boys to their field and garden, and the girls to their sewing, knitting, &c. They leave work at 5, and sup at 6, after which they play an hour or more, if the weather permit; and, as they sing in the church, they practise the psalms and chants for the following Sunday, and the day is closed with prayers. The profits of the farm are carried to the account of the union; they amount to from £60 to £70 per annum on an average, after paying rent and taxes, together with a per centage on the buildings, draining, &c. This profit is attributable chiefly to the labour being performed by the boys and not charged, and from the abundance of liquid manure, arising from all the drainage of the house, cow house, and pigsties, being preserved in a tank, and constantly applied to the land; sometimes to the growing vegetables. The crops grown are Carrots, Cabbage, Mangold Wurzel, Potatoes, Turnips, Rape, Italian Rye Grass and Vetches; following in quick succession, so that the land is never allowed to lie idle, except in the dead of winter, at which time a plentiful supply of liquid manure is given to all the land not having a crop upon it, and being thus prepared it requires but little in the spring to enable it to bear the next crop. The implements used are the spade, fork, rake, hoe, liquid manure barrel, and cart; the two latter shift and go upon the same wheels.

The following is a copy of the ledger account for the year ending Lady Day, 1849:

QUATT SCHOOL FARM IN ACCOUNT WITH CASH.

Receipts from Lady-day, 1848, to Lady-day, 1849.

	£	s.	d.
To cash from sale of Potatoes.....	29	3	6
To cash from sale of Milk.....	49	13	8½
To cash from sale of Butter.....	41	4	6½
To cash from sale of Live Stock.....	90	1	6
To cash from sale of Cabbage Plants	0	7	0
To stock in hand on Lady-day, 1849			
(as per valuation).....	66	0	6
	£276	10	9

Expenditure from Lady-day, 1848, to Lady-day 1849.

	£	s.	d.
By purchase of Food.....	36	9	10
By purchase of Seeds.....	4	15	5½
By purchase of Live Stock.....	61	11	7
By purchase of Tools, Implements, &c.	3	0	8½
By purchase of Manure.....	0	11	11
By purchase of Straw.....	6	0	0
By purchase of Sundries.....	2	9	11
By cash, a Year's Rent including interest expended in the erection of Building, Draining, Rates, &c.	19	6	0
By Stock in hand on Lady-day, 1848			
(as per valuation).....	75	7	6
By Profit and Loss.....	67	17	10
	£276	10	9

IMPORTANT TO FARMERS.—Last Tuesday morning, Mr. John Birchley, landlord of the Red Lion Inn, Buxton, went into his shippoon to give a calf its breakfast, when it refused to touch it, and appeared unwell. He had heard of several calves being attacked with a disease known by the name of lion, or hian, which has caused a great destruction of late among young cattle; and he communicated his suspicions to one of his neighbours, of the name of Grime, who went with him to the shippoon, and began to examine the calf, with the view, if possible, to ascertain where the diseased part lay, knowing that if some remedy were not quickly applied, the disease would prove fatal. In passing his hand rather heavily across its hinder quarter, it shrank from the pressure as if it were hurt. He therefore thought that that must be the part attacked or affected, and he instantly got a sharp knife and flayed the skin from off the part, when underneath, for several inches in circumference, the flesh was black and putrid, from which arose an almost intolerable stench. After he had flayed the skin of the whole part affected, he took a quantity of common salt and rubbed it on the part, and then took another handful and put it on, sewing the skin over it again with the salt underneath. At night he went to visit the calf again, when he found it was so far recovered as to be well enough to take its supper, and at the present time the animal is doing quite well.—*Preston Pilot.*

ON THE UTILITY OF BEE KEEPING.

TO THE EDITOR OF THE MARK LANE EXPRESS.

The keeping of bees combines utility with instruction and mental recreation to all; but more especially to the agricultural labourer. Now, when we take into consideration that since the commencement of the present century from £40,000 to £50,000 per annum has been paid by England for the produce of the hive, is it not a great national misfortune that the culture of bees has not been made an object of profit instead of amusement only, as at present is the custom in this country? For it may safely be affirmed that there is no one branch of rural economy in which the profit is so great, according to the expense attending it, provided the management be systematic and correct. I know not whether he be now living, but a few years since there was a humble, yet meritorious individual living at Blair Drummond, near Stirling, who annually paid the rent of a small farm from the profits of an apiary of fifty hives; and in many parts of England, particularly in Hampshire, the cottagers rent is paid by the same means. Unfortunately, however, as I know from experience, many superstitious prejudices beset the minds of the rural population with regard to bees; viz: that they will not prosper

without the exercise of a certain portion of witchcraft. First, it is deemed unlucky and impolitic to buy bees—they must be exchanged for some other commodity; and when a member of a family dies you must turn each hive once round, to prevent a like calamity among your bees. Lastly, they are averse to keeping them, because they happen to have a sting; but no creature is more harmless, provided it is treated with proper respect.

The natural history of the bee has been more fully considered than that of any other insect. It presented a favourite field for amusement as far back as Democritus; and of experience and scientific philosophy before Christ, 460. Aristomachus spent fifty years in the same study. Philiscus spent most of his days in forests observing the habits of this industrious little insect. The number of authors who have written on the subject previous to the 17th century has been estimated at between 400 and 500; including the name of Galen (A.D. 190, or thereabouts) Aristotle, Varro, &c. And last, not least, the Prince of Poets, who has made the habits, economy and treatment of bees the subject of his last *Georgic*, commencing—

“The gifts of heaven my following song pursues;
Aerial honey, and ambrosial dews,
Embattled squadrons and adventurous kings,
A mighty pomp, though made of little things,
Their arms, their arts, their manners I disclose,
And how they war, and whence the people rose.”

Further on he tells us that—

“Some have taught
That bees have portion of ethereal (?) thought
Endued with particles of heavenly fires.”

HOW MANY CREATURES A MAN OF SEVENTY HAS EATEN?—A Cockerian correspondent of the *Gateshead Observer* has calculated what a man might consume on the average in seventy years. “Taking ten years off for infancy—which is too much”—yes! far “too much.” Mamma’s darling, Jacky, as papa knows to his cost, is carnivorous long before the completion of his tenth year; but “taking ten years off for infancy,” although it is “too much,” and allowing a man “four pounds of flesh meat per week” (too little for an alderman, but more than a Burgess can get hold of), the consumption, at the close of three score years and ten, amounts, according to “our own” Cocker, to 12,480lbs., or 899½ stone; or to 156 sheep of 80lbs. each, or 20 bullocks of 44½ stone; or, to take it still another way, to 78 sheep and 10 bullocks, “with 6 stone over,” which may stand for poultry, fish, &c., “say 20 of each in the year,” or “1,200 poultry, 1,200 fish.” But, “if we take in shrimps and shell-fish,” and “all is fish,” that comes to our correspondent’s net), “heaven only knows what animal life is destroyed to keep up that one animal—man!”

FOSCOTE SHEEP.—On Wednesday, the 6th instant, at the ram show of Mr. Valentine Barford, of Foscoote, in Towcester, the successful in-and-in breeder of pure-bred Bakewell or Dishley sheep, we met a large and highly respectable company of sheep-breeders, amongst whom were many strangers, of reputed judgment, from the neighbouring and distant counties of Norfolk, Suffolk, Rutland, Lincoln, Leicester, Isle of Ely, Bedford, Bucks, Oxford, Gloucester, Cumberland, &c., &c., and all were highly pleased and satisfied with the size, form, and quality of Mr. Barford’s in-and-in production. These close-bred sheep, without a single cross of any other blood for more than forty years, struck the stranger with admiration and amazement to see rams exhibited so full in all those points which denote vigour, stamina, and constitution. Several strangers acknowledged that their minds had been diverted and prejudiced by false and erroneous reports about this flock, but that after seeing Mr. Barford’s challenge (which was elicited, we learn, owing to an unfair public attack on his principle of breeding), to produce as great a quantity of mutton and wool per acre, and of as good quality, on grass and turnips only, as any other breeder, they were led this year to attend Mr. B.’s show. There were also several old customers, of acknowledged reputation, who had hired rams continuously of Mr. Barford for twenty and thirty years, and who remarked that he had increased his size and stamina by breeding in-and-in. The number let this season far exceeded any former occasion, notwithstanding the badness of the times; and Mr. B. openly asserted, although he had let the major part shown that day, he could still offer a similar number equally good. More than fifty sat down to dinner, and were afterwards highly entertained and delighted by an animated discussion on the breeding and feeding of animals, in which it was endeavoured to show how free-trade times are to be best met by producing the greatest quantity of animal food at the least expense. When Mr. Barford responded to his “Health, and prosperity to the Foscoote Flock,” he entered fully into the details of his practice and experience in breeding, which he holds as no secret from those who favour him with their company; and to the inquirers in the world, he says, “Come and see.” We understand Mr. Barford this year intends showing a few sheep at the Royal Agricultural Society’s meeting at Norwich as a specimen of what can be produced on natural, and without the aid of artificial food.

BEE.—“An Inexperienced Bee-master” writes—“I have a stock hive, four years old, which swarmed last year on the 15th June, and again about a month later. Through a blunder, some water was thrown from a syringe over the second

swarm, as they were settling, which drove them back into the hive, and they did not again leave it. This year there were the usual indications of swarming so early as the beginning of May. The bees crowded in clusters about the hive-board and front of the hive, and often remained out during the night. They continued in this way until the weather became cold, about ten days since, when they seemed to settle at work, and are so continuing. To-day there is a small cluster again out, but much smaller than that which appeared a month since. Is there anything to be done in this case? Is it likely the swarm will yet come off? What is best to be done with this hive, the straw of which is becoming old and losing shape? Could the bees be transferred to another hive, and how?"—Bees frequently show indications of swarming, but return to the hive again from some sudden change in the weather, or other cause. We know of no method to force them to swarm, but when too late in the season, they may be prevented from swarming by putting a rim three or four inches deep under the hive, which gives them additional room. The swarm may yet come off, and that suddenly, upon the weather becoming warm. The bees can be transferred to another hive, by turning the present one upside down, late in the evening, and placing a new hive on top, previously sweetened, and binding a cloth tightly round the hives, at the joining; they will ascend to the new hive in a short time; keep them prisoners till the following night, when the new hive may be placed on the stand. But by this method, a large number of the young brood will be destroyed, and on that account the best method will be to fumigate the hive with a fungus called puck-fist or fuzz-ball, which, when well dried, set on fire under the hive, in the following manner:—Have ready a board, mounted on three or four legs, with the centre cut out, similar to a wash-hand basin stand; upon this the hive is to be placed; tack a curtain all round of glazed calico. This curtain should be made like a bag, having a running string at the bottom mouth, which should be drawn round a tin dish about ten inches wide and three or four deep. This should be perforated with holes, to admit air like a kitchen cullender, which article will serve as well as one made for the purpose. Placed on this should be a tin box, with a perforated lid on it, like a dredging box, into which the ignited fungus should be placed, and the whole closed up. In a very short time the stupefied bees will begin to drop, and a few smart taps on the hive will shake down any that may be sticking between the combs; immediately after you must remove the hive, and cut out the combs, and place them in the new hive, with as little breakage as possible; drop in the bees between the combs, and set the new hive upon the stand; everything should be prepared before hand, and the operation performed with despatch; it requires a very handy person, and one accustomed to bees; this is not the

season to do it, it should be done early in the spring. The above method serves either to remove bees from an old hive to a new one, or to one of Nutt's bee boxes, or to unite two weak swarms or hives together.

VICIOUS HORSES.

RUNNING AWAY.

This, when a horse does it in harness, I conceive to be one of the most natural impulses that actuate him, inasmuch as it is natural for any animal to endeavour to run from that which either alarms it, or that it has a dislike to; it is one of those occurrences that, more than any other, should be guarded against in harness; for so sure as a horse has had one decided run-away with a vehicle behind him, so sure will he, at least, attempt the same thing again on the first provocation or incitement to do so. No doubt but in proper hands, that know how to counteract such a propensity, he may, in most cases, be prevented from accomplishing his purpose; for such a person will first guard against (as far as he can) the animal being excited to the attempt, and, should he do so, knows the proper means of preventing its being carried into effect, but, with an ordinary hand as a driver, a run-away at some time or other is certain.

That the original, that is, the first, run does not arise from any vice I think nearly certain; for not having tried the experiment, of course the animal knows nothing of what the result of it will be; but if he has done so, and found that he got rid of the carriage, like the post-boys' horse following Johnny Gilpin, "right glad to miss the cumbering of the wheels," he then probably runs away the next time to bring about the same result; this, then, becomes a decidedly vicious trick in harness, though not absolute vice in the horse as to general disposition. I might be asked by some one knowing less of these things than myself, what I would recommend as the best means of curing or counteracting the propensity. This I certainly, from having had a good many such horses through my hands, could and would with much pleasure state; but I know I can give much safer and better advice, which would be—"Use him as a saddle horse, if he is fit for that purpose; if not, sell him." No one can say with proper confidence that he can cure a determined run-away horse of the propensity; if a horse runs away from high temper, constant work will probably appear to have effected a cure; so perhaps it will while the work continues; he is subdued, but do not fancy that he is cured. Let him recover his energy, and away he goes again; nor will work even always produce the effect, for, if he is really a bad-disposed horse, he will sulk at it, and then run away from ill-humour instead of fright or energy. The cause of the starting off will be a different one, but the effect will be equally dan-

gerous, and in the latter case so certain as he runs away will he kick also, which a high-mettled or even frightened horse may possibly not attempt, though the probability is that he does.

I certainly never was absolutely run away with by any horse in harness, excepting once by a pair of young ones. I in no shape mean to infer this has arisen from any very superior coachmanship; many far better coachmen have had more than one or two such starts, but probably they have not had as much to do with such horses as I have, and consequently do not see by the commencing manœuvres of the horse the favour he intends us. There is no case where the common saying that "prevention is better than cure" holds good more than it does, I may say, in all things that regards horses. The want of prevention often brings on vice, where vice did not before exist.

There certainly are some old offenders who are always on the watch for a start, and are knowing enough to make it when they find that from a decline or a particularly hard bit of road the carriage will almost run off itself: for this reason a suspicious horse should always be slackened in his pace before he begins a descent, for, if he once get ahead down the hill, not only cannot the driver stop him, but very probably he will not be able to stop himself. But horses often get credit for this kind of cunning and vice when the run-away proceeds from quite another cause, namely, the state of his mouth. A very high-spirited horse would mostly run away, if we would let him; that is, he would get on from seven miles an hour to twelve, then he would break into a gallop, and thus end in a complete run-away, without its having been in any way premeditated. This is all from want of, in technical terms, "hands," on the part of the coachman or rider, as the case may be. On first starting, the horse's mouth is tender, and if properly bitten he feels the influence of the bit; this he would continue to do to his journey's end, if his driver knows what he is about. The horse, we will say, after going a mile or two, begins to find his mouth not so sensitive as at first,—so he pulls a little stronger; here half, and more, drivers would pull the stronger at him, so they catch take "a long pull, and a strong pull" both "together." The horse increases his pull—so does the driver; then the horse begins a determined pull and "sets his jaw;" the driver places his feet more forward, and his hands also, and probably likewise sets his jaw, or makes some such face indicative of the exertion he is using. It's all up now; the mouth has got so dead, that it no more feels the bit than his hoof would, and away he goes. This may have all proceeded from high mettle only; had his mouth been kept alive, he would have been kept to a proper pace; he was allowed to increase it—his blood then got up, and then, and not till then, he set to in earnest, and from that time certainly determined on going off, and with such

a driver, or a man with such hands, would always do the same thing.

A light hand will hold a horse when a stronger arm cannot, for this reason,—he will not let the horse pull at him; just as an expert fisherman will hold a large fish with a single hair. I could perhaps hold a stubborn pig with a rope in his mouth as well as Isaac Walton; but if I had twenty trout at the end of my line, they would all break away from me as the horse would do from the driver I have described. Why? Because I am a muff with a rod in my hand, as the other is with a pair of reins in his.

Running away when ridden is a propensity somewhat more difficult to account for than when done with a carriage behind the animal, for here fright from the vehicle cannot be brought in extenuation of the act; but fear or dislike of the rider may, and, if so, it may not proceed from a vicious disposition. The horse has probably got rid of his burden on some former occasion by this manœuvre, so with this intent he tries it again. But why does he so dislike a rider? No doubt from having suffered by one. Here, as in driving, "hands" and a proper bit are the only remedies.—*Veterinarian*.

MODEL FARM OF THE SOCIETY OF FRIENDS.

The Friend's Relief Committee, having laboured for upwards of two years, in the management of the large funds entrusted to them, for mitigating the distress during the famine, and having a residue of the fund, resolved that the sum of twelve thousand pounds be placed under the control of five directors, for the object of exhibiting, by a liberal application of capital and improved mode of culture, the extent to which the agricultural resources of Ireland are yet capable of being developed, and increased employment thereby afforded to the people. With these views they advertised for land, for the purpose of establishing a model farm in the west. They had the offer of 97 farms, all of which they declined, mostly from deficiency of title or length of tenure. At last they discovered one for which they closed; it is 14 miles from Ballinasloe and 7 from Mountbellew; and, as I was obliged to stop for a few hours at the latter town, I determined to drive over, and see the farm. I found Dr. Bewley, their confidential manager, paying his workmen, 228 in number. He charges every shilling expended under its proper head, whether for draining, building, or farming, and has an exceedingly nice set of books. He is a most intelligent man. He walked over the farm with me, which contains six hundred and fifty statute acres of arable pasture land, for which they are to pay an annual rent of £320, being rather under 10s. per acre. Nearly one-third of the farm is bounded by a good broad road; another third is encircled by 360-

acres of deep, unreclaimed bog, which is given in without any charge. The term is for 999 years. There are no houses on it, except a cabin or two; there are the ruins of an old manor house. When they got it, two months ago, it was divided into 276 fields: nearly all the ditches are levelled, and it is to be laid out in 39 large fields. There is a fall of water, which, with a little trouble, can be made most convenient for driving a thrashing machine; and a second fall, a few yards further on, that will do for a corn mill, both of which are to be erected; also, a house for the manager, cottages for the regular workmen, extensive office-houses, all on the most improved plans. The erection of a lime-kiln is in progress; plenty of limestone on the farm; turf, for the making, quite at hand. Four hundred acres will require thorough draining, four feet deep; and good, well made, solid roads are now in the course of being made quite through the grounds. All this will require an outlay of four or five thousand pounds; but, when it is done, the directors will have a very fine farm. One-half will be land of the first class, about a fourth of the second class, and the remaining fourth poor and bad. It is all rather a light soil, on a limestone bottom. The poor-rates, in the division, were only 2s. in the pound for the last twelve months; the population is not dense, yet labour is cheap. A statute acre will be dug, by contract nine inches deep, for 9s. 6d. The district is extremely quiet and orderly. Dr. Bewley is the only Protestant, of any denomination, residing within the bounds of the parish, so there is no danger of party fights. The railway from Dublin to Galway is to pass within three miles of the farm, which must enhance its value, and make it easy of approach.—JOHN LAMB, in *Northern Whig*.

VETERINARY OPERATION UNDER CHLOROFORM.—Recently, the painful operation of firing was performed on a horse in the possession of J. G. Bridge, Esq., of Piddletrenthide. From a desire to avoid unnecessary torture to the animal, it was decided that it should be submitted to the influence of chloroform. The following account may be interesting.—The horse having been thrown, the india-rubber nose piece, charged with two ounces of chloroform, was applied to the nostrils, and the effect was almost instantaneous. In two minutes the horse became insensible, and the firing was concluded within twenty minutes, without any plunging or symptoms of pain (the chloroform being re-applied on any appearance of returning animation.) The hobbles being removed, three minutes elapsed before the horse awoke, and then he stood up and commenced eating the grass in the paddock, perfectly cool, and without those symptoms of excitement and distress which usually attend that painful treatment.

FLAX.—when sown early, will be fit for pulling by the middle or end of the month; it requires much nicety to determine the time it should be pulled. The fibre is in the best state before the seed is quite ripe; if pulled too soon, though the fibre is fine, it will be rendered unprofitable, by the great loss it suffers in scutching and hackling, and if pulled after the seeds get ripe the extra weight does not compensate for the coarseness of the fibre. The proper or most profitable time is, therefore, when the seed capsules are changing from a green to a brown hue, and the stalk yellowish for about two-thirds of its height from the ground; the flax should be caught by the puller just beneath the seed bolls, by which all short stems will be left behind; the handfulls should be laid across each other in a slanting direction, so that the person who ripples may take them up without confusion. The rippling should be performed at the same time, or go on simultaneously with the pulling, and the flax carried to the water as soon as rippled. River or soft water is the best for steeping; the flax, after being bound in sheaves should be placed in one layer, in regular rows, a little sloped, the head of each row lying on the roots of that which preceded it, and covered closely with thin tough sods; as fermentation proceeds the flax will begin to rise, when additional weights should be laid on to keep it down; it requires 10 or 12 days steeping; it should be examined from time to time, every six hours, after the fermentation subsides; try some stalks of an average size, by breaking it across in two places, about six or eight inches apart; catch the woody part, and if it pull freely out, leaving the fibre behind, it is ready to take out of steep; then place the bundles on their root ends, close together, to let them drain for 24 hours, and spread it out evenly and thin, on a clean, short pasture; turn it repeatedly with a rod about 8 feet long and 1½ inch thick, and in about from six to twelve days it will be fit for lifting, when it may be tied up in bundles, and if not soon to be scutched it may be put up in small loose stacks. Drying by fire is now exploded as being pernicious and destructive to the fibre, and if properly steeped and grassed exposure to the sun will make it ready for breaking and scutching.

ENORMOUS CHEESE.—Mr. James Elgar, cheese-monger, Peterborough, has exhibited an immense cheese, which has attracted the admiration of the inhabitants. The weight is 1,474 lbs., its circumference 13 feet, and thickness 18 inches. This, it may be remarked, exceeds in size and weight the one sent as a present to the Queen from Somersetshire, in 1841, which measured 9 feet round, and was 22 inches deep. Mr Elgar's cheese was made from upwards of 20 hogsheads of milk, of one meal, from 737 cows.—*Northampton Herald*.

POETRY.

THE SONG OF LADY JUNE.

(FROM ELIZA COOK'S JOURNAL.)

Oh, come with me, whoever ye be !
 Come from the palace and come from the cot;
 The strong and the hale—the poor and the pale—
 Ah! sad is the spirit that follows me not.
 Old December lighted his pyre,
 And beckoned ye in to his altar blaze;
 He hung up his misletoe near to the fire,
 And pressed soft lips upon Christmas days.
 Ye welcomed him, with his eyes so dim,
 But I know ye have more love for me;
 When I wander about, and whistle ye out
 With my blackbird-pipers in every tree.
 Oh, come from the town, and let us go down
 To the rivulet's mossy and osiered brink;
 'Tis pleasant to note the lily queen float,
 The gadfly skim the light wave and drink.
 Oh, let us away where the ring-doves play,
 By the skirt of the wood, in the peaceful shade;
 And there we can count the squirrels that mount,
 And the flocks that browse on the distant glade.
 And if we would stay till the farewell of day,
 Its parting shall be with such lingering smile;
 That the western light, as it greeteth the night,
 Will be caught by the eastern ray peeping the while.
 Little ones come, with your chattering hum,
 And the bee and the bird will be jealous full soon;
 For no music is heard like the echoing word
 Of a child, as it treads 'mid the flowers of June.
 Ye who are born to be weary and worn
 -With labour or sorrow, with passion or pain,
 Come out for an hour; there's balm in my bower
 To lighten and burnish your tear-rusted chain.
 Oh, come with me, wherever you be!
 And beauty and love on your spirits shall fall;
 The rich and the hale, the poor and the pale,
 For Lady June scatters her joys for all.

ELIZA COOK.

MISCELLANEOUS.

FRESH AIR.—Man acts strangely. Although a current of fresh air is the very life of his lungs, he seems indefatigable in the exercise of his inventive powers to deprive himself of this heavenly blessing. Thus he carefully closes every cranny of his bedchamber against its entrance, and he prefers that his lungs should receive the mixed effluvia from his cellar and larder, and from a patent little modern aquarius, in lieu of it. Why should man be so terrified at the admission of night air into any of his apartments?

It is nature's everflowing current, and never carries the destroying angel with it. See how soundly the delicate little wren and tender robin sleep under its full and immediate influence, and how fresh and vigorous and joyous they rise amid the surrounding dew-drops of the morning. Although exposed all night long to the air of heaven, their lungs are never out of order, and this we know by the daily repetition of their song. Look at the newly-born hare, without any nest to go to. It lives and thrives, and becomes strong and playful, under the unmitigated inclemency of the falling dews of night. I have here a fine male turkey, full eight years old, and he has not passed a single night in shelter. He roosts in a cherry-tree, and always is in prime health the year throughout. Three dung-hill fowls, preferring this cherry tree to the warm perches in the hen-house, took up their airy quarters with him early in October, and have never gone to any other roosting place. The cow and the horse sleep safely on the cold damp ground, and the roebuck lies down to rest in the heather, on the dewy mountain's top. I myself can sleep all night long, bareheaded, under the full moon's watery beams, without any fear of danger, and pass the day in wet shoes without catching cold. Coughs and colds are generally caught in the transition from an overheated room to a cold apartment; but there would be no danger in this movement if ventilation were properly attended to—a precaution little thought of now-a-days.—*Waterton's Essays on Natural History.*

"NATURE IS THE KINDEST MOTHER STILL."—How strange and how happy is the effect of even the most transient intercourse with nature upon a heart, wounded and erring, and yet desirous of good. How it soothes agitation and softens pain, and creates life afresh, and in a nobler mould! And this work is done not merely by gorgeous skies of lovely moonlights, by bright waters looking up like children into the solemn faces of mountains, or sleeping under the shadowy guardianship of overhanging woods, by the glory and the beauty of earth; it is done likewise by her simplest and quietest pictures, by her cheapest and most unpretending gifts. The sight of one dark-leaved tree rocking slowly against a dim heaven, the mere aspect of one green field is often enough to change and subdue the whole course of thought. Is it not, perhaps, because these creations are fresh and unmarred from God's hands that they so speedily affect us; because in this they transcend man, in whom there is so much of personal and of evil that the workmanship of God is, as it were disguised, and only to be discovered by careful search. The blade of grass which we pluck is what its Creator intended it to be; who shall dare say so much as this of himself, or of any other?—*Seven Tales, by Seven Authors.*

GIGANTIC HORNED DEER.—The largest, and decidedly the most remarkable, skeleton remains of the great horned deer of ancient Ireland ever before discovered, have recently been exhumed at Killowen, county of Wexford, the property of Henry P. Woodroffe, Esq. This splendid specimen of a long-extinct animal tribe is perfect in the minutest particular, and has been dug out and restored to form without receiving the smallest injury. It was discovered four feet from the surface of the earth, between vegetable mould and plastic clay. The roots of the black willow and German rush had entwined themselves round the bones, and some seeds, ascertained to be wild cabbage seeds, were found in the same bed with the skeleton. Within an area of fifty square yards some smaller skeleton remains of the same species were discovered, but none of them approaching the vast dimensions of this former antlered monarch of the woods. The following brief measurement summary will afford some idea of the size of this magnificent specimen. The skeleton stands $12\frac{1}{2}$ feet from the hoof to the tips of the horns; the breadth between the tips or points of the antlers being 11 feet, or 13 feet 6 inches measuring by the curve. From the hind foot to the pelvis measures 7 feet, and the palm of the antlers is 2 feet 7 inches long by 1 foot 2 inches broad; some of the spikes of the antlers are $2\frac{1}{2}$ feet long, and the face is 1 foot 10 inches in length; three of the cutting teeth of this animal have also been found, which did not accompany any specimen hitherto discovered. The bed in which the skeleton was found had been experimented on. It has a depth of more than twenty feet, and is different in appearance from any mould in that country. When exposed to the air, it exfoliated into plates as thin as the leaves of a book, showing a beautiful stratified structure.

BUSH HOSPITALITY.—The hospitalities of all settlers in the bush (and on the coast south of Sydney, I should say "the bush") commenced at the Shoalhaven) are gladly extended to all comers, who indeed, receive them, not as a favour, but as a matter of course. If the settlers happen to be out, the traveller takes possession, and makes himself as comfortable as he can. I hear that on one occasion, when Mr. — returned home late, he found a stranger in a red nightcap, in comfortable possession of his bed. The nightcap nodded, and the wearer said, "How d'ye do, Mr. I don't know-your-name? I found you out, so I turned in—good night." The owner of the house thereupon made his bed on the table. The owner of the nightcap was afterwards transported for 15 years, for shooting a tie-passer on his grounds, and, perhaps, but for this circumstance, I might not have recollected the incident.—*Townsend's Rambles in New South Wales.*

AN OAK AT EDMONSTONE STRUCK BY LIGHTNING.—During the thunder-storm on Saturday last, a magnificent oak in the policy of Mr. Wauchope, of Edmonstone, about three miles from Edinburgh, was struck by the lightning, and instantly reduced to a picturesque heap of ruins. The tree was about fourteen feet in circumference at the base, and is supposed to have been nearly six hundred years old. The electric fluid appears to have entered the trunk about ten feet from the ground, stripping it completely of its bark, and cleaving it asunder into a thousand segments down to the root, and apparently through the root itself, while the vast branches—each equal in size to a considerable tree—were torn from the stem and thrown to the ground, covering an area nearly a hundred feet in circumference. The splinters of the trunk are of all sizes—from filaments as fine as flax up to massive planks, several of which, weighing probably upwards of four or five hundred pounds, have been projected to the distance of forty, fifty, and even a hundred feet. None of the fragments have the least appearance of being scorched. The proprietor has, with excellent taste, thrown a fence around the prostrate "monarch of the wood," to prevent his remains from being disturbed; and although the beautiful grounds of Edmonstone have been thus deprived of one of their most venerable vegetable ornaments, its ruins will long remain an object of engrossing interest.—*Edinburgh Post.*

CAPITAL.—One could almost fancy that this word capital had been invented by what has been not inaptly called a money-power to cheat us in the belief that the existence of that power is essential to our welfare. Men talk of capital as if it was a mysterious something, lying in a Bank in London, or snugly shut up in the safe of the millionaire. They forget that all the elements of human wealth are human labour, and the materials and powers that God has placed in and upon the soil and elements around us. These things themselves are capital; and there is no capital that is not formed from their combination. Wherever these are there is capital, and there are the means of its indefinite increase. Industry creates capital—not capital, industry. The mightiest mill, with the most perfect machinery, is but stone, and timber, and iron, wrought together by the industry of man. The waste of undrained soil is now in Ireland, profitless to all; drain it, and dig it, and fence it, and it becomes land to which capital has been applied. The labour of man turns the stones of the field, the wood of the forest, the minerals that are hidden under the surface, into capital. The capital of every nation must be formed by the industry of its inhabitants from its own resources. To apply that industry to those resources is the only secret of its production.—*Mr. Butt's Pamphlet.*

A MOST WONDERFUL DISCOVERY.—A German zoologist, named Brandt, has published some microscopical observations upon the remains of food found by him in the cavities of the teeth of an antediluvian rhinoceros, of which the museum of St. Petersburg possesses an entire cranium covered with the skin. From these researches it would appear that these animals fed upon the leaves and fruits of fir trees and that they had never lived in a tropical climate.

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Montreal, 7th June, 1849.

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All communications connected with this Journal, to be addressed, post paid, to the Secretary of the Society—WILLIAM EVANS, Montreal.

Annual Subscription for the Journal, five shillings.

MONTREAL:—Printed by LOVELL & GIBSON, Saint Nicholas Street.