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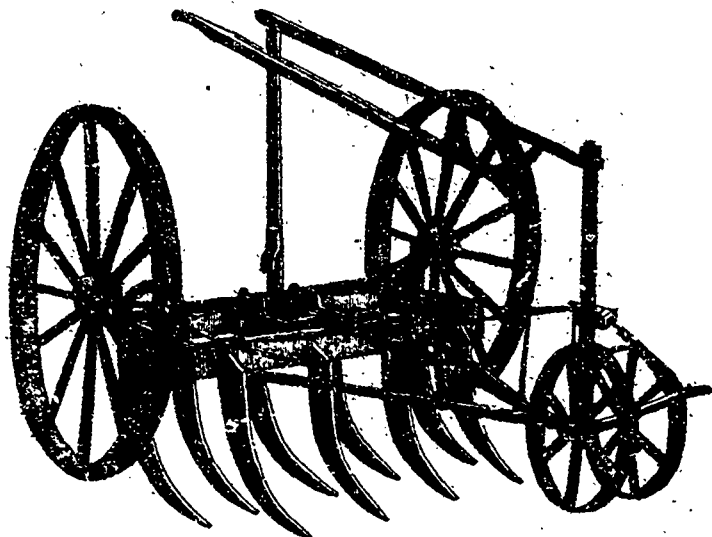
# THE BRITISH AMERICAN CULTIVATOR.

"AGRICULTURE NOT ONLY GIVES RICHES TO A NATION, BUT THE ONLY RICHES SHE CAN CALL HER OWN."—Dr. Johnson.

Vol. 1.

TORONTO, MAY, 1842.

No. 5.



IMPORTANT AGRICULTURAL IMPLEMENT,  
DISTINGUISHED FROM OTHERS BY THE NAME OF THE INVENTOR,  
AND KNOWN IN THE COUNTY OF SUFFOLK, (ENGLAND) AS  
**DIBBELL'S SCARIFIER.**

*For the purpose of cultivating land under a variety of circumstances, and bringing it into a proper state of tilth, much more effectually and at less expense than can be done by the means generally employed for that purpose. The size of the Scarifier is 9 tines, in two rows, work 8½ inches apart, covering 6 feet 2 inches.*

A gentleman who has for several years had three of the Scarifiers in use, states that they are of great service in making Summer fallows; and that they have enabled him to do the work of his Tillage with a less number of horses than he must otherwise have kept for the purpose. Its use may be strongly recommended immediately after the corn is carted in harvest, where an early preparation and clean land is required for Swedish turnip, &c. If the Implement be then used, it will, for the first time of going over the land, require four horses to break up effectually eight acres per day. The next day, or as soon after as possible, the land should be well rolled, and again scarified with three horses. It will, for cleaning land without ploughing, be desirable to use the Implement a third time, and to follow it by good rolling and harrowing. All grass and rubbish will by this means be brought to the surface without breaking the Couch Grass, the form of the teeth being such as is best adapted for that purpose.

THE ADVANTAGES OF THIS IMPLEMENT ARE,

*Saving in Tillage*, of half the labour, both manual and horse, over the ordinary method of cleaning land.

*Saving of Time*.—Lands may be broken and stirred with this Implement in much less time than with the plough.

*Improved Cultivation*.—The operation of this Scarifier is much more effective for spring crops on strong lands than plough-

ing, as it occasions less treading by horses, produces more mould, and allows the moisture to be more advantageously retained.

*Less Harrowing is required*, as the land is broken up and left much tiner than after the plough.

The land is left by this Implement in a state to be immediately harrowed, which may be done in time to break the clods before they become too hard.

In all cases where it is desirable to give tillage to the land without turning down the surface, this Implement may be used with great advantage.

DIRECTIONS FOR USING THE SCARIFIER.

In using the Scarifier, attention should be paid to set it level, and the depth of scarifying may be varied from one to ten inches, which is done by means of the two levers.

The horses should be kept in a direct line, and the Implement not suffered to turn without taking the fore part out of the ground by means of the long lever. Particular attention should be paid to this; for although the slanting direction in which the tines are set will bear the draught required while the horses go straight forward, they cannot stand against the twist, if the Scarifier be turned round before the front tines are taken out of their work. It is also needful to observe, that the draught iron from the fore wheels, upon which the whippetrees hang, should be suspended by the draught chain higher than where the three irons (when in

work) go upon the upright part of the fore axletree; otherwise, this may bend or give way.

The wheels, on either side, may be made to go higher or lower by shifting the coupling irons, where holes are made for that purpose, where one wheel has to work in the furrow; which may be the case when a sward is scarified by going on one side of it, and coming back on the other.

It is essential to have whippetrees adapted to the Scarifier; if otherwise, the Implement will fail to scarify up the foot-marks of the horses.

On land in course of preparation, three horses only will be required, driven abreast.

On land immediately after the crop, four horses are commonly required.

## The Prospect of the Wheat Crop in Canada West.

From the period the wheat was sown in the autumn down to the present time, the weather has been very favourable to the plants, and the general prospect of an abundant harvest is more flattering than we have ever seen them before, at this early season of the year. The quantity sown last autumn, was probably double that of any season previous. The cause can be easily explained. Wheat, for the last two years, has been nearly the only crop which brought the Canadian farmer any thing approaching a remunerating price; accordingly it has been looked upon as our only staple crop which could be relied upon, or cultivated with profit by the farmer. The agriculturists through this abovementioned cause, and others which will be hereafter explained, not only sowed double the usual quantity, but prepared the land in a much better style.

The news of an adverse harvest in England, warranted our Merchants and Millers to enter the market with spirit, the result was, in a very short time, the best samples commanded no less a price than 6s. 3d. per bushel, (of 60 lbs). As soon as our wheat harvest was secured, the main roads leading to the various market towns, were literally lined with farmers' teams, laden with this valuable commodity. Through the low prices of other grains and fat, many farmers sowed large fields on barley and pea stubble, (a system we would not encourage unless under very favourable circumstances) which, of course, do not promise so great a return, as the well tilled summer fallow.

While we are advertizing to the wheat crop, we beg leave to state that we noticed, a few days since, in the neighbourhood of Thornhill, near this City, a small field of wheat, sown with a drill, about seven inches apart, pretty much in the same style we have recommended elsewhere in THE CULTIVATOR; with this exception, that the drills or rows are too close. In this country, where the land is not exhausted, the drills should not be less than fourteen inches asunder.

We will advert to this subject in our next number, and suggest a few useful hints to the wheat grower.

**SELF FLATTERY.**—It often amuses me to hear men impute all their misfortunes to fate, luck, or destiny; while their successes or good fortune they ascribe to their own sagacity, cleverness, or penetration. It never occurs to such minds, that light and darkness are one and the same, emanating from, and being part of the same nature.

**EARLY RISING.**—Dean Swift says, he never knew a man to rise to eminence who lay in bed of a morning. and Dr. Franklin says, "he who rises late may trot all day, but never overtake his business."



## THE CULTIVATOR.

"Agriculture is the great art which every government ought to protect, every proprietor of lands to practice, and every inquirer into nature improve"—Dr. Johnson.

Toronto, May, 1842.

"Let it be remembered, then, that agriculture is the immediate source of human provision, that trade conduces to the production of provisions only as it promotes agriculture; that the whole system of commerce, vast and various as it is, hath no other public importance than its subserviency to this end."

"Suppose a fertile, but empty island, to be within the reach of a country, in which arts and manufactures are already established; suppose a colony sent out from such a country, to take possession of such an island, and to live there under the protection and authority of their native government; the new settlers will naturally convert their labour to the cultivation of the vacant soil, and with the produce of that soil, will draw a supply of manufactures from their countrymen at home. Whilst the inhabitants continue few, the land's cheap and fresh, the colonists will find it easier and more profitable to raise corn, or rear cattle, and with corn and cattle to purchase woollen cloth, for instance, or linen, than to spin or weave these articles for themselves. The mother country, meanwhile, derives from this connection an increase both of provision and employment. It promotes at once the two great requisites upon which the facility of subsistence, and by consequence the state of population depends,—production and distribution; and this in a manner the most direct and beneficial. No situation can be imagined more favourable to population, than that of a country which works up goods for others, whilst those others are cultivating new tracts of land for them; for as, in a general climate, and from a fresh soil, the labour of one man will raise enough of provisions for ten, it is manifest that where all are employed in agriculture, much the greater part of the produce will be spared from the consumption, and that three out of four, at least, of those who are maintained by it, will reside in the country which receives the redundancy."—Paley.

Writers on Philosophy and Political Economy, though mistakers in many of their opinions, have nevertheless, conferred great benefits upon mankind. Their works, however valuable, it is true, are not so much read as they deserve to be, and, perhaps, were we to refer to the statistics of a public library, we should find that the lightest, and most worthless novel, would have a hundred readers, for one who would read a work on Philosophy or Political Economy. Mr. Alison, in his work on the "Principles of Population," says:

"No doubt among every thousand of mankind there may possibly be found forty or fifty, who would derive pleasure from the discoveries of science or the pursuits of literature and philosophy, but unquestionably there never will be found more than that number. The remaining nineteen-twentieths will be accessible only to

physical enjoyments, or excitation of the fancy. This is not peculiar to the lower orders, it pervades alike every walk of life—the Peers, the Commons, the Church, the Bar, the Army."

It is no wonder then, that the great mass of mankind, and even those who pass for the best educated portion of them, should be ignorant of many subjects which they ought to be thoroughly acquainted with, and we cannot help attributing to this circumstance, many of the evils which mankind have to endure. We conceive it to be absolutely necessary, that those who take an active and leading part in legislation, or in the direction of any department of public affairs, should be men of extensive reading, and that this reading should not be confined to works connected with the particular professions to which individuals may belong. Without this general knowledge, we cannot see how men would be qualified to act in those capacities, with credit to themselves, or advantage to the community. But we must return to our subject.

We may now be permitted to enquire, how far the principal trade and commerce, at present carried on between Great Britain and the Canada's, "conduces to the production of provisions, and promotes agriculture." Also, why it is that, in a general climate, and from a fresh and fertile soil, the labour of one man does not raise provisions enough for ten?

We reply, that the most valuable part of the trade and commerce carried on between the British Isles, and our only sea-port at Quebec, consists in the produce of a foreign country, transported through Canada, and in which the Canadian farmers have scarcely any part or interest whatever! We see our fine lands lying waste, or badly cultivated, and we become the carriers of the agricultural produce of a foreign state, upon the navigable waters that intersect our own neglected lands! And so far is it from one man being able to raise food for ten, the agricultural population of Canada East and West, scarcely raise food sufficient for themselves, notwithstanding that they possess a most fertile soil, and general climate! If the causes which have produced these results, is not an important subject of inquiry for our legislature, we confess we know not what would be worthy their attention. We can safely say, that trade and commerce does not promote agriculture with us, and that our vast tracts of fertile land, does not enable us to raise a produce that we could exchange for the manufactures of the mother country; and hence the greater part of the advantage which our connection with Britain, and our situation and circumstances, every way, ought to afford us, are lost to us, and obtained by a rival and foreign nation.

No doubt can exist, that the only true basis of wealth in British America, is the abundance of her fertile land. To make this wealth available, however, we must expend capital and labour upon these lands to bring them into profitable production. Every hindrance that exists to the accomplishment of this good, it is our duty to remove, or provide against if possible, without any regard to sectional or temporary advantages.—The increase of our population and the improvement of our lands, ought to be the grand object to be aimed at in preference to every other purpose whatever. Connected as we are with the richest country on earth, "whose capital has been liberally given in loan to foreigners, both in Europe and on this Continent, we might reasonably

expect we would not want for capital, if we could only offer security and profit. We might also hope for abundant supply of labour, of our countrymen, who are idle at home. How do wise men expect this country to improve and prosper, unless by successful agriculture, supported by capital, labour, abundant produce, and remunerating prices? We take leave to tell them plainly, it cannot improve and prosper by any other means. Carrying the produce of the United States, (when they have any to spare that they can dispose of), upon the Western lakes, the canals, and River St. Lawrence, to Quebec, will never cultivate the millions of acres of forest land we possess in Canada, or give us a full population, and the means of supporting them. We may well apply the words of Dr. Paley to this country, when he says:—

"The importance of population, and the superiority of it to every other national advantage, are points necessary to be inculcated, and to be well understood; in as much as false estimates, or fantastic notions of national grandeur, are perpetually drawing the attention of statesmen and legislators from the care of this, which is at all times, the true and absolute interests of a country."

Again he says:—

"Whatever be the native advantages of the soil, or even the skill or industry of the occupier, the want of a sufficient capital confines every plan, as well as cripples and weakens every operation of husbandry. This evil is felt where agriculture is accounted a servile, or mean employment."

Truly agriculture will be felt a mean and servile employment in Canada, where there is not sufficient capital to carry it on properly, and where the returns from it are so unprofitable as to discourage the investment of capital in agriculture. And if we consider, as we justly might, we presume, that population would be the true and absolute interest of this country, how do we act with respect to the adoption of measures to increase our population? Are we not conscious that hundreds of thousands of our fellow-countrymen, have emigrated from the British Isles within the last few years, not to people the vast and fertile forests of British America, but to add to the population, and people the "Far West" country of a foreign and rival nation. We do not even offer sufficient encouragement to emigrants who land on our shores at Quebec and Montreal, to remain with us, and settle in Canada, because thousands of those who do land here, only make Canada the high-way to the United States. This is passing strange, and we decidedly attribute it to the depressed state of our agriculture, arising from various causes, that are capable of remedy.

We have seen by some late reports, that the probable average number of emigrants, that annually leave the British Isles for the United States, are from thirty to forty thousand, besides those who come to Quebec, and go through Canada to the same country. The whole, we believe, would not be less than fifty thousand British born subjects, who annually leave their father-land, and settle in a foreign country. Of these, there would be fifteen thousand able-bodied men capable of work, and able to create much over their consumption, besides women, who would be employed in the fields, houses, and manufactures. The advantages, or we should more correctly say, the actual gain, to the United States, circumstanced as she is, of such a valuable accession of working population, could not be estimated at less value than one million

pounds sterling, or five million dollars annually, besides what they might have brought out in specie. This is not a chimerical flight of the imagination, but a fact that is perfectly easy of demonstration. Let us suppose a single case. A merchant builds or purchases a ship, in the expectation that the freight, &c., carried by the ship, over and above the cost of navigating and maintaining her, would pay the interest, and refund the principal employed in her purchase.—But if the ship was lost at sea on her first voyage, both principal and interest were gone. In raising human beings from infancy to the period they are able to work for their living, a considerable expenditure must necessarily be incurred, for their food, clothes, and education; and if men, remove themselves to a foreign country, when they are capable of working, and rendering back to their parents and their country, the amount expended upon them in infancy and childhood, the country of their birth loses all this expenditure as completely, and to all intents and purposes, as the merchant loses his capital invested in building or the purchase of a ship, that was lost on her first voyage. By the same rule, the country who receive this working population, gain all these advantages, and they are more valuable to them, considering the circumstances of that country, than a money capital of the amount we have stated, would be. What does all the wealth of the world consist in, but in the surplus produce of the earth and water, created by the labour of man expended in its cultivation, and in fishing its waters, over what man has consumed for his food and clothing? What constitutes the riches of a country, but the wealth and possessions of each individual inhabitant? What prevents us in British America from offering as much encouragement to our fellow-country men to emigrate to these Provinces instead of a foreign state?—We lose fully a million pounds sterling annually, that emigrants coming to North America from the British Isles do not settle in British America. Have we not abundance of fertile land to give settlement to all the emigrants that would come to us for one hundred years? Are not these lands now being waste, not yielding any return whatever? If the country is habitable for the present population, and capable of profitable cultivation, it must be equally so, and much more so, for a population twenty-fold as great, speaking moderately. If we can live and prosper in it, thirty millions of human beings would have a much better chance to do so.

We appeal to the present inhabitants of British America, whether they like the country, and think it capable of a prosperous agriculture, so far as the production of good crops would make it so. If we are answered in the affirmative, the country must be capable of supporting a full population, which may, perhaps, be fifty times as numerous as that which we have at present.—For ourselves, we never would have urged so strenuously the encouragement of agricultural improvement, if we thought it would ultimately produce only loss and disappointment to those who would so employ their capital and labour. We have, and do praise and recommend the country, because, after a long residence in it, we are practically convinced that we are justified in doing so. Let others who praise the country, act ingeniously and consistently, and prove to the world that they believe their recommendation of it is just and proper, by applying all their energies, and whatever power and influence their

situation and circumstances may give them, to improve their own country, in preference to a foreign state. By acting thus, we may expect to see a numerous emigration directed to, and successfully settled in these Provinces, and British America soon become productive in corn, and cattle, and one of the most populous and prosperous colonies that belongs to the British Empire. Let self-interest, and the interest of a few, give way to the general interests of the country, whatever that may be, and let all unite, with hearty good will, in promoting the prosperity of the land we live in.

### Size of Cattle.

At an Agricultural Show, at Netherby, in England, two or three years ago, the Right Hon'ble Sir James Graham, is reported to have said:—

"I take blame to myself for having endeavoured to introduce with considerable tenacity, the short-horned breed of cattle, which I am now thoroughly convinced is not so well adapted to thrive in the climate of this part of the country. But having now taken the Galloway breed, as decidedly the best and most profitable, it has been my earnest endeavour to obtain from Galloway the best breed of cattle in order to introduce them among the tenants on my estates."

At the present time in England, with all their advantages of climate, good farming, and abundant keep, they do not appear to be very anxious for over large cattle. According to the dead weights of some of the prize animals, exhibited at the Smithfield Cattle Show, in December last, we find the weights varied from seven cwt. to near twelve cwt.—but none exceeded the latter weight. The dead weight of the sheep exhibited at the same Show, varied from six stone to ten stone, of fourteen pounds to the stone. In British America, we have no doubt, that a moderately sized description of neat cattle would be much the most suitable and profitable. These cattle should be carefully bred from good selections, both bull and cow. Whatever be the description of stock desired, it is considered by the best judges, to be imprudent to breed from the largest bulls. The size of a bull ought to be of secondary consideration, in judging of him as a breeding animal. Short legs are generally indicative of fine qualities. The stock of the most celebrated breeders, consisted of bulls of small size. Those of Mr. Collings' were so. His bull Diamond was particularly so. This bull obtained the first prize at the Coldstream Cattle Show. The get of this bull were remarkable for the good qualities of their beef. In Smithfield as much can be had for 80 stone of beef, as for a beast weighing a 100 stone. Generally small sized beef, if well fattened, sells for one penny per pound more than large beef, and this makes a difference in the value of an animal of six or seven cwt. weight of about from £3 to £4—a very material consideration to the farmer. The propriety of the breeding least in reference to Smithfield is perfectly just—"Small in size and great in value." The famous bull Comet, was a very short legged animal. Indeed in our own experience, we have never seen short legged animals that were not easy to keep in condition, and to fatten. The good quality of the flesh is a property that is very generally associated with a small size, and particularly with the shortness of the legs. We have seen a small breed of cattle in the old country, known as the Kerry breed, and in proportion to their size, they were better for milk and butter,

than any other breed with which we were acquainted. This breed were equally remarkable for their fattening qualities, and for the sweetness and excellence of their beef. The good description of Canadian cattle, have properties very similar to the Kerry breed, but are rather of a larger size generally. Short legged compact animals will always be found best, and most profitable for fattening. A thick soft covering of hair is a good quality in cattle—and this is a quality that is peculiar to the improved long horned breed.—We do not mean to recommend a very small breed of cattle as the best in every situation, and upon every soil; but we say they are the best, where the keep is not abundant both in summer and winter. And we further add, that it is our decided opinion, that in the most favourable situations in British America, carefully selected, moderate sized animals, of good shape, will be found the best and most profitable for those who keep them, either for the dairy or for the shambles, and for both. We know that this opinion will be at variance with the opinions of highly respectable farmers; but conscientiously entertaining them as we do, we conceive we should not be doing justice to our Subscribers, if we did not submit them. It is only by the most careful experiments made with each kind of cattle, that their relative value, and the profit derived from each, can be truly ascertained. We have seen in a late number of the Mark Lane Express, an extract from a communication addressed to the President of the Council of the Royal English Agricultural Society, by a Mr. J. Oakley, which we think well deserving of the consideration of Canadian farmers. This gentleman says:—

"The following remarks will directly apply to sheep, but the principle will embrace all animals that convert vegetable into animal food.

"You are well aware that every farmer has his own opinion, as to which description of sheep will produce the greatest profit, which must be interpreted here as the sum of money left after the sheep have paid for their food consumed, out of the amount produced by their wool and mutton. In every county, the farmers using short or long wooled sheep, as the case may be, are divided in their opinion as to which are the best kinds of their respective sorts, and they look to you to determine the question for them.

"It would be presumptuous in me to mark out any course for your guidance, but I feel I shall stand excused for going so far into detail, in the endeavour to explain my views, as will not allow you to suppose I wish to lay down any specific plan.

"Different soils require different descriptions of animals, and on different soils, does this experiment require a trial; also on different soils in different climates. And as some animals of the same age and kind, consume more food than others of the same age and kind, the value of the food consumed tested by weight, compared with the value of the produce realized tested by the same power, would produce results, if conducted under your management, that might be depended on by all, and which would enable the best sort for the different districts, to be stated without fear of contradiction, and to the satisfaction of the most prejudiced.

"As this experiment would necessarily embrace numerous lots of sheep and other animals, in many different situations, the attendant expenses could be met by no agricultural associations, but the Royal Agricultural Society of England; and therefore I address you on the subject."

We do not wish to forego this opportunity to copy another article from the same paper, addressed to the same party as the above, on the "COMPARATIVE VALUE OF ANIMALS," by Mr. T. Umbers, of Warwickshire:—

"I feel convinced that the subjects of discussion

brought before the Society, the various tests that have been made in reference to soils, grains, roots, and manures, have all been instrumental in effecting great improvements; as also the premiums offered for breeding stock by the Society for the best animals of each kind.

"I believe there is no subject upon which there exists so great difference of opinion, as on that of breeding animals.

"There are established in almost every county in England Agricultural Societies, for the exhibition of live stock, and I believe it is generally admitted that great good arises from them. I am disposed to think that as there are great varieties of soil, and variations of climate, so there may be selected various sorts of animals best adapted respectively to them. The Smithfield Cattle Show, is the grand emporium at Christmas, where meet the best animals of their respective kinds in competition.

"The great and important question to which it is my object to draw your attention, is a practical test of the comparative value of animals. It is no unfrequent occurrence amongst breeders of two or more distinct sort of animals, to make matches, and show publicly: the one defeats the others; but who can now tell whether the animals which lose, might not be the most valuable for general purposes? Large animals, be their kind what they may, are generally preferred by the majority; and provided the weight produced be greater, after compensating for the value of the food consumed, they are preferable.

"I know persons who occupy similar soils, located within a few miles, breeding four different kinds of cattle; and it is quite clear that these cannot all be the best calculated for the situation. Our great aim, if I mistake not, should be to cause the surface of England to be covered with the best stock of their kinds, for the purpose of feeding the population at the cheapest rate.

"I look upon this question to be of greater importance to the breeders and feeders of stock, and to the community at large, than any of those subjects that remain to occupy the attention of the Royal Agricultural Society. I feel persuaded that with practical data, based upon such authority as that of this Society, we should see the weight of shambles' meat increased, and consequently the price to the consumers reduced, at the same time, paying the producers better.

"However strong may now be the bias of any of us, as breeders, in favour of the sort of cattle or stock we may keep, we should from motives peculiar to our individual interest, abandon those which have been proved inferior, and preserve only those which have been ascertained to be superior."

These communications may be equally useful to the farmers in British America, as for those in England. The sure criterion by which the value of animals can be judged of, is by ascertaining what they consume and what they produce.

### The Importance of Systematic Economy in Feeding Horses.

The cost of feeding horses is such a heavy charge upon the farmer, that none should be kept whose labour is not absolutely required. It demands the most serious consideration from every agriculturist, as to the number absolutely required to perform the necessary work upon the farm, as well as to the most advantageous and economical method of feeding those that are to be kept, so as to make them fully equal to the labour they will have to perform. The distance travelled by a team in ploughing an acre of land, the furrow eight inches wide, will be *twelve miles*, and 660 yards, besides the turnings at the headlands, which in a field of 200 yards long, might be something over half a mile. It has been proved that a team going at the respective rates of a mile and a half, and two miles an hour,

will plough in nine hours as follows:—

Width of Furrow.	Rate per hour.	A. R. P.
Eight inches,	1 mile and a half,	1 0 0
Nine inches,	do.	1 0 20
Eight inches,	2 miles,	1 1 10
Nine inches,	do.	1 2 0

It is of some importance to the farmer to know how he can keep his horses in good working condition fully equal to their work, with the least possible expense. There are three things respecting the food of horses, deserving of serious attention from every man that keeps them.

- 1st. The food most natural for them.
- 2nd. The quantity of food requisite to keep their condition equal to their work.
- 3rd. The best manner of giving them their food with a view of its being speedily eaten, so that they may lie down to rest.

The most natural food for a horse is corn, hay, and grass: but man, having reduced that noble animal to a state of servitude, has also adopted various sorts of food suitable to his state of vassalage. For a length of time it was supposed that grass, corn, and pulse constituted the only sort of fodder in which was contained the nutriment required for the sustenance of horses; and in consequence of the expensive nature of these articles in some seasons, many farmers did not give sufficient nutritive food to their horses; whilst others, that took pride in the appearance of, and condition of their teams, used to incur a heavy expense by running into the opposite extreme. It has, however, now been fully proved that beside corn, pulse, and grass, various other articles may be substituted, without detriment to the health or strength of the animals; and that various means of preparing the ordinary food may, also, with great advantage be adopted. The plants most usually substituted in Britain for hay and corn, or rather conjointly with them are, potatoes, parsnips, carrots, Swedish turnips, and Mangel wurtzel, together with straw, beanstalks, pea haulms, gorse, vetches, clover, and other cultivated grasses cut green. In British America most of these plants may be converted to the same purpose.

The quantity of fodder required for a horse, depends upon its kind and quality. The allowance for cavalry horses is, every twenty-four hours, twelve pounds of hay and ten pounds of oats, (or fourteen pounds of bran in lieu); and these horses, upon their allowance, are always in good condition and equal to their work. The highest allowance for horses working the mails, and other fast coaches in England, that travel at the rate of twelve or fourteen miles an hour, is twelve and a half pounds of oats, two and a half pound of bran, and fourteen pounds of hay or straw cut.

Horses ought to be well groomed and well fed. If they suffer from bad grooming, and bad feeding, they cannot be equal to the performance of more than half work; and consequently, not only half the value of their labour, but also half the labour of the man that follows them, will be completely wasted. Every labourer, kept beyond what there is full employment for upon the land, is an additional and unnecessary charge to the farmer of from £25. to £35. a year. It is therefore of importance that the farmer should suit the number of labourers to the work that is to be done. To keep too many labourers in proportion to the work, is an inexcusable waste of money; whilst to keep too few is a ruinous econo-

my. Whatever number of labourers may be required, should always be paid liberal though not extravagant wages. The employer has a right to demand a full day's work from the labourers, but the labourer in return is justly entitled to wages equivalent to his labour. A man that is badly paid and badly fed is not able to do a full day's work, and he must be less than a man who would expect it of him.

Whatever fodder be used, it should be supplied in such a form as to be eat forthwith that the poor animals might enjoy refreshing rest; to secure this, the fodder should be cut or crushed, and placed in the manger. If this plan was adopted, when the respective feeds will have been consumed, every horse will lie down to rest; his hunger being satisfied, there will be no temptation to keep him standing for hours, as would be the case, were his rack stuffed with hay, according to the too general custom of farmers. With respect to corn and peas, the general practice is to measure each feed; but that mode is neither just towards the horse nor his owner. The nutriment contained in every variety of grain, depends upon its weight—and there will be more or less nutriment, according to the weight, in the same measure. There is likewise a great misunderstanding with respect to the relative value of different kinds of grain, as food for horses, which, where many are kept, is productive of no small loss. To guard against this loss the price and weight of the different kinds of grain, with respect to each other, ought to be taken into consideration. Suppose a bushel of oats to cost two shillings, and its weight to be forty pounds: the relative value of other grains to oats, according to that price would be as follows:—

Oats.	Tick Beans.	Horse Beans.	Common Grayspeas.	Barley.	Rye.
Wt. 40 lbs.	60 lbs.	56 lbs.	60 lbs.	50 lbs.	52 lb
2s.	3s.	2.5d	3s.	2s. 7d	2s. 9d

By attending, therefore, to the market prices, one sort of grain might with great advantage be substituted for another, with benefit to the farmer, and without the slightest detriment to the horses. By the following table, it will likewise appear, that the weight as well as the price of corn, is deserving of serious attention. This experiment was made with oats, but the same principle is applicable to every other kind of grain. Such tables as these are useful to the farmer, not only as regards the feeding of horses and cattle, but to enable them to judge accurately of the value of grain for other uses, and what proportion the market prices of the several grains bears to their comparative real value. With respect to oats, though seasons and varieties may make some difference, yet the result will be nearly as follows:—

Weight per bushel, Avoirdupoise.	Produce in Meal.	Produce in Husk.
lb.	lb. oz.	lb. oz.
42	25 2	16 14
40	23 6	16 10
38	21 12	16 4
36	20 3	15 13
34	18 11	15 5
32	17 5	14 11
30	16 1	13 15

From the above it will be perceived that husks are much cheaper to buy as husks, than as poor corn: and generally speaking, grain is much cheaper to buy for horses than hay, independent of the extra work they will be equal to by being corn fed. They must, however, always have a due proportion of hay, and perhaps

the proportion observed in the food allowed for the army horses, is as near what it ought to be as is necessary. Suppose a working horse of middling size, to have ten pounds of oats and two pounds of beans in the twenty-four hours—it will require hay or some other substance, such as chaff or cut straw, to increase its bulk to about thirty pounds, before the functions of digestion can be carried on in perfection. A certain quantity of bulk being requisite for that purpose, independent of the quality. The same observations applies to the feeding of all other animals, but more especially such as are fattening, or in the dairy, where quickness of digestion is of such great importance. The nutriment contained in good hay, if there be plenty of it given, is sufficient to keep a horse to look at, in good condition; but corn is indispensable to enable him to stand hard work; and no man that intends to make a livelihood by cultivating land, ought ever to keep a horse that is not, both as to constitution and spirits, fully equal to his work. It is supposed that, by weight, hay does not contain of substantial nutritive matter, in comparison with oats, more than as one part to three—that is one pound of oats contains fully as much real nutriment for the horse as three pounds of hay.

When oats, weighing about thirty-six to forty pounds the bushel, is sold for one and eight pence to two shillings; ten pound of oats will cost about as much as thirty pounds of hay when selling for about five dollars the hundred bundles. This proportion will show the relative value of hay and oats, according to the market price of both at any period. These calculations may be useful to any individual keeping horses, or fattening cattle. About thirty pounds of dry food will be sufficient in the twenty-four hours for a middling sized farm horse. The thirty pounds should contain ten pounds of grain coarsely ground or crushed, or about one bushel and a half per week. This will amount to about eighty bushels of oats in the year, and might be grown on two acres of land very easily. During the winter months the oats should be mixed with steamed potatoes, carrots, or some other vegetables, mixing a small quantity of salt occasionally. If horses are stabled during the summer, they might be fed with vetches or clover, from about the first week of June to October. Each horse would require from 50 to 60 pounds of clover vetches, given with the usual quantity of ground or bruised grain in the twenty-four hours. A quarter of an acre of good clover or vetches, would afford abundant food for one horse during the four summer months. Work horses might be very profitably kept in this way, and perhaps they should be always so kept in summer on a well regulated farm, where the horses were regularly worked. There is considerable time and labour lost in sending work horses to, and fetching them from their pasture, and it is generally supposed that two horses from grass are not equal to as much work, as one horse would be well groomed and fed on clover and grain. The following table had appeared some time ago in *The Sporting Magazine*, and is deserving the attention of farmers and others keeping horses. It is said to have been proved that the quality and quantity stated in this table, are fully sufficient to keep a moderate sized horse in good working condition, and in every respect equal to any work that may be required from them by a farmer. Each column forms the mixture of food

	for one horse during the twenty-four hours:—			
	lb.	lb.	lb.	lb.
Oats, peas, or beans, ground or crushed....	5	5	10	5
Hay cut into chaff.....	7	8	10	8
Straw do. ....	7	10	10	8
Potatoes steamed.....	5	5	0	0
Malt dust or oil cake.	0	2	0	2
Bran.....	0	0	0	7
Grains.....	6	0	0	0
	30	30	30	30

About two ounces of salt should be added occasionally. Although this table shows that the various kinds of fodder enumerated as being sufficient to keep a horse in full work in condition, yet it must be evident to all that are acquainted with the properties of different kinds of fodder, that other articles, such as carrots, parsnips, and Swedish turnips may be substituted for a part of the hay, but of course, a larger weight will be required. If horses are allowed the full quantity of one bushel and a half of oats, or its weight of some other grain weekly, cut straw or pea haulms, may be very beneficially given to them occasionally, instead of hay. Small doses of nitre, and flour of sulphur, should also, be frequently administered to horses in this climate.— In feeding horses during the winter months with steamed vegetables, they should be given to them warm, unless the stables are very close, and no chance of the food being frozen. Indeed in any case, we believe, that it is the most judicious method to give the steamed food warm and mixed. A great loss is sustained in feeding any species of animals in this country with raw vegetables. We believe that it is a loss of fully one half of the food consumed. To any farmer who may think differently, we would recommend to make a careful experiment. Much food is wasted by the neglect of proper preparation of it for the use of animals, and careful attention in placing it before them in due quantity and at the proper time.

**Spring Sowing and Planting.**

The month of May should afford the farmers ample opportunity to finish the spring sowing and planting. Early sowing and planting, provided the soil is in a suitable state to receive the seed, will generally be found the most profitable. In Eastern Canada, farmers have been in the habit, for the last few years, to put off sowing wheat to the latter end of May, in order that it should not come into ear before the middle or latter end of July, when the danger of the wheat fly would be nearly over, as they seldom continue in the fields after the 15th or 21st of July. The risk, however, of sowing wheat so late is considerable, as it will be subject to rust and mildew, that are nearly as fatal to the crop, if attacked by these diseases when in a green state, as it would by the ravages of the wheat fly. In very favourable years, such as last year, late sown wheat may succeed, but it is a practice we cannot take upon us to recommend, as the uncertainty attending it is too great to be incurred, unless upon a small scale, by way of experiment. Peas, oats, barley, and potatoes should all be in the ground this month, as well as carrots, parsnips and any other green crop, except turnips. Indeed carrots and parsnips should have been sown in April, where the land was suitable.— We have always recommended farmers not to sell their wood ashes, as it will be found one of the best manures upon the farm, particularly for turnips, when sown; or as top dressing on mea-

dow, or mixed in a compost heap. We would suggest the propriety of mixing some fresh lime with potatoes, immediately after they are cut for seed, and allow it to dry upon the cut part previous to planting. We would also recommend planting and covering in the morning, or when the day was not too hot. It is a bad plan to leave the cut seed for any length of time exposed uncovered in the drills, to a hot sun. The seed should be covered the moment they are planted.

**Principle of Rotation of Cropping.**

“The first principle, or fundamental point, is, that every plant exhausts the soil. The 2nd., That all plants do not exhaust the soil equally. The 3rd., That plants of different kinds do not exhaust the soil in the same manner. The 4th., That all plants do not restore to the soil the same quantity, nor the same quality of manure. The 5th., That all plants are not equally favourable to the growth of weeds.” From these leading principles, writers on agricultural science deduce the following inference:—“1st. However well a soil may be prepared, it cannot long nourish crops of the same kind in succession, without becoming exhausted. 2nd. Every crop impoverishes a soil more or less, as more or less is restored to the soil by the plant cultivated. 3rd. Perpendicular rooted plants, and such as root horizontally, ought to succeed each other. 4th, Plants of the same kinds should not return too frequently in a rotation. 5th, The plants favourable to the growth of weeds ought not to succeed each other. 6th, Such plants as eminently exhaust the soil, as the grains, and the oil plants, should only be sown where the land is in good heart. 7th, In proportion as a soil is found to exhaust itself by successive crops, plants which is least exhausting ought to be cultivated.” By observing these rules of rotation, a vast improvement would necessarily be introduced in Canadian agriculture. At present, nine-tenths of the farmers pay no attention whatever to rotation of cropping. Weedy crops of grain succeed each other, without summer fallow or manuring.

Letters on “MEDICAL EDUCATION” have been handed to us, by the author Dr. Hall, of Montreal, and upon a careful perusal of them, we perfectly concur with their talented author, that an urgent necessity exists for the introduction of a law, that would prevent men not duly qualified, from practising as Physicians or Surgeons in Canada. We do not perceive any thing arbitrary or unreasonable in the propositions of Dr. Hall, but we think it extremely unreasonable and improper, that any man should have it in his power to demand a licence, by our existing laws, to practice as a physician or surgeon, without being previously properly qualified by a medical education. The copy or abstract of a bill to regulate the practice of Physic, Surgery, &c., within the Province of Canada, we conceive to be perfectly reasonable, so far as we are capable of understanding it. The law in England on this subject, may be a very good president for to adopt here, making such alterations as the different circumstances of the country would require. The health and lives of the people of this Province, are not to be jeopardized by the practice of unqualified physicians and surgeons. As Dr. Hall correctly observes, it is not in the cities and principal towns that much evil is to be apprehended from the practice of such men, but in the country amongst the agricultural population they may do the most harm, where there will not be an opportunity to discover their deficiency of medical education. It is on this ground we refer to the subject, and recommend it as deserving a serious attention of the agricultural class and their representatives.

### The Best Animals to Fatten.

A second question of some importance is, whether it is better to stall-feed animals of a small or medium size, than those of large frames. In general, the farmers incline to the medium sized-animals. Animals do not consume always according to their size, though in general, animals are kept at an expense, in some measure, proportionate to their size. The matter resolves itself into this simple question: whether the same amount of feed will produce more amount of flesh in an animal of moderate, than in one of large stature. I do not know any certain rule can be laid down in this case. Small-boned, snug and compactly built animals, will be found generally to have a much stronger tendency to fatten, than animals of large and coarse frames. But after all, the main point is the thriftiness of the animal. There is always a much stronger tendency in some animals to grow fat and to keep fat, than in others, and where this disposition predominates, the gain is likely to be in proportion to the size.

The thriftiness of an animal may be, in some measure, determined by the eye; but experienced men, in their judgment on this point, depend more upon the hand, or what is technically called, the *feel* of a beast.—“It is,” says one competent to speak in these matters, “the nice touch or mellow feel of the hand, which, in a great measure, constitutes the judge of cattle;” and what you wish to find in an ox, is “a thick, loose skin, floating, as it were, on a layer of soft fat, yielding to the least pressure, and springing back towards the fingers, like a piece of chamois leather, and covered with thick, glossy, soft hair.”

The description given in an English treatise, of an animal best suited to the stall, is so skilfully drawn up, that I will not forgo the pleasure of transcribing it. It follows: “Attention should be paid to compactness and symmetry of form, deep fore-quarters, wide carcass, fine small bones, moderately thin hide, a protuberance of fat under the root of the tongue, and large full eyes. A well shaped ox should then have a small head with a placid countenance, as indicating docility, and a consequent disposition to get fat; a fine muzzle and open nostrils; the throat should be clean; long and thin in the neck; but wide and deep in the shoulders; the back should be broad and straight near to the setting on of the tail, with the rump points fat and coming well up to it; the barrel should be round, wide across the loins, and the girth deep behind the shoulders, with the space between the hip-bone and the first rib very small; the fore-legs should be short and wide apart, so as to present a broad appearance to the chest, and the thighs of the hind-legs should be shut well in the twist, the seam in the middle of which should be well filled, and the flanks should be full and heavy. A form such as this, is not only the best for affording the greatest weight, but will be also generally found to lay the flesh upon the prime parts, to produce the least quantity of offal with such a large quantity of tallow, as, emphatically speaking, in the butcher’s phrase, will cause the animal to die well. These marks, however, are not the only indications of a propensity to fatten quickly. On the contrary, it has been found by experience, that many coarse beasts with large bones and gummy loes, have often proved superior in that particular, to other animals of undoubted superiority in point of shape; but those coarse thick hides handled soft and silky, with a sleeky degree of fullness, which is the characteristic of a healthy habit, while the skin of the others was wiry, and their

flesh felt hard. The state of the hide and flesh, therefore, is of the first importance as the essential property of handling well.”—*Columb’s Fourth Report.*

### UNIFORMITY IN THE TREATMENT OF STOCK.

I know of no greater mistake that farmers commit in respect to their animals, than in their variable and capricious treatment of them; sometimes filling them to repletion, at other times subjecting them to the most severe usage; taking them, for example, from the pastures in the autumn in high condition, and by hard usage in winter, reducing them to mere skeletons before the spring. The animal constitution always suffers essentially by such reverses. It is said that a sheep is never fat but once. There is a great deal of truth in this assertion. Perhaps it is to be received with some qualifications; but I know how very difficult it is to raise an animal from a low condition. The farmers prejudice very greatly their own interest in suffering their milk cows to come out in the spring in low condition. During the time they are dry, they think it enough to give them the coarsest fodder, and that in limited quantities; this, too, at a time of pregnancy, when they require the kindest treatment and the most nourishing food. The calf itself, under this treatment of the cow, is small and feeble. He finds comparatively insufficient support from his exhausted dam; and the return which the cow makes in milk during the summer, is much less than it would be, if she came into the spring in good health and flesh. It requires the whole summer to recover what she has lost. The animal constitution cannot be trifled with in this way.—*ib.*

We conceive that the following communication, though not on the subject of agriculture, may prove of some interest to agriculturists:—

### Twisted-wire Springs for Carriages.

The Silver Isis Medal, of the Society of Arts, was presented to M. Victor de Stairs, for his Twisted-wire Spring for Carriages, a Model of which has been placed in the Society’s Repository.

30 HALF-MOON STREET, PICCADELLY, }  
24th February, 1840. }

SIR,

I take the liberty to submit to the members of the Society of Arts, a spring of my invention, constructed on a principle entirely new, and applicable to carriages, or to any other mechanical purpose.

The advantages of this new spring upon other carriage springs are the following:—

1. *Strength and Pliability.*—The wires, being stretched longitudinally, have no friction upon one another; they can easily be increased in thickness or in number to any strength required; and they may be lightened in a moment according to the occasional addition of weight that may be placed upon it.

Whilst the other springs in use, composed of numerous plates placed one above another, have a great deal of friction, and are thereby retarded in their immediate action, and produce after a lapse of time, a most unpleasant noise; besides, they must be loaded up to a certain point, under which they are completely rigid.

2. *Weight of the Spring.*—The steel employed being used in all its particles, the weight of the spring is about 1-300 of the weight suspended. Whilst the weight of the springs in common use varies from 1-10

to  $\frac{1}{3}$  of the weight suspended, consequently, the wheels and the horses of a travelling carriage, supposed to weigh about ten cwt., would be relieved of two or three cwt.

3. *Facility of Repairs.*—The total weight of the springs necessary for a travelling carriage being three pounds, a change or two of springs may be easily packed in a box; and, in case of accident, ten minutes would be more than sufficient to replace the damaged spring. Whilst two days are oftentimes not sufficient to make a new spring; and, in most cases, when travelling in Italy, or other distant countries, the broken spring is mended with cords, any how, to allow the traveller to come to the next town, where even he very seldom meets with a mechanic that is able to repair the damage.

4. *Cheapness.*—The springs necessary for a carriage, would not cost more than ten shillings, whereas they cost now from twelve to twenty pounds.

The steel wires composing the springs might be stretched upon certain parts of the train, to which they would give additional firmness and strength. The only additional expense would be the revolving roller, but it would be dispensed with in any thing but a carriage, its use being for a particular purpose, viz:—

5. *Safety.*—Both sides of the carriage being connected by the roller, no momentary shock, or increase of weight, will cause it to recline on either side, the vehicle will always remain parallel with the level of the road whatever may be its velocity in turning; whereas most coaches are overturned, because the weight being thrown entirely upon the outer spring, this one bends down beyond its elastic power, whilst the inner one, being relieved, rises to its farthest extent, and upsets the carriage.

V. DESTAIRS.

W. A. GRAHAM, Esq., Secretary, &c.

The springs are placed one at each end of the carriage frame in tube-casings, of a length equal to the width of the carriage.—Each spring consists of an endless steel-wire of four lengths, twisted together in opposite directions from the centre, and having a lever bar passed through at the centre, precisely after the manner of that of the stretching cord of the hand frame-saw. The spring has its bearing on two ratchet plates, which have holes round their centres, through which the single wires are passed, so that all the strands of the twist may be brought to an equal degree of tension. The ratchets are fitted with clicks, and serve for adjusting the springs to a degree of tension proportioned to the weight of the carriage. The resistance of the spring is transmitted, by jointed rods, from the spring-bar to a roller, (parallel with the spring), which carries the bars from the ends of which the body of the carriage is suspended.

The principle of this spring is different from that of the French torsion-spring, the action of which depends on the resilient effort of a steel-bar, (fastened at one end), to relieve itself from the twist given to it at the free end by the weight of the carriage; whereas the action of the twisted-wire spring depends upon the resistance which it offers to a higher degree of tension between its bearings, than that to which it is adjusted. M. DeStairs’ does not restrict itself to the mode of suspending the carriage here described; the invention being offered

to the public rather as a suggestive principle, than as a recommendation of the form of its application represented by the model.

It is suggested that the lightness of the material and the facility with which it can be put together, may recommend its adoption for heavy carriages, more especially in young colonies, where there are not the ready means of manufacturing springs of the ordinary construction.

### Hoeing Wheat.

The following paper appeared in the "Transactions of the Society of Arts," in 1838, but we think it may even now be useful to Canadian farmers. There are many suggestions in this paper that we might profitably adopt in the cultivation of wheat, and if we did, more than double the quantity of wheat now produced in Canada West, might be grown annually in that part of the Province. We have not been so fortunate as to have seen, during our residence in the country, one sample of a pure and unmixed variety of wheat from Canada West. All the wheat we have seen from that part of the country was mixed, and contained several varieties, and also, very frequently, seeds that were not wheat. This is both discredit, and very unprofitable. The difference of the climate in Canada, and the Island of Jersey, may have an influence on the time that seed is in the ground before it sprouts, but this will not affect the useful suggestions that will be found in this paper. *The Thanks of the Society was voted to Col. J. LeCOURTEUR, of the Island of Jersey, for the following paper on Hoeing Wheat:*

"In a small work published by me, 'On the varieties, properties, and classification of wheat,' I stated that it is of paramount importance, in order to obtain the largest amount of produce, that the seed should be pure: that is to say, of one sort or variety, in order to secure a uniform and perfect state of ripeness; for I have distinctly established, that the proper portion of farina, or meal, cannot be obtained from a crop containing a vast variety of sorts—where some, at the moment of reaping, which the farmer judges of from the largest portion being ripe, may be half ripe, some still less so, and some in a green state.

Under such circumstances, it is impossible to expect that most corn will be ripened, or the largest portion of flour obtained from such corn, or that it will afford the greatest quantity of bread.

I am aware of the fact, that wheat should not be over ripe in order to produce most meal, but this applies equally to a pure crop; indeed more so, as more will be obtained from such than from one that is indiscriminately mixed.

This principle being admitted, I wish to bring forward observations, which the experience of two additional years has afforded me, relating particularly to the proper moment for hoeing wheat.

I trust that circumstances, which may appear trivial at first sight, may not be tedious to listen to; but I truly believe that the proper cultivation of wheat is yet little understood, and I feel that every advance should be developed and promulgated as speedily as possible, in order to promote the blessings derived from agriculture, and to extend

knowledge; indeed, one who could keep secret any advantages proceeding from it, would little deserve either the inestimable blessings conferred by a gracious Providence, or its protecting hand.

It has not been unusual to hear intelligent farmers object to hoeing wheat, because they found that it injured the growth of the plants; an objection perfectly correct, as long as they worked without a proper knowledge of the mode of growth of wheat: for they frequently did, and do still, greatly injure the crop by injudicious hoeing.

There are two sorts of roots to wheat, and, therefore, this grain should be sown at a depth sufficient to separate their offices, which I hold to be distinct.

A grain of wheat, sown at the depth of three inches that which I adopt, usually appears above ground, in ordinary favourable seasons, in nineteen days.

By observing the dried specimens now exhibited, it will be seen that No. 1, sown at the above depth on the 23d of January, was, on the 25th of April, or at the end of ninety-two days, still depending on its lower or terminal roots for support, it had not yet put forth the upper or coronal roots: but a small dark ring indicates the point from which they would have protruded, about one inch below the surface. This small joint between the two sets of roots is named the pipe of communication.

On the 4th of May, specimen No. 2, will show you that, in one hundred and two days, the two coronal roots had protruded literally about a quarter of an inch.

It seems that nature, by affording this pipe of communication between the coronal and seminal roots, clearly intended them to perform different offices—the lower set nourishing the plant from sources drawn from below, the upper one from the influence of the atmosphere, hoeings, or top-dressings. What more beautiful or interesting provision can be found for the healthy support of a plant, so necessary to the very existence of man.

The coronal roots begin to shoot laterally in about eighty days after the plant has appeared above the ground in ordinary seasons, it being impossible to fix a precise time, as allowance may be made for climate and seasons. If these coronal roots, commencing to perform their offices, find themselves in a hard dry soil, surrounded by the roots of millions of weeds; that the leaves by which the plant breathes are overwhelmed by a multitude of enemies, in the form of weeds of every description, which deprives the young and tender plants of the pure atmosphere they should inhale, and probably impart to it themselves gases of qualities noxious to the wheat; it necessarily follows, that the plant cannot thrive as it should do, and that it must be checked at this period of its growth. Now, this is the precise fact. Let any observant person look to his wheat at this period; let him take up some of the plants carefully, he will perceive these coronal roots; let him observe further, he will, as the weeds advance, see his crop changing from a healthy green, to a yellow sickly colour, which it may only recover when the roots have gained strength, and in some cases, the plants have got the better of the weeds; in others, the weeds will get the mastery of the coronal roots, and the return will be a half crop, if not less. I have experienced this myself, but what is the contrary case? If, at the period that these coronal roots are just to emerge, a deep, careful, and rapid hoeing be given them, the whole of their enemies, the weeds, are checked—the roots shoot into a soil recently stirred for their reception—the plants revel

in a pure atmosphere, and breathe freely, besides possessing the undivided enjoyment of dews, refreshing showers, and the influence of light. The same observer will perceive the sudden and extraordinary change that will soon take place: the plants will lose their sickly hue, and they will rapidly expand, or trail along the ground.

By looking to Plant 3, it will be seen that, at the end of 114 days, the coronal roots will have made considerable progress; and that, in a fortnight more, they appear gradually developed, as in Plate 4. I will here call your attention to the fact, that, as the plants begin to tiller, the pipe of communication would appear to lessen in volume, declining, in the end, as it were, into a mere thread; the coronal roots, also, begin to develop themselves in a greater degree than the seminal roots.

I consider I have demonstrated the importance of examining a few plants, in order to watch for the proper period for the first hoeing. To press it further, it may, however, be added, that though wheat, in ordinary favourable seasons, is from seventeen to nineteen days in appearing, from the period of sowing this season, owing to extreme coldness, some of my wheat sown a week before Christmas, was forty-five days in the ground before it appeared, although it had been regularly picked and soaked: it is proper to add, it was seed I obtained from England, and might have been two years old, which would have retarded its growth in a slight degree. Where land is in a foul state hoeing is important; but this, it is considered, should be exceedingly light and scientific, merely to skim off the weeds that may have sprung up since, or have escaped the first hoeing, in order not to cut or disturb the coronal roots which, at the end of 114 days (specimen 5), will have extended themselves across the drills, whether of seven or nine inches. The hoe used for this purpose is of my own construction: it is of the form of a stirrup, the sides being rounded off in order to guide the workman in making his strokes rapidly; for, by this means, the round side may rub along the wheat without injuring it, and the blade being of a razor shape, and as narrow, is both strong and cutting, accumulating no soil, and meeting with little resistance: it is a pleasant and efficient instrument. If the workman steps backwards he leaves the weeds untrodden to wither rapidly. A man can hoe four drills at each pace conveniently: and, when the land is not foul, he should hoe half an acre a day. I frequently got the work done at so much per drill, after having ascertained the time required to hoe the first four drills, so that a just quantum of labour can be exacted, and the labourer earn more or less according to his industry. By walking forward the labourer will execute more work, but he then treads down the weeds into the freshly surred soil, which is also considerably consolidated. This description of hoe is also strongly recommended for all sorts of drilled crops, as it enables a workman to scoop out a weed from the edge of an onion, or other plant, without incurring the risk of cutting it—an inconvenience constantly attending the use of the ordinary Dutch or other hoes, it used rapidly.

On poor soils requiring much manure, an application of diluted, recent liquid manure, will be found highly beneficial just after the first hoeing, as the young shoots will absorb a due share of nourishment from it, while, by the destruction of the weeds, the roots of most of them will afford additional food for the wheat plants.



For the same reason that it is proper to free the young plants from weeds when the coronal roots begin to shoot, I hold it to be a doubtful practice, then, to sow grass seeds.

If the ensuing fortnight be mild and moist, the young clovers and grasses will have put forth leaves, which are so many millions of mouths, breathing the atmosphere at the expense of the wheat plants, besides taking from them much nourishment.

I had a remarkable instance of this on my farm last season. A field of wheat was looking beautiful after the first hoeing, I had sown a large portion of artificial grasses over it, imagining the coronal roots would gain ground over them; but a fortnight of galling weather wrought a sad change,—the little grasses came on charmingly, but the poor wheat changed in a "yellow and settled melancholy," and never recovered itself—the ground had been so well manured that the sample proved fine, but the crop did not reach twenty-six bushels per acre, where I should have obtained forty, and the straw was short of half its length.

The result was different by sowing the grass seeds at the second hoeing, which I tried in another field, a fortnight or three weeks additional growth having enabled the coronal roots to take a firm hold of the soil; nor did the crop appear to receive a check at the period when the grass seeds developed themselves.

The produce, in this case, was only thirty-five bushels per acre; but that the grass did not suffer here is proof, by the beautiful sample, I venture to call it, of the variety, *Talavera Belyuatis*.

I am inclined to think it a faulty practice at best, to sow grass seeds of any description among wheats, which appear to me to receive all the nourishment the soil can afford them. I am prosecuting an experiment accurately to ascertain the truth of this, which, if this paper has not proved interesting, I may hereafter have the honour of reporting to you.

By referring to Specimen No. 7, it will be seen that the grain having been grown superficially, or on the broad cast system, by a neighbour, and merely lightly harrowed in, the coronal and seminal roots appear crowded together, so, as it is presumed, to identify in some sort their offices, which, by the other mode, appear to be kept separate. This is a subject for further enquiry, as no positive conclusion has been arrived at; but as far as the structure of the plant seems to be a guide, it would appear to be clear that in certain seasons, and under particular states of the atmosphere, this crowding of the roots must prove prejudicial. The observation is made in order to invite attention to this point, in the hope that some enquiring mind will be led to make experiments on the subject.

In the collection now on the table, amounting to about 200 varieties, or subvarieties, is a fine selection of wheats, which I received from Mr. Landon which I greatly value, as coming from an individual so unwearyed and so distinguished for his admirable labours. They were grown by Mr. Vilmorin of Paris, and presented by him to Mr. Landon, and, as a classification, illustrative of the varieties described in the "Maison Rustique," are invaluable. I grew every sort last year. Some have greatly increased in size, being eight or nine inches long, two or three inches longer than their original tips; but the moist weather which prevailed at the period of ripening, discoloured them so much as to destroy their beauty, and almost their resemblance to the parent.

. LECOUREUR."

### Waterproof Boots and Shoes.

*The Thanks of the Society of Arts were voted to Mr. William Rey, 111, London Wall, for his method of constructing Waterproof Boots and Shoes, 1841.*

The leather is made waterproof by applying to one or both sides, according to the part of the shoe for which it is required, a solution of caoutchouc in turpentine and linseed oil. The upper leather is lined to any required height with chamois leather, coated on one side with the solution, and is sewed together with its lining, to the welt and inside sole. The under side of this sole, the welt, and the stitches, are then saturated with the solution, and a middle sole, coated on both sides, is put on, in lieu of the *offal* or filling of refuse leather, which is usually employed. The whole is then covered with the under sole, coated on the inside.

Farmers above all other classes, require waterproof shoes and boots, being constantly exposed to wet in the feet, that is so injurious to health. The method recommended is worthy of fair trial.



### THE CULTIVATOR.

"Agriculture is the great art which every government ought to protect, every proprietor of lands to practice, and every inquirer into nature improve"—*Dr. Johnson.*

Toronto, May, 1842.

### The System of English Agriculture Suitable to Canada.

As it is possible that some of the Subscribers to this Periodical, may be of opinion, that the system of agriculture practiced in the British Isles, might not be so suitable for this country, as the system of the neighbouring states of the Union, we think it may be necessary to submit our own views on the subject for consideration.

After a practical experience of agriculture in the old country for several years, and a residence in this country of near twenty-four years, during all which period, we have been engaged in the same business; we are firmly persuaded, that the more closely we adopt the most approved system of agriculture practiced in the British Isles, (with the exception of turnip growing to the same extent), the better and more profitable will be our crops, and stock of every description. This is an opinion that has not been lightly formed, or adopted from prejudice. We candidly state, that we attribute our deficient and weedy crops, and the mixed and inferior quality of our cattle and sheep, to no other cause but that of our not adopting, and practicing the English system of husbandry. We state further, that the most approved modes of cultivation practiced in the British Isles, in the production of wheat, barley, oats, rye, peas, potatoes, turnips, carrots, parsnips, clover, and other artificial

grasses, and the management of meadows and pastures generally, would be the very best and most perfect modes that could be adopted in British America.

Let any farmer adopt the English plan of preparing land for wheat, or any other grain crop that is grown in that country; let him sow the seed in the same manner; and weed, hoe, and manage the crop as they do in England, and if he does not succeed in raising a better crop, than by any different practice, we shall give up all claims to practical agricultural experience. We make an exception in regard to sowing fall wheat in Canada East, as, from the severity of the winters in that part of the Province, it sometimes partially fails. We believe, however, that if sown in proper time on well prepared summer fallow, and lightly covered with the plough, it might succeed as well in that part of the country as in Canada West. At any time we would most willingly try an experiment with any of the crops we have mentioned, and adopt the English mode of cultivation and management throughout, against any mode of practice of purely American origin, and we confidently anticipate that the English mode will be proved to be the best, most successful, and profitable.—English practice is often adopted partially, and not followed up to perfection. This is the true cause of its failure. It is only by following up, from the first time a field or parcel of land, is brought under arable culture, the English practice of ploughing, draining, manuring, sowing, weeding, hoeing, and harvesting, that we can reasonably expect the same results they obtain in Britain. Though we make selections from the English practice of husbandry, in preference to the practice of any other country, we shall be cautious not to offer any information that would have the slightest tendency to lead inexperienced farmers into error.—As to farmers who are more competent than ourselves, they will be able to judge for themselves, and act upon our suggestions as they may deem proper. Turnip growing enters largely into the British system of agriculture, and is found the most profitable part of it. This part of their system we cannot profitably adopt to the same extent, neither would it be necessary for us in the present state of our thin population. Large quantities of turnips could not be safely or profitably stored here, to feed cattle in our severe winters, and as we have not many cities or towns to supply with fresh meat, we can without difficulty, winter feed a more than full supply for all demands, with our inferior grain and root crops, to a reasonable extent. In no country would it pay to stall feed cattle for the purpose of salting the beef, and exporting it in that state. It is only to supply markets with fresh meat, that fattening cattle in the winter can pay; they must be grass fed for any other purpose. We trust that this explanation will be deemed sufficient by the Subscribers to this paper. It shall be our unceasing endeavour to make *The Cultivator*

both useful and acceptable. We shall submit what information and suggestions, we conceive to be the best and most proper.—Contributors will have it in their power to make up for our deficiencies. Between us, therefore, it is not too much to expect, that this Periodical may answer all the objects and purposes for which it has been published.

### Regularity in Farming Operations.

In all farming operations, a due regard to order and regularity should be invariably observed: so that every one employed should not only know his own business well, but the proper time and season for the due performance of it. No two sorts of work or operations should be allowed to interfere or clash with each other, or to a certainty, at least one of them will be performed in a slovenly or disorderly manner. All should be as regular and systematic as if the whole business of the farm were regulated by some well adjusted machine. To be engaged in different sorts of work out of the proper season, (for there is a season for all things), particularly sowing and planting, to witness a profusion of weeds allowed to grow up, and ripen their seeds, to notice rubbish and litter scattered about during the summer, are sure indications of slovenness, if not of decided bad management. In the fall, to neglect the repairing and opening of ditches and drains where they require it—and when the work is done, having the various farming implements all properly secured and stowed away, until such time as they may be wanted again in the ensuing spring or summer—and not left to rot in the fields where they happen to be last used, or placed in gaps instead of proper fencing materials—all too plainly indicate something wrong in the system. It is extremely difficult in this country to find hired men that will pay due attention to all these matters, without the strictest personal superintendence of the farmer in every case. Farm labourers that have been constantly accustomed to work on English farms that were well managed, are of much greater value here, than any other class of workmen; but we are sorry to say, that very few of the former class come to British America.

### The Turnip Fly.

After numberless trials to prevent the ravages of the turnip fly, the only way which I found at all successful is, to collect all the weeds I can on the farm, and lay them in heaps all round the field sown with turnips; on the plants coming up and showing the least appearance of being attacked by the fly, the heaps to windward are set on fire, brimstone is put on the fire, and thus the strong smoke, which is very offensive to the insect, is wafted over the crop. If this is continued till the turnips get into the rough leaf, they will be safe; but if before this the process is stopped for five or six hours together, in a fly-working day, the crop most likely will be lost; therefore I have not scrupled on a Sunday to have the fires lighted before the morning, and also before the

afternoon service. I think the smoking plan might be serviceable to protect hops from the insects which attacks them. The turnip fly commences, and ceases to commit its depredations, at such different times, in different seasons, that no one can with any degree of certainty fix the time for sowing, when the crop shall be least likely to be injured. The fly likes only the smooth seed leaf of the turnip, and if that is eaten, the plant dies. When they cannot meet the seed-leaf so they will eat holes in the rough leaf, but they cannot thus destroy the plant. When corn crops are mowed, they will then prey upon the young clover plants. No one has been able to prove where the fly is produced. Some assert that it comes out of the earth; others that it is bred in the seed. I made an experiment two years ago, which satisfied myself and those who I showed it to, that the fly comes out of neither. When my turnips were sown, I covered a piece of land with a large square of thin gauze, which I so fastened down, that no insect could creep under it. Under the gauze, the turnips were not touched by the fly; all around it, they were eaten and destroyed by it. Where the insect is generated is not known; it flies in the air like other insects, and although it may appear strange to us, it has the power to discover where is the food for it, as soon as the turnip leaf appears above the ground.—From *Hillyard's Practical Farming and Grazing.*

In Canada, grasshoppers, in very dry seasons, are most destructive to turnips, after they get into the rough leaf. Hence, between the turnip fly, and the grasshopper, turnips are an extremely uncertain crop in British America.

The most certain method to obtain a crop, is to sow on new land, and to use the ashes of earth or wood as manure, on either new or old land. This we have found to be a most certain remedy against the ravages of the turnip fly. We have also steeped the turnip seed previous to sowing, in a strong decoction of tobacco water, for twenty-four hours; and if the weather is favourable for vegetation at the time, the plants will retain so strong a taste and smell of the tobacco, for a few days after they come up, that they will be in the rough leaf before the fly will prey much upon them, and then they will be safe. The rapid growth of turnips, is of great advantage to save them from this insect, and the richer the land, the greater chance there will be of safety to the crop. From the first to the tenth of July, we have found the best time to sow turnips, if the weather does not happen to be too dry at that time. Prat soils, properly prepared, are very suitable for producing turnips in Canada. On this kind of soil, dressed with ashes, a crop is more certain than on any other land.

During a period of 21 years in England, from 1815 to 1835 both inclusive, the wheat crops was estimated to be above an average six years—below an average eight years—and an average seven years. Allowing the average to be 100—the six abundant years near 122 on an average. The eight deficient years produced 83 on an average. It is a remarkable circumstance that the six abundant years made up exactly for the de-

ficiency of the eight scanty years. Thus a bountiful Providence provides for the wants of His creatures.

### POETRY.

#### THE MAIDS AND MATRONS OF ENGLAND.

BY RICHARD WYNNE.

O! the maids of merry England, so beautiful and fair—  
With eyes like diamonds sparkling, and richly flowing hair;  
Their hearts are light and cheerful, and their spirits ever gay:  
The maids of merry England, how beautiful are they!

They are like the lovely flowers in summer time that bloom,  
On sportive breezes shedding their choice and sweet perfume,  
Our eyes and hearts delighting with their varied array:  
The maids of merry England, how beautiful are they!

They smile when we are happy: when we are sad they sigh:  
When anguish wrings our bosoms, the tear they gently dry:  
O! happy is the nation that owns their tender sway—  
The maids of merry England, how beautiful are they!

Then ever, like true patriots, may we join both heart and hand,  
To protect the lovely maidens of this our fatherland;  
And that Heaven may ever bless them, we'll all devoutly pray:  
The maids of merry Eng'and, how beautiful are they!

And the matrons of old England, they are a gentle race,  
Adorned with every virtue, and enriched by every grace:  
Our homes they render happy, our children they cherish:  
May God our English matrons in mercy ever bless.

They are like the ripened fruit in autumn's golden time,  
All hang in rich luxuriance throughout our happy clime:  
With more than angel kindness they all our cares redress:  
May God our English matrons in mercy ever bless.

And o'er our land presiding, with mild and gentle sway,  
We have an English matron, for whom we'll ever pray:  
And round her throne we'll rally, our duty to express;  
May God our English matrons, in mercy ever bless.

Then ever, like true patriots, let's join both heart and hand,  
To protect the virtuous matrons of this our happy land:  
And in one voice united our Maker we'll address—  
May God our English matrons in mercy ever bless.

HONELY TRUTH.—A gentleman who was imperturbed by a sturdy beggar, answered him,—  
"My good man I am nearly as poor as yourself, with only the difference that what I have, I work for."

Beggars able to work, have no excuse for such a practice in British America.

## SHEEP.

(Continued from our last).

The intestinal canal is long, commencing at the pylorus, or lower opening of the stomach, and averaging from ninety to one hundred feet. There are but few enlargements in the great intestines. The fat, like that of all ruminating animals, becomes, on cooling, hard and brittle.

(22). *Period of Conception*.—In this climate, ewes fed on good pastures admit the ram in August; but September or October is the time when such would occur if left to nature. They go with young five months, and in warm climates bring forth three a year; but in Britain, France, and most of Europe they do so only once. They give milk for seven or eight months; live ten or twelve years; and, if well managed, are capable of bringing forth during life, though generally useless for that process after the seventh or eighth year. The ram lives from twelve to fourteen years, though instances are recorded of their enduring till twenty, and becomes unfit for propagating at eight.

(23). *Names applied to Sheep*.—The age of sheep is never dated from the time that they are dropped, as that would be attended with many inconveniences, but from the time that they are first subjected to the shears, by which means the first year includes a period of at least fifteen or sixteen months.

The following is a condensed arrangement of the names by which sheep are designated at different periods of their existence, in various parts of England and Scotland:—

*From Birth till Weaning.*

MALE	FEMALE
Tap, Ram Lamb, Heed, or, Pur.	Ewe or Gimmer Lamb, Chilver.

*From Weaning till first Clip.*

Hog, Hogget, Hoggered, Teg, Lamb hog, Tup hog, Girdling, and, if castrated, a Wether hog.	Gimmer hog, Two Hog, Teg, Sueder ewe, Twaive.
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*From first to second Clip.*

Shearling, Shear hog, Heeder, Diamond or Diamond ram, or tup, and, when castrated, a Shearing wether.	Shearing ewe or gimmer, Double-toothed ewe or Teg, Yill gimmer.
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*From second till third Clip.*

Two shear ram, young wether.	Two shear ewe, Count-wedder.
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*From third till fourth Clip.*

Three shear ram, old wether.	Three shear ewe, From-ter.
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And so on, the name always taking its date from the time of shearing. Broken-mouthed ewes are called *cranes* in Suffolk and Norfolk; *locks*, or *crooks*, in Scotland; and *draps* in Lincolnshire. In Scotland, ewes which are neither with lamb, nor giving milk, are said to be *cild*, or *yard*.

**THE LARGEST WETHER SHEEP EVER SEEN IN LONDON.**—A five year old wether sheep of the Cotswold breed, bred and fed by H. Tuckwell, Esq., of Signet, near Burford Oxon, was sold by Duckworth and Kennedy, meat salesman, Newgate Market. After fasting one night, its live weight was 400 lbs., and the neat weight of the carcass 296 lbs.

**MEN OF GENIUS.**—There are some features which, in people of genius, are always the same. They are uniformly dis-

tified, restless, longing after something better, nobler, higher, than the present life. They are awkward in little things, benevolent, modest, yet ambitious, with violent passions, and a long train of virtues or vices, according to the direction which these passions happen to take.



## No. 1.

## On Education,

IN REFERENCE TO THE AGRICULTURAL POPULATION.

"Ignorance is the curse of God,—  
Knowledge is the wing which reviveth to Heaven."

Shakspeare.

"Pas illi limina Divam Tangere."

Virg. Geor. 4.

To the Editor of The British American Cultivator Sir,

Perhaps there is not a word in the English language, to which a wider latitude of meaning has been attached, than to the word Education. When an ordinary Education is spoken of, the term is held to import a knowledge of the arts of Reading, Writing, and Ciphering, with, occasionally, but not necessarily, a familiarity with the practical rules of Mensuration and Trigonometry. A man of education implies a person who is intimate with the Greek, Latin, French, and other languages,—while some modern authors extend the signification so as to include a knowledge of Nature and Science in all their various departments. That we may ascertain which of these definitions approximates most nearly to the true meaning of the word, it will be necessary to recur to a consideration of the primary objects of education. These are understood to be the training of the intellectual faculties of a youth, so as not merely to qualify him to fulfil the duties of his station in this life, with credit and efficiency, but to afford him a well grounded hope of being able to participate in the joys of a future state of existence. If this definition of the objects of education be correct, then, I apprehend that we may with tolerable certainty conclude that reading is not in itself education,—nor writing, nor ciphering,—nor is an acquaintance with Greek or Latin, or with any other language, because a mere knowledge of these can have no direct influence on any of the objects of education. We are therefore reduced to the conclusion that the true definition of the term in parts an intimacy with science and nature, because by this, and this alone, can these objects be in any shape affected.

"What then!" methinks I hear some one ask, "are reading, writing, and arithmetic,—is a knowledge of the ancient and modern languages, unnecessary to education?" Far from it. On the contrary they are, one and all, absolutely essential to its perfect attainment. But what I contend for is that these ought to be looked upon, not as education in themselves, but merely as the keys or means by which education is to be attained, and that no system of public instruction should stop short of an introduction to such of the sciences as have the most intimate

connexion with the probable pursuits of the majority of the community.

In deciding on a proper system of Common School education, therefore, it is absolutely indispensable that this fundamental principle should be kept strictly in view. Hitherto, I am sorry to say, it has been but too often entirely neglected. Reading, by rote, (if the expression be admissible), writing, and an imperfect knowledge of a few of the practical rules of arithmetic, form the only instruction which the great majority of our Common Schools have heretofore afforded, and even the best teachers in these met with little or no encouragement in attempting to extend the ordinary routine to the principles of grammar or of geography.

Among the various causes to which this state of matters may be ascribed, three deserve special notice,—(1.), the *inadequate encouragement* offered by, and (2.), the *consequent incompetency* of the teachers, which afford unequivocal evidence of the third, namely, the *apathy* of the parents. How far the provisions of the recent act of Parliament may have a tendency to remove the two first grounds of exception, remains to be seen. It is not my purpose to indulge in conjecture, but I must be permitted to remark, that unless adequate encouragement be offered, the co-operation of competent teachers cannot be secured; and without competent teachers, the public money may, with almost equal advantage, be expended in an attempt to cope with the Indies in the production of aromatics,—to cultivate the eternal snows of the hyperborean regions, or in any similar scheme equally visionary or futile. As to the indifference of the parents, it is to be hoped that, through the instrumentality of THE CULTIVATOR, they may be made sensible of the error of sacrificing, as heretofore, that precious time which ought to be strictly employed in the education of their children to any motive—not of economy—the term would be misapplied; but of avaricious parsimony, and of temporary expediency. Assuming then that these grounds of exception already do, or soon may cease to form any serious obstacle, it shall be my endeavour to point out what I deem to be essential in the establishment of an efficient system of education in the Province.

It has been already demonstrated that the art of reading is not to be regarded as education in itself, but only as a key to, or a means of acquiring education. It must therefore depend upon the use which may be made of this key, whether its attainment is or is not to be beneficial to the pupil in after life. If, however, as but too often happens, he has been taught to read merely by rote, without troubling himself to attach any, to say nothing of a distinct meaning to what he does read, the acquisition can be but of very little service in advancing his proper education. It ought to be a principal object in the management of Common Schools, therefore, not merely to teach the art of reading, but to train the pupil in the application of that art, or in other words to teach him to read, not merely by rote, but to read with understanding.

This result can be attained only by having recourse to a regular interrogatory system of instruction. But such a system cannot be followed out, unless the lessons be adapted to the intellect of the child. With this view, therefore, the subjects to which his attention ought to be directed, should be such as can be distinctly comprehended by him, and such as are in themselves calculated to excite an interest in a youthful mind. "If," says Sir James Mackintosh, "we were to devise a method for infusing morality into the tender minds of youth, we should con-

tainly not attempt it by arguments and rules — by definition and demonstration. We should endeavour to attain our object by insinuating morals in the disguise of history, of poetry, and eloquence,— heroic examples,—by pathetic incidents,—by sentiments that either exalt and fortify, or soften and melt the human heart." But the books at present in use in our Common Schools, with their formal division into sections, argumentative, didactic, &c., would absolutely seem to be compiled upon a principle the very reverse of that here advocated. They are indeed, in many instances, utterly unintelligible to those for whose use they have been devised, and they ought therefore to be at once abandoned.

Works are not wanting to supply their place. The object of the junior classes, in such seminaries, is chiefly to gain a facility in reading and spelling, accompanied by a general acquaintance with the uses of these arts; and the series of compilations prepared by Dr. McCulloch of Kelso, formerly of the Circus Place School in Edinburgh, appears to me to be admirably adapted for these purposes. By these books, the pupil is ushered, step by step, not only through easy to more difficult passages, but he is at the same time introduced to many of the most interesting and pathetic historical incidents, and to a number of the arcana of science. He is thereby gradually prepared for following out, with effect, the course of study in which he will afterwards come to be tutored, while he is delighted with the subject of his task,—a consideration of no mean importance,—for it should ever be remembered that

"No profit grows where is no pleasure taken."

The senior classes, who are presumed to have already acquired a tolerable facility in reading and spelling, with a general knowledge of the application of these arts, should be at all times provided with a dictionary for reference. Their course of reading will be directed principally to history and biography, and in particular to the history of the British Isles. It is to be regretted that no suitable epitome of the history of this Province is in existence, but such a desideratum might perhaps be supplied, if adequate encouragement were to be proffered. In addition to historical and biographical works, Chambers Introduction to the Sciences merits attention, as it will form an appropriate link of connexion with the ulterior course of study which it is my purpose to recommend.

Although these suggestions are mainly designed to apply to what may be termed secular education, I must nevertheless be permitted to record my opinion that the Bible ought to form a regular class book, to be employed at stated periods in all Common Schools. Not that I look upon it as being a book peculiarly well adapted for the purpose, but it is the foundation of our common religious faith; and, therefore, "all who profess and call themselves Christians," ought to be familiar with its precepts from their youth. With this view the New Testament should be placed in the hands of the junior classes, so soon as they are able to make use of it, and the whole Bible in the hands of the senior classes. At the same time, a large map or maps, embracing the Holy Land, and other countries, noticed in the sacred volume, should be suspended in the school-room for reference.

It is in many seminaries a practice for the children of the junior classes, to be required to commit to memory a catechism or other manual of religious belief. To a certain extent the practice is commendable, on the principle that the memory is improved by exercise; but it should at all times be

left to the parents of the children to determine what catechism is so to be taught. In this they will, of course, be advised by their several spiritual directors, and I would strongly urge upon the notice of both, an observation by a popular writer of the present day, which I apprehend, will be found to convey the result of the experience of very many on this subject. "I had certainly," he says, "been well instructed in the tenets of our faith when at ———, but there, as in most other schools, it is made irksome as a task, and is looked upon with almost a feeling of aversion." "No proper religious feelings," he continues, "are or can be inculcated to a large number of scholars. It is the parent alone who can instil, by precept and example, that true sense of religion which may serve as a guide through life."

In writing, engraved copy-lines should uniformly be made use of; and the object aimed at ought to be to give the pupil a distinct and legible, rather than an ornamental hand. These copy lines might be made to serve an excellent purpose, if they were composed of such difficult words in the English language as are peculiar for their spelling or pronunciation, or of Latin or French phrases in almost daily use, together with their meaning or import. The scholar would thus become familiar with these.—He should likewise be required to write out his arithmetical rules and examples, his grammatical exercises, &c., to read and copy manuscript, and to write to dictation. By these means he would readily acquire the requisite dexterity in the use of his pen.

Arithmetical tuition should begin in the junior classes with an intellectual system. A large board, painted black, suspended behind the teacher's desk, will enable him not only to extend the system according to the pupils' capacity, but to give such elucidations of the fundamental principles as will greatly facilitate the child's progress, when he enters upon the more regular course.—The usual routine of mercantile arithmetic should terminate with a course of book-keeping by single entry. This again should be followed by an introduction to algebra, which will enable the pupil to understand the intricate, and indeed otherwise unintelligible, rules of evolution, &c.

Euclid should form a collateral branch of study with the more advanced rules of arithmetic, algebra, &c., and by this means the pupil will be prepared to enter upon a system of trigonometry and mensuration with advantage. It will be kept in view, however, that this, in my apprehension, is but a secondary attainment contingent upon the study of euclid. It is not here recommended with a wish to make the pupils proficient mathematicians. No other course could indeed be followed, if it were desired that they should become such,—but a systematic course of mathematics is now universally admitted to be the most effectual method of cultivating the rational faculties, laying at the same time the only certain foundation for the acquisition of all scientific knowledge.

English grammar and composition, and the principles of geography and astronomy, ought to form indispensable branches of study, and for the latter purpose, the teacher should be provided with globes and regular sets of maps both terrestrial and celestial.

The whole of these several branches (with the exception perhaps of algebra and mathematics, and it is with reluctance that I make even this exception), ought to be taught in our Common Schools to pupils of both sexes. These form the foundation or elements of all education properly so called. Now, sir, in laying the foundation of a building, a careful architect is extremely solicit-

ous that this important operation be sufficiently executed; and surely no less anxiety should be evinced that the rudiments of instruction, which form the basis of all true knowledge, should be effectually impressed on the minds of our youth of both sexes. It will be proper, therefore, before we proceed further, to consider first, whether any and which of the branches of study here suggested, may be, without detriment, dispensed with; in the second place, whether, as some suppose, the Common School be adapted for imparting instruction beyond the scope of the elementary branches here proposed:—and, lastly, if not, in what way such further instruction is to be conveyed to the rising generation.

It is not requisite in the present day to offer any detailed argument, to show that the branches of study here recommended ought to be esteemed indispensable. No one, I expect, will be inclined to dispute the proposition. The education of a child must either be designed to be extended beyond the course here prescribed for the Common School, or it must not. If it be not meant to extend it beyond that routine, it is not expected that any one will pretend to maintain that the course here suggested is too extensive; and if it be proposed to carry the pupil's education further, then one and all of the branches of study here recommended are unquestionably indispensable to his future progress. Some may be disposed to object to the introduction to algebra, but one important benefit to be derived from it has been already hinted at, and, in case of the pupil's studies being further extended, it is well known that no distinct explanation of mechanical power can be given without a reference to the principles of algebra.

Without enlarging further upon this point, then let us at once proceed to the next enquiry, whether it be advisable or indeed practicable, to extend the business of the Common Schools to other branches. The number of scholars that, under an improved system, may be expected to attend such a school, may be reasonably estimated at 45; 30 of these we shall suppose to constitute the junior, and 15 the senior classes. Now it is proposed that separate lessons shall be given to each of these pupils as follows, viz:—

	No. of separate Lessons.
<b>JUNIOR CLASSES.</b>	
In reading with the necessary explanations, interrogations, spelling, &c., 2 each.....	60
In intellectual arithmetic.....	30
In catechism.....	30
In spelling with explanation of words, distinct from the reading lessons.....	30
	—150
<b>SENIOR CLASSES.</b>	
In reading, &c., 2 each.....	30
In intellectual arithmetic.....	15
In grammar.....	15
In mathematics.....	15
In geography and astronomy....	15
In writing to dictation and revising same.....	15
In spelling, &c.....	15
	—120

270

This shows a total of 270 separate lessons to be given in the course of the day. These, it must be remarked, are exclusive of the indispensable, though only occasional, instructions in writing and arithmetic, which sometimes engage no small portion of the teacher's time; and of the general supervision of the school. Now, in country

districts at least, the usual time that the school is open, is from 9 A. M. to 4 P. M., with an interval of an hour at noon. Six hours each day are thus employed in the direct purposes of tuition, giving 360 minutes, or, at an average 1½ minute to each lesson.

Surely nobody will pretend to say that this allowance of time is extravagant; and, if not, it is evidently impossible that the time of the Common School teacher can be advantageously employed on other branches of study, than those before indicated. But the information thus imparted, is not sufficient to qualify a man to fulfil the duties of his station in this life, with credit and efficiency. Something more is requisite. He must be introduced to a knowledge of the principles, at least, of such of the sciences as are most intimately connected with the profession or business, which it is intended that he shall pursue; and how is this to be accomplished?

The enquiry will form the subject of my next letter.

Yours, truly,  
W. COLVILLE.

Esquesing, Feb'y. 1842.

COLCHESTER, WESTERN DISTRICT, }  
15th April, 1842. }

To the Editor of The British American Cultivator.

SIR,

The establishment of a Canadian journal, exclusively devoted to the advancement of agriculture, being what I have long earnestly hoped for, allow me to congratulate the public in general, and the farming community in particular, on the realization of that very desirable, and, as far as the latter is concerned, most auspicious and important event, in the appearance of *The British American Cultivator*, to which I have of course become a Subscriber, and of which I have the pleasure of having now before me the first three promising numbers.

Under ordinary circumstances I would be content to address you anonymously, but considering it the duty of every patriotic well-wisher to the agricultural prosperity of Canada, to step forward frankly and give you all the encouragement and support in his power; and it having been my lot to take a rather prominent part, some few years ago, in the establishment of an *Agricultural and Horticultural Society* in this District, which has unfortunately lain dormant ever since the "patriot" outbreak, I feel myself called upon to lay aside all disguise, and to express an ardent hope that, under the auspices of an Editor so well versed in the theory as well as practice of agriculture, as you are known to be, *The British American Cultivator* will, ere long, rouse the farmers in every part of the country, and more particularly of this fine District, to something like zeal in their agricultural pursuits, and prove that all that is wanting to ensure a triumphant competition with our American neighbours, is persevering energy and industry, and local emulation in the adoption of the scientific systematic tillage, which has proved so miraculously beneficial in the mother country, together with the periodical dissemination of the successful practical results of their experiments, through a widely circulating public medium, such as I trust your valuable journal will soon prove.

Being also, at the same time persuaded, that the success of your undertaking will mainly depend on the support you receive from Correspondents and Subscribers united, I beg to assure you, as an earnest of the sincerity of my observations, that as opportunity offers, I shall not fail to "trouble you

with a few lines, or matters which may become subjects of discussion, either in my own name, or as less liable to animadversion, on the score of vanity or presumption, under some anonymous signature, promising that having only of late years, "turned my sword into a plough-share, and my spear into a pruning hook," the arguments of an old soldier, on a subject so foreign to his profession, must be indulgently regarded as more matter of theory than practice, notwithstanding his having witnessed agriculture in all stages in various quarters of the world.

I remain, at all events,  
Dear Sir,  
Your very sincere well-wisher,  
R. LACHLAN.

To the Editor of The British American Cultivator.

SIR,

Having seen a communication in your valuable paper, I think No. 2, from Mr. Thomas Shepperd, Toronto, regarding mud or unburnt brick buildings; I now take the liberty to address you and give you my opinion of that art. I built a house this last year, 31 feet by 21 feet: I built it of unburnt bricks, and neither used straw nor stones in the making of the bricks, and I think it is not at all necessary to use either of them, as I think the straw would be an impediment in the making of the bricks. I mixed the surface and blue swamp clay, and moulded the bricks with ashes; and after plastering, whitewashed it with lime. I made a special mortar of lime, sand, and clay, for building the bricks with, it made an excellent band; the house is built cottage fashion with a pavilion roof; the chimney is in the centre of the house, with doors and windows opposite each other. I agree with Mr. Shepperd's opinion of building such houses, as I think they are preferable in winter as being warmer than a frame house, and cooler in summer.

I have addressed this communication to you and hope you will give it publicity, as I think that many people might benefit themselves by following Mr. Shepperd's and my own plan of building. I shall be glad to inform any person, as far as I am capable of, regarding the art, by calling on me, where they may see my house.

I am, dear Sir,

Your most obed't serv't  
JAMES MCGREGOR.

GLANGRIGOR CASTLE, LOT No. 6,  
11th Con. Township of Howard.

To the Editor of The British American Cultivator.

SIR,

Every intelligent Canadian, every well-informed foreigner, who has made this the country of his choice, every individual who is either intimately or remotely concerned in the prosperity of agriculture, (and few are not), must feel gratified at the occurrence of an event, so well calculated to advance its interests, as the establishment of an exclusively Agricultural Periodical.

The benefits and advantages of such a work are neither few nor unimportant. I am aware, however, that there are some farmers so well satisfied with the knowledge they possess, as to feel perfectly indifferent about acquiring more; they consider it a sort of imputation upon their judgment, if you tell them that they may learn something from an agricultural paper. Books, are to them, the most distrustful of all the sources of information, (and I regret to say, too many of this description of persons are to be found among my own countrymen).

But surely this ought not so to be. While the professors and friends of all the other arts and sciences, call to their aid the light and accumulated written wisdom of the past and present ages, why should the art of cultivating the earth, by far the most important of all the arts, be left to no other guide than blind tradition?

To what are we to attribute the recent rapid advances in agricultural knowledge in the mother country, and in the neighbouring Union? What has pointed out to the agriculturist new sources of wealth; and not only taught the theory, but enabled him to realize the pleasure of blooming gardens, of fruitful fields, and luxuriant harvests? What, I say, has done all this, but books and the scientific communications of literary men, who have devoted their wealth and their talents, to lighten the burdens and increase the stores of the farmer? The benighted ignorance of those men, who repudiate books, and will do nothing but what their fathers have done, merits our most heart-felt commiseration.

It is indeed possible, that every thing new may not be valuable; but it is certain, that every thing valuable, was once new.—We should not, therefore, reject a thing that promises to be useful, merely because it is new, without first giving it a fair trial. If among the numerous machines invented, and the various plans of operation devised by the ingenuity of man, to lighten his labours and add to his comforts, we should see an occasional failure, it should not deter us from pressing into our own service whatever is really useful. Who will not acknowledge that a spirit of improvement has gone forth—that its influence is rapidly extending itself through every department in the business of life? What an improvement, for example, has been made, within a few years, upon that most useful of all the implements to good husbandry, the plough. Twenty years ago, its model, in many instances, would seem to have been taken from Egyptian Hieroglyphics, where it is said to be represented; but little changed from its rude and simple original, in the form of a sharpened stake! Though there are few but will acknowledge the superior excellence of the modern plough, how many are still in ignorance of the real value and usefulness of that other important utensil, the roller? Yet, one would suppose, that every farmer, in the least degree acquainted with the process of germination, and subsequent growth of plants, must at once perceive the utility of passing a roller over wheat fields, that have been exposed to the alternate thawings and freezings of a Canadian winter; by which means the roots of the young plants would be pressed into the earth, and secured against the drying withering influence of the sun and wind.

The mistaken notion is too generally entertained by farmers, that no experimental operations can be made, no change of system introduced without burdensome expense. The wealth of the opulent may indeed do much; but mental research, and a spirit of enquiry, accompanied by the personal inspection, and persevering efforts of the practical farmer, will do much more to increase the produce and improve the condition of our farms.

As a Canadian, I feel deeply interested in the future prosperity of my country, and I fondly cherish the hope that those hateful prejudices, which have hitherto raised such a barrier to improvement, will soon disappear.

I know of nothing so well calculated to effect their removal, as a well conducted agricultural publication—a desideratum that has long been felt; but which is now sup-

plied by THE BRITISH AMERICAN CULTIVATOR: and I think, the sincerity of my motives will not be questioned, when I recommend the sound practical lessons of its enlightened Editor, to the constant perusal of every Canadian farmer, and to every friend of rural economy.

Yours, &c.,  
W. McDOUGALL.

To the Editor of The British American Cultivator.

SIR,

I am anxious to make known, (by means of *The British American Cultivator*), to the breeders of stock, and farmers in this Province, that I have thorough-bred Durham cattle of the most esteemed blood, and each animal's pedigree, I doubt not, will be found correct, by reference to Coates's General Short-horned Herd Book. I have three bulls for sale, the youngest (named Echo) is six weeks old, colour Roan. My next (young Farmer) three years old next May, colour white. Comet is the name of the oldest, he will be four years old in May, colour red and white, and I believe he would weigh at this time a ton live weight; but in case he were really fed to the extent that he is capable of, in that case he would astonish the inhabitants of this country, for such is the disposition of the pure Durham cattle to fatten.

A Durham heifer that will be five years old next September, as yet has never had a calf, owing to the high condition she was in. The whole of last winter she has lived upon straw, and has never had any other food. I have never put her up in any stable or building, where the rest of my Durham cattle were lodged. This heifer has taken her chance along with some Canadian steers and other cattle about her own age, picking straw from a rack placed under an open shed. The common cattle that I allude to, had the same chance, last summer, as this Durham heifer. The result is, as many of my neighbours know, that this Durham heifer is now rolling with fat, while the Canadian cattle, which have had precisely the same treatment, both summer and winter, are poor. My object has been to get her to breed, which all sound and practical judges pronounce impossible while she remains so fat. Although, as I said, she is rolling with flesh at the present time, still she is nothing to what she was last summer; and the flesh is flabby and loose to what it was last fall. I make these statements, because a great many that are not acquainted with this breed, viz. the pure Durhams, state that they are tender and delicate, and by no means fit for this country; it is for the want of knowing better, for the reverse is the true state of the case. For I am aware that amongst really good judges, and those too that speak from experience, they will bear me out in stating, that the world cannot produce animals to surpass them in constitution or symmetry, combining the qualifications of milking and feeding. I shall have for sale in the fall, (if all is well), pure South Down ram lambs, at £2. 10s. each.—These South Down sheep were carefully selected from the flocks of the late Earl of Bridgewater, the Earl of Powis, Lord Hill, Lord Clive, Sir Walter Williams Wynne, and Mr. Mylton, all well known breeders of the pure South Down sheep.

JOHN HOWITT.

Guelph, April 22nd, 1842.

He who, though He has ordained labour to be the lot of man, has yet made their labour the instrument of the highest happiness, and the source of the greatest comforts to our race!—Blackwood.

For the British American Cultivator.

"They who continue to buy more than they have the means to pay for, must in the end become insolvent."  
Common Sense

Mr. EDITOR,

Being of opinion that an Association of the Farmers, Manufacturers, and Mechanics of Canada, having for its object the production and more general use of all articles of usefulness, comfort, and economy, which our own climate, skill, and industry can furnish and we require, would increase our prosperity; I am induced, through the medium of your useful periodical, *The British American Cultivator*, to bring the subject before the public, in the hope that other persons being thereby led to view the project in its various shades and bearings, may state their opinions of the probable advantages or injuries to be expected from such an Association.

Mistrusting my own judgment of what may, or may not be our best policy, under that complicated science, "Political Economy," I wish to ask what interest would be prejudiced, or what party need be alarmed by the formation of a Society, the members of which, having one common interest, promise to use and encourage the use of all such articles, the produce of their own soil, skill, and industry, in preference to such as may be imported, where the quality, the price, and the mode and means of payment are equal, or in favour of the productions of Canada?

That the importers of British manufactures may not take alarm, I beg to make one remark, viz. that the main object in the formation of such Association is to afford encouragement to the production and manufacture of such goods, wares, and merchandize, as we, at present, so largely (legally and clandestinely) import from the United States; for why should we import from that country what our own could equally well supply, (under proper patronage) unless we prefer to enrich strangers, rather than employ our own population! and what I ask, do the citizens of the United States take from us in return for their country—produce and manufactures—some lumber and much money—an exchange not mutually beneficial in my opinion!

As I should be sorry to occupy much space in the columns of *The Cultivator*, a topic which may be deemed impracticable, impolitic, and futile, I shall at present make no further remarks, intending on a future day, to reconsider the subject, if other persons are of opinion that such an Association is deserving of being considered as one of the best means, in our power, of increasing the productive wealth of the country.

I am, Sir,

Your very obed<sup>t</sup>. serv<sup>t</sup>.

J. SCARLETT.

Runnere, Dundas Street, }  
April 20th, 1842. }

METHOD OF ASCERTAINING THE WEIGHT OF CATTLE WHILE LIVING.—This is of the utmost utility for all those who are not experienced judges by the eye, and by the following directions the weight can be ascertained within a mere trifle. Take a string; put it round the beast, standing square, just behind the shoulder blade; measure on a foot rule the feet and inches the animal is in circumference; this is called the girth; then with the string measure from the bone of the tail which plumbs the line with the hinder part of the buttock; direct the line along the back to the fore-part of the shoulder-blade; take the dimensions on the foot rule as before, which is the length, and

work the figures in the following manner: Girth of the buttock, 6 feet 4 inches; length, 5 feet 3 inches; which, multiplied by 23, (the number of pounds allowed to each superficial foot of all cattle measuring less than seven and more than five feet in girth), makes 713 lbs.; and allowing 14 pounds to the stone, is 50 stone, 13 lbs. Where the animal measures less than nine and more than seven feet in girth, 31 is the number of pounds to each superficial foot. Again, suppose a pig or any small beast should measure two feet in girth, and two feet along the back, which multiplied together makes four square feet; that multiplied by eleven, (the number of pounds allowed for each square foot of cattle measuring less than three feet in girth), makes 44 lbs., which divided by 14 to bring it to stones, is three stone two pounds. Again, suppose a calf, sheep, &c., should measure four feet six inches in girth, and three feet nine inches in length, which multiplied together, makes sixteen and a half square feet; that multiplied by sixteen, (the number of pounds allowed to cattle measuring less than five feet, and more than three in girth), makes 264 pounds, which divided by fourteen, to bring it into stones, is eighteen stone 12 pounds. The dimensions of the girth and length of black-cattle, sheep, calves, or hogs, may be exactly taken this way, as is at all necessary for any computation or valuation of stock, and will answer exactly to the four quarters, sinking the offal, and which every man who can get over a list of chalk may easily perform. A deduction must be made for a half-fatted beast, of one stone for twenty, from that of a fat one; and for a cow that has had calves, one stone must be allowed, and another for not being properly fat.—*Cattle Keeper's Guide*.

PORTABLE STEAM ENGINE.—Messrs Carr and Smith, of Derby, have produced an ingenious new patent portable steam engine, the parts of which, though not exactly new, are extremely simple in their arrangement. The boiler, or combination of boilers, in a comparatively small space, has a very large surface exposed to the direct action of the fire, giving out abundance of steam with great economy of fire; the engine and boiler are placed together on one plate, which is mounted on wheels; the entire space occupied by a five-horse power engine is about three feet by four feet, requiring no brick work, and the cost not more than half those of ordinary construction.—*English paper*.

ITALIAN BARLEY has been lately introduced into England, and is highly praised by those who have sown it. Barley from China has also been sown in England, and is said to have produced abundantly, and to be of extremely rapid growth, so much so, that last year, the grain sown in spring was harvested in June, and the produce again sown and become ripe in October. Black wheat was imported from Russia, but the result is not yet reported. These new varieties of barley, might, perhaps, be very profitably introduced into Canada.

PAPER MAKING.—A piece of rag was put into the mill, reduced to pulp, passed into the mould, and formed into a sheet of paper six feet long, which was afterwards pressed and dried, and the names of sixty-seven gentlemen who were present, were printed on it, and all in the short space of six minutes.

## Seed Sowing.

Every grain of corn and other seed has a shell or less hard, to protect it from external injury; and at its base what is called the seed pore, or eye for the passage inwards of the nutrient pulp when the seed is ripening, and for the passage outwards of the young plant after sowing. Within the shell is the kernel, consisting of the *embryo* plant with its radicle or root, its gemlet or stem, and the neck between them, besides the seed lobe or lobes, containing materials for nourishing the plant in its first stage of growth.

Four things are indispensable in order to begin the growth of the embryo plant contained in the seed — heat, water, air, and darkness. The heat is required to bring into activity the dormant vitality of the embryo, and in conjunction with the water, to soften the nutrient materials contained in the seed lobes, and render them available for the sustentation of the youthful plant, until the perfection of its organization will have enabled it to derive its sustenance from the surrounding soil. For this purpose, pure water is better adapted than water containing any rich materials, the nutriment which nature has provided in the lobes of the seed being fully adequate and of sufficient richness to nourish the plant in its infancy or dependant state. Water for the proper nourishment of plants, however, should be more or less mixed with atmospheric air, which it always is when in a running state, or when falling in showers of rain. If a dead level, a stiff clay, or any other cause stop for a length of time, the motion of the water supplied for food to plants, becomes unwholesome, chiefly from not having an opportunity to mix with air, which it can only do by moving or circulating freely without let or hindrance. Farmers term those soils cold or sour where water lodges and does not circulate freely through. Their defect is the want of a due supply of air. The taste of the water on such soils is rapid somewhat like water deprived of air by boiling. Freely circulating air is absolutely necessary for supplying oxygen and carrying off carbonic acid gas, a process the very reverse of what takes place when plants are exposed to sunlight. For the same reason light is injurious by carrying off the oxygen requisite in the stage of growth. In sowing any kind of seed, these four circumstances should be carefully attended to. For want of heat, seeds will not come up in frost; for want of air they will not come up if too deep in the ground; and if not deeply covered they will not come up from having too much light. Few will germinate in the light. It is of the utmost importance to the success of the corn crop, that the seed be placed at the proper depth in the soil. If it be too thinly covered, from being exposed to the action of light, the nutrient contents of the seed lobes will become exhausted, before the young plant will have gained sufficient strength and power to obtain its food from the soil. If on the other hand, it be buried too deep in the ground, three or four inches, the stem of the young plant is weakened, and its strength spent, in efforts to get above ground to expose itself to the free action of light, which, the moment the nutrient functions of the seed have terminated, becomes absolutely requisite to the due performance of the functions upon which its existence and future growth depends. In this state, plants are called seedlings.

The very tip of every root fibre is furnished with a spongy sucker, which acts as a mouth to feed the plant: these are called spongetlets, and have their openings or pores

so very small, that they will not allow any solid substance, however fine to pass, nor any liquid thicker than water. All manures must, therefore, be dissolved, and made as thin as water, before they can become available as food for plants. The common air is also a most important ingredient in the nourishment of plants, hence the necessity of a free circulation of air in securing luxuriant crops. The food taken in by the roots of plants undergoes great changes, especially when it has reached the leaves. When the water, holding in solution the nutritive materials, constituting the food of plants is sucked in by the tips of the roots, and passes up into the plant, it takes the name of *sap*. The *sap* in most plants, if not in all, a clear fluid, highly sweet, becoming thicker as it rises, probably from mixing with what has previously passed through the leaves. The milky matter in lettuce, fow thistle, dandelion, spurge, and other plants, is not actually *sap*.

When the *sap* arrives at the leaves it is somewhat in a thickened state, and is spread out under the very thin skin of the upper side of the leaf, and exposed to the action of the air, as the blood is in the lungs of man and other animals. For this purpose the leaves are provided with very numerous and minute openings or pores, which admit air, and facilitate the escape of a considerable portion of oxygen gas, and the superfluous water (constituting two-thirds of the *sap*), which had been taken in by the roots as a required solvent of the food upon which the plant is subsisting. After the *sap* has passed through the leaves, and by giving out its superfluous water has become reduced to about one-third, it forms the *pulp*, chiefly composed of carbonic acid, and is of a dark blue colour; this, with the more or less yellow hue of the transparent tissue of the leaf gives it the green colour. When no pulp is formed the leaves become yellow. The influences from this are of practical importance. The change of *sap* into *pulp* cannot take place in the dark, seen light being indispensable to open the pores of the leaves; hence plants growing under thick trees, or any thing that obstructs the sun's light, cannot properly effect this important change; and the *pulp* being in consequence only prepared in small quantities, they become slender, yellowish, and sickly; the leaves, which are the organs for digesting and preparing the *pulp* from the *sap* being incapable of duly performing their functions. When the change of *sap* into *pulp* is in any way prevented, as by shade or by excessive moisture, the leaves become yellow.

The more light plants are exposed to, the harder will they be; provided they be not gorged with too watery food; and the less light they have the more feeble, sickly, and yellow they will become. The importance of wide planting and sowing according to the size of the plants, must therefore be obvious. Turnips, wheat, and other plants, by being crowded together become nearly as much shaded, at least their sides, as if planted under trees. The perfect growth and size of plants, depend upon a supply of the food proper for the formation of *sap*, and on a healthy formation of the *pulp*.

The formation of the *pulp*, in a plant is analogous to the digestive process that the food undergoes in the human or of the animal stomach, to render it capable of promoting the growth of the animal body, and of maintaining it in a state of robust health, equal to the performance of all its functions. Independent of the water and gases, which are given out by plants, in the formation of *pulp*, they throw out, by their roots, a sort of excrementitious slime, differing in different plants, but more or less poisonous or in-

jurious to the same kind of plants which throw it out. This accounts why too successive crops of the same kind do not succeed. It is not, as is generally supposed, from the plant food in the soil being exhausted, but from the excrementitious slime, which acts, upon the same sort of plants that produced it, as a slow poison. This shows the necessity of a systematic arrangement in the selection of crops to succeed each other in rotation. This excrementitious slime, though injurious or poisonous to plants of the same kind that produced it, is yet a nourishing food for plants of a different kind. Thus, the excrementitious slime given out by beans or clover, so far from being injurious, is found to be highly favourable to the production of wheat. The same has been proved with respect to the succession of other crops. In tracing the changes that take place from the time the seed corn is put into the ground, until the plant arrives at maturity, and perfects its seed, several facts present themselves to the observer which are practically of the utmost importance, and which should never be lost sight of by the intelligent agriculturist. When the seed is put in the ground, the four requisites to enable it to perform its functions and produce a seedling plant, able to sustain itself by nutriment taken from the soil, are heat, water, air, and darkness. This consideration will sufficiently indicate the points to which attention should be directed in putting the seed in the ground. When the seedling plants have become capable of maintaining a separate existence, independent of the nutriment contained in the seed, light, which in its embryotic or first stage, was so highly injurious, has now become absolutely and indispensably necessary to the performance of those functions upon which its growth and luxuriance depend, and without which, in conjunction with a free circulation of atmospheric air, it never could arrive at healthy maturity. This shows the necessity of placing the young plant at such a distance from each other as to secure for them the full benefit of light and air. The *sap*, or crude aliment, taken in by the roots, after undergoing an important change, by exposure to light and air, in its circulation through the leaves of the plant, is converted into *pulp*, or the digested and prepared food, constituting the component parts of the plant in all its stages, from the tender seedling to full maturity. Whilst the leaves are performing these functions in converting the crude *sap* into nutritive *pulp*, care should be taken that the soil be kept in such a state of tillage, and in such a condition, as to secure for the roots a sufficient supply of nutritive matter to supply the demand made upon them by the constant waste of *sap*, which the growth of the plant necessarily creates. Farmers in general pay little, if any, attention to these important points, and the consequences are an immense waste of seed, and deficient crops."—*Hints on Agricultural Economy.*

The foregoing article is well worthy the farmer's attention. We believe that in no country, would the beneficial effects of drill sowing of wheat and barley be more decidedly perceptible than in British America, provided the crop was once hoed. It would give air to the crop, and prevent, in a great degree, the disease of rust and mildew so prevalent here. The hoeing, together with the free circulation of air, would have a considerable effect in destroying, or preventing the ravages of the wheat fly. We most strongly recommend the drilling of wheat. On lands properly prepared by summer fall

loving, there would be no difficulty of drilling in the seed. It is only by this mode that the seed can be deposited in the soil, at a proper and uniform depth, so essential to a productive crop. It would secure the roots against the danger of being thrown out by the frost. One hoing might be given at one dollar the acre—it only costs half that amount in England. It is from our defective and negligent cultivation that we seldom see here, full and even crops, such as are seen in Britain. A large proportion of ears, even in our best cultivated fields of grain, are both short and poor, and this is a great drawback on the produce and sample. Let farmers that are in wealthy circumstances import drilling machines, and show an example. By hiring out these machines to other farmers, as they do in England, the cost of the machines would soon be refunded to the importers. A drilling-machine can be had from fifteen to twenty-five pounds according to size. Drills suitable for ridges of nine and of twelve feet wide would be best. In conclusion, we hope to hear that some will be imported in time to sow wheat this fall.

Though agriculture has been enriched by an introduction of many foreign plants, it still remains for us to adopt and naturalize others, and to extend the cultivation of those we now possess. The agriculture which is limited to the production of grain, supplies only a portion of the wants of society, but if it includes in its labours all the productions of which the climate and soil will admit the cultivation, it will provide for the workshop of the artisan the materials of his industry, and thus supply every necessary of life.—The lot of the agriculturist who cultivates only one species of produce, is always precarious; he is dependant not only upon the chances of the harvest, but upon the rate of sales, and the necessities of consumers, whilst he who can procure from the soil a variety of productions is nearly sure of obtaining a market for some of them.

Another advantage resulting to the agriculturist from the cultivation of a variety of productions, is the power of appropriating each portion of the land to the vegetable for which it is the best adapted, and, by this means, of preserving the soil in good condition. This mode of management offers to the agriculturist immense resources for the rotation of crops; where only grains are cultivated, it is impossible to establish a judicious succession of crops; since it is only upon a variety of productions that there can be founded that system of rotation or succession, which will preserve the land in a constant state of fertility, and permit it to produce without intermission. We have already introduced into agriculture, the cultivation of grasses, grains, oil, and roots, flax, and hemp, and have thus furnished the materials for a succession of crops.—*Chapman's Agricultural Chemistry.*

PROGRESS OF IMPROVEMENT IN EUROPE.—On Saturday evening at the opening of Mr. Blanqui's course of Lectures, on Political Economy, at the Conservative des Arts at Metzers, the professor made some remarks to his hearers, arising out of his visit to Constantinople, combating some opinions which have gained ground, in public he said: "You are told that the German Union in its state of happiness has become apathetic,

leaving to France and England to attain to the utmost limits of progress in the arts; that Turkey is a dead country, and that Russia resembles a camp filled with soldiers, ready to invade the south of Europe. There is no truth in all this—Germany is daily making immense efforts in productiveness; Austria is being covered with roads and railways, and her steamers are in every river and in the whole of the Black Sea; in Russia, I found exactly the contrary of what I expected to find, viz: immense manufactories scattered at all points, and producing abundantly and well. In the heart of Turkey I found an old Pacla, an ancient chief of Janissaries, who had hung up his terrible yatagan against the wall, in order to devote himself to commerce and the encouragement of the arts. Every where I found a powerful impulse given to manufactories and trade, and France must be active in order to maintain the rank which she holds."—*Galignani's Messenger.*

From the above paragraph we may conclude that the several countries of Europe are making great efforts to manufacture all their necessities, and that consequently, they will become less dependent upon the manufactures of Britain. In countries that are very populous, they cannot fail to introduce manufactories, otherwise a large portion of the people would not find employment, and would be idle. The cultivation of the soil would not give full employment to a numerous population, unless cultivated as a garden, and no part left in pasture. It is in countries such as British America, and other British colonies, that have a vast extent of waste but fertile lands, and a thin population, that manufactories cannot be established, and hence it will be in these colonies that British manufactures will be likely to have the most certain customers.

P. PUSEY, Esq., M. P., President of the Royal Agricultural Society, in the first page of their Journals, stated the average produce of Wheat in England was only 26 bushels per acre, and it this could but be raised to 27 bushels, it would add to the nation's annual income 475,000 quarters, worth, at 50s., about £1,200,000, which would be equal to a capital of twenty-four millions sterling, gained forever to the country by the trifling increase in the growth of one article alone; and that in England and Wales only. It is by making calculations similar to the above that we may be able to ascertain what might be the probable increase that it would be possible to bring the cultivated lands in British America to produce by a better system of Agriculture. We have no doubt whatever, that the produce on an average, could easily be doubled. That would, indeed, be a vast increase of the annual income of these Provinces, provided a profitable use could be made of this surplus produce.

#### Smith's Patent Albert Ploughs.

Such at the present time is the impetus given to pursuits of AGRICULTURAL SCIENCE, and so great is the interest taken in any and every discovery calculated to advance its prosperity, that of late the attention of scientific men has been especially devoted to objects of this class, not exclusively indeed with reference to the skillful cultivation of the soil, but in conjunction with it, and as an object of collateral, if not of equal moment, to the improvement and

perfection of various descriptions of agricultural implements in use amongst us. Hence it is that "the plough," that simple and most important of all agricultural implements, has grown up from its first simple rude, but unwieldy form, into a machine replete with scientific arrangement and artificial skill.

Amongst the most recent and valuable improvements in this department that have appeared; is an invention by Mr. Theophilus Smith, of Attleborough, Norfolk, who, himself a practical farmer, has discovered an improvement in the plough, for which he has obtained a patent, and which from all that has been said of it by the most experienced judges, is much calculated to extend the usefulness and efficiency of that essential implement of field husbandry. It is an invention of a very novel but simple character, and the object of the inventor in its construction, is to supersede the necessity of the person guiding the plough having to go to the head of the plough to make such adjustment in the apparatus, as is required to obtain the suitable elevation or depression of the plough-shave, or what is generally understood by "the deepening and flattening of plough." All which is accomplished, by this invention, by means of a simple lever, "affixed to the plough-handle, so that the ploughman never has to leave the plough for that purpose." In consequence of which, not only time is saved, and a more regular depth of furrow secured, than with ploughs in general use, but more work is done, and in a more workman-like style, and the management of the plough is so simplified, especially in reference to the wheel-plough, that a common farming servant, after a few hours trial, may obtain a better acquaintance with its workings, than often is acquired by a long practice under the old system. Practical men who have tried the invention, express a decided opinion that no farmer, once having tried the experiment, will ever return to the old method of arrangement. The Right Hon'ble the Earl of Abbercorn, Sir Robert Beecher, Bart., and the venerable Earl of Leicester, of Holkham Hall, have pronounced a highly favourable opinion on it. The inventor also had the high honour of an interview with His Royal Highness Prince Albert, who having taken the Windsor farms into his own cultivation, evinces a deep interest in the advancement of agricultural science, who having inspected the models of those improved ploughs, has spoken of the invention in terms of high approbation. Within the last few days an order has been received by the patentee from His Royal Highness, which is now being executed at Messrs. Ransome's foundry establishment, in this town, and there can be little doubt but that those improved ploughs will be brought into general use.

The above information is given in order to afford the farmer, an opportunity to make inquiry about new invented implements.

LONGEVITY.—A respectable farmer, named Cummins, residing within a few miles of Carlou, died a few days ago, at the advanced age of 111 years. Amongst those who attended his funeral was a man who had attained the age of 102 years.

"Why is it that the love of flowers takes such deep hold of the heart?" Why! Why! it is because they are the emblems of love. Show me one who does not feel his own heart expand as he watches the expanding beauties of some delicate flower, and you will show me one who knows nothing of that pure and perfect affection of the heart which binds the human family together.



TORONTO MARKETS:

For the month ending 30th April, 1842.

	s.	d.	s.	d.
Flour Farmers', in barrels.....	25	0	a	26 3
Wheat.....per bushel	5	0	a	5 6
Barley.....do.....	1	8	a	2 4
Oats.....do.....	1	2	a	1 3
Pease.....do.....	2	0	a	2 6
Clover Seed.....do.....	25	0	a	30 0
Grass Seed (Timothy).....do.....	5	0	a	5 6
Potatoes.....do.....	1	0	a	1 3
Oatmeal.....per barrel	21	3	a	22 6
Salt.....do.....	11	3	a	0 0
Pork.....per 100lbs.	15	0	a	18 9
Beef.....do.....	15	0	a	22 6
Mutton and Veal (qr.) per lb.	0	3 1/2	a	0 4 1/2
Butter.....do.....	0	5	a	0 7 1/2
Turkeys.....do.....	2	0	a	3 6
Fowls.....per couple.....	1	6	a	2 2
Eggs.....per dozen.....	0	4	a	0 5
Hay.....per ton.....	60	0	a	70 0
Straw.....do.....	30	0	a	40 0

MONTREAL MARKETS:

For the Month ending April 22d, 1842

	s.	d.	s.	d.
Oats, per min.....	1	3	a	1 6
Barley, do.....	2	6	a	2 9
Pease, do.....	3	0	a	3 4
Buckwheat do.....	2	6	a	3 0
Butter, (dairy) per lb.....	0	10	a	1 0
Do, (Salt) do.....	0	7	a	0 8
Pork, per 100 lbs.....	20	0	a	27 6
Beef, do.....	25	0	a	35 0
Flour, per cwt.....	12	6	a	13 0
Beef, per lb.....	0	3	a	0 6
Pork, do.....	0	2 1/2	a	0 5
Veal, per qr.....	1	6	a	10 0
Mutton, do.....	1	6	a	10 0
Lamb, do.....	2	6	a	5 0
Lard, per lb.....	0	5	a	0 6
Lint Seed, per bushel.....	5	6	a	6 0

With the exception of wheat the Montreal markets have been constantly supplied with all descriptions of agricultural produce in abundance, during the past six months, and there has not been much variation in the prices, until the breaking up of the ice, that beef and mutton have brought rather higher prices. The prices of oats, potatoes, and hay, are something lower than during the past winter. Farmers are not disposed to stall-feed cattle in consequence of the extreme uncertainty of the market. A large supply of fat cattle and sheep, may come in from a foreign country, at any time, and reduce the price so much, as to leave the farmer scarcely any remuneration, for the extra food and trouble of stall-feeding. If this was not known by experience, it is not possible that oats would be selling for 3s. 3d. to 1s. 6d. the bushel, and the best hay for four dollars the hundred bundles of 1,600 lbs., as it is in our markets at present. These prices are not more than sufficient to pay the expenses of labour of raising these crops, carting the produce to market, and other expenses, and not leave one shilling an acre to the farmer for his land. No farmer would sell at these prices, if he could do better by stall-feeding cattle and sheep. If the farmers of Canada would not be able to supply the few markets they have, with abundance of excellent butchers' meat of every description, they would, indeed, be unworthy to keep possession of the fine lands they hold. Let them, however, only have reasonable protection from foreign competition, and we will take upon us to state, that the market will be supplied with abundance of better meat, than it ever has been up to this moment. Though there are large supplies of neat cattle and sheep brought in here from the United States, and sold to the butchers, a great proportion of them are not well fattened, though they have the effect of reducing the prices. The encouragement required by farmers here, is a certainty of market, when their stock is ready for sale, which they never can have, while open to a supply from a foreign country, where cattle are raised and fattened under different circumstances, from those that exist with us. The expense of keeping our cattle that are stall-fed, after they are

prepared for market, must always be most injurious to the feeder.

We do not see any probability of a material rise in any description of agricultural produce for some months to come. Oatmeal, might, perhaps, be profitably manufactured for exportation, from the present extremely low price of oats.—We would recommend the cultivation of horse beans as a productive and profitable crop, and an article that may be always exported. We know they succeed well in Canada East, when properly cultivated, and sown in time, and we do not understand why they should not succeed in Canada West, under judicious management. It is very desirable that any crop, the produce of which can be exported, should be extensively cultivated. The produce of peas and beans may generally be exported. Both require early sowing. We would further recommend farmers to try the experiment of growing, even a small quantity, of hemp and flax, that might be dressed by hand labour.

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We anticipate that the change in our Terms to Agents will prove satisfactory. We have made this alteration, in the hope that the Secretaries of the different Agricultural Societies, throughout the Province, would exert themselves in our behalf. The Societies of the counties of Durham and Johnstown, have already ordered a large number of THE CULTIVATOR, and we flatter ourselves that it will be worthy of the support of every Agricultural Society established in the Province.

We receive, almost daily, communications from our friends, stating "that The Cultivator gives general satisfaction, and that they hope our exertions will be crowned with success." In reply to those flattering testimonials, we have one request to make, which, if acted upon, will place us in such a position that the ultimate of our enterprise will then be no longer a matter of conjecture. As we expect to lose the whole of our time for the current year, and a considerable amount of money in travelling expenses, we think it is not too much for us to make the request that every Subscriber should make it his business to procure, at least, one Subscriber, and see that the subscription is forwarded without delay.

DEVON BULL FOR SALE.

A THOROUGH-BRED North Devon Bull, one year old, which took the first premium at the Markham Agricultural Meeting last fall. He will be exhibited in Toronto, upon the 11th of May next, at the SHOW. He is offered for sale in consequence of the owner's leaving Canada for England. For particulars, as to pedigree, &c., reference can be made to R. GAFFER, Esq., Yonge Street. Also, some choice Ewes, with lambs by Mr. Hockridge's ram.

JOHN PROUT.

Lot No. 24, 8th Con., Pickering, 24th April, 1842.

CATTLE SHOW.

HOMEDISTRICT AGRICULTURAL SOCIETY.

THE

Spring Fair and Fat Cattle Show,

WILL be held on Wednesday, the 11th day of May next, at the City of Toronto, on the open space in front of the New Gaol and Court House, when the Society will award the undomentioned Premiums, for the following Stock:

HORSES.

	First	Second	Total.
Through bred Stallions.....	£5 0	£2 10	£7 10
Druggist Stallions.....	5 0	2 10	7 10
Saddle Stallions.....	5 0	2 10	7 10
Druggist Mares.....	2 0	1 0	3 0
Saddle Mares.....	2 0	1 0	3 0
Yearling Horses reared in the District.....	1 10	0 15	2 5
Yearling Mares reared in the District.....	1 10	0 15	2 5

HORNED CATTLE.

Bulls—aged.....	3 0	2 0	5 0
Bulls—two years.....	3 0	2 0	5 0
Bulls—yearling.....	1 10	1 0	2 10
Cows.....	2 0	1 10	3 10
Heifers—yearlings.....	1 0	0 10	1 10

FAT CATTLE AND SHEEP.

Pair of Fat Cattle, reared and fed in the District.....	3 0	2 0	5 0
Pen of Three Fat Sheep, reared and fed in the District.....	2 0	1 10	3 10

Total amount to be awarded, £50.....£50 0

No Mare shall be entitled to receive a Premium, unless she either have a Foal by her side, or the owner prove that she be with Foal.

No person shall receive a premium for Stallions or Bulls, until it shall have been certified by two Members of the Society, that the same have remained in the District during the coming season.

All Bulls, except Yearlings, must be secured by a ring in the nose, with a chain or rope attached, to prevent any accident.

Persons desirous of competing for any of the above Premiums, who are not Members of the Society, must pay the sum of Fifteen Shillings on entering their Stock. Members who have paid their annual subscription, are entitled to shew stock without any extra charge.

The Certificates of Stock entered for competition, with the name and residence of the owner, must be handed to Mr. George D. Wells, the Secretary, at the Court House (in one of the rooms which the Sheriff has obligingly given for the occasion) before 11 o'clock on the morning of the exhibition—at which hour the Lists will be closed; and no Stock, not included in the Secretary's List, will be allowed to enter into competition.

In order to prevent any idea of partiality in awarding the Prizes each Competitor for a Premium shall be furnished by the Secretary with a Numerical Ticket, to be fastened to the animal entered for a Prize.

A large number of very superior Stock will be offered for sale, at Public Auction, immediately after the Fair.

GEORGE D. WELLS,

Secretary.

Toronto, April 1842.

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