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OFFICIAL SERIES.

THE FARMERS' JOURNAL,

AND

Transactions of the Board of Agriculture

OF

LOWER CANADA.

VOL : XII.

MAY, 1860.

NO. 9.

CONTENTS.

(General.)

FARMERS' JOURNAL.—(*Editorial Matter*;) Application of the Sciences to Agriculture; Grazier and Breeder; Poultry Yard; Rural Architecture; Enquiries and Answers; Foreign Agricultural Intelligence, Obituary, and Critical Notices, &c.
HORTICULTURAL JOURNAL.—(*Editorial Matter*;) Entomology, Meteorology; Ladies Department; Markets.
EMIGRATION.

All communications to be addressed—If for the French Journal, to J. PERRAULT, Esq., Secretary-Treasurer and Editor:—If for the English Journal, to JAMES ANDERSON, Esq., F. S. S. A., &c., &c., Editor, Board of Agriculture, Montreal.
N. B.—Communications received before the 15th of each month will appear in the ensuing Number.

*"O! fortunatos nimium, sua si bona norint,
Agricolos! quibus ipsa, procul discordibus armis,
Fundit humo facilem victum justissima tellus"*
VIRG. GEO.

MONTREAL

PRINTED BY DEMONTIGNY & C^o PROPRIETORS & PUBLISHERS

18, St. GABRIEL STREET.

Subscription One Dollar per Annum

MAY, 1860.

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SUMMARY.—Seasonable remarks—Winter and Spring wheat—Importance of winter wheat crop—How it might probably be risked in safety—General Drainage Bill—How to double the agricultural produce of Canada—Seasonable remarks continued—The garden—Trade prospects—How may the country become self-supporting?

This is the month of the Farmers' toil. During the winter months he should have matured his plans for the approaching season. He has decided on the course to be pursued in the cultivation, cropping, and management of every field. No doubt he may see fit to make many modifications in the carrying out of his pre-arranged system as the season advances, but this will not materially alter the scheme of operations. His stock will now be benefitting by his previous industry in storing up an ample supply of roots and fodder, and this will appear in the thriving and healthy condition at this urging season. Old hay should be steamed and salted to render it palatable; roots should be examined, and decayed ones removed, otherwise, by neglect, a great portion which might by their timely removal be saved, will become totally unfit for the use of stock, and only fit for being carted into the manure heap. The mouths of covered drains must be examined, and obstructions removed—ditches and furrows cleaned out, and channels made for the removal of all stagnant surface water without delay. But he should be careful not to commence ploughing till the ground has been tolerably dry, for, otherwise, he will be but preparing an unfavourable seed bed. We have in previous articles recommended attention to procuring abundant firewood and fencing timber to last till next fall, and attention to repairs as soon as the season will permit.

It is believed that winter sown wheats have suffered severely in many situations, from the sudden changes of temperature. Several march days resembled those of april and may. But in the latter portion of march we experienced cold north-westerly winds, which could not fail to prove injurious. We must be careful hereafter to change our seed frequently—always selecting the growth of different soils and climates, for, by neglecting this precaution, we have frequently been great sufferers. Spring wheat is now largely grown in the Upper Province, it is superseding the winter varieties—and they have been able to reckon on the product with considerable certainty. They resorted to this inferior crop from the great injuries sustained in late seasons by the attacks of insects and severe frosts. Winter wheat brings a higher price in the market, but on wet lands, especially, spring wheat is much more certain and profitable—although the returns for the latter crop would be largely increased by efficient drainage. The rolling of light soils, as early as possible, will be found a good remedy and preservative against the throwing out of the young plants. In cases where the crop has been irreparably injured, no time should be lost in ploughing the ground immediately, and sowing it with spring wheat, or some other crop.

Every means should be tried to raise fall wheat. The first requisite is to have the land thoroughly drained. But the growth of fall wheat, as a sure and abundant crop, would be of incalculable advantages in Lower-Canada. The soil best suited for it is a strong clay soil, thoroughly drained, as looser soils do not afford sufficient anchorage for the roots after severe frosts—the latter being very apt to be thrown out as the soil expands. But to succeed in growing this valuable crop, we must have thorough draining and deep ploughing; for in damp

soils, when the snow and frost are disappearing in march and april, the most dangerous period is experienced ; for if snow water becomes frozen on the surface, the young plants are apt to be destroyed, and it is still more injurious when it comes on slowly with alternating of thaw and frost. There is no such danger with thorough drained land. Would not general drainage and deep ploughing then, be of incalculable service to Lower-Canada ? When we have a fall of snow during the night, which is soon melted after sunrise, the thawed soil becomes saturated with moisture, and being unable to penetrate downwards through the indurated inferior stratum, it continues hardened ; and the saturated soil freezing during the night, raises up the superficial layer of earth subject to its influence, and rends the plants and their tender rootlets growing therein. The latter are upturned and torn by this means ; and during the day, the earth thaws again and becomes collapsed, falling back into its original position ; but the plants remain high and bare on the surface. This process is often repeated for several days and nights in succession, and every repetition of the process becomes more and more destructive. The more porous and light the soil the greater the danger. Wheat looking promising in march, has often been almost completely destroyed by such causes. But if soils were thoroughly drained, the cause would be removed to a great extent, and with it the effect ; and Eastern Canada would again become a wheat growing country,—and the more valuable crop of *Winter Wheat* might be risked with safety. Light soils would answer better for spring wheat ; and by draining, too, the wheat crop would be saved from the loss wrought by rust and the weevil. There can be no doubt on this score ; and the government would by the introduction of a Drainage Bill attain their object in effecting the permanent riddance of these pests, and the agricultural produce of the country would speedily be increased twofold. There can be no doubt on this point, and the Legislature could adopt no more certain or speedy method of increasing the revenues of this country, and getting rid of her indebtedness, and restoring the balance between its imports and exports than by passing a General Drainage Bill through both Houses of Parliament. Any other proposed means will prove no better than quackery and imposition. We shall be but imposing upon ourselves. By doubling the agricultural produce of the country we shall be opening an inexhaustible mine of wealth—ever increasing in productiveness, and it would require no prophet to predict the beneficial results which must follow. *This is the true solution of the problem ; what are we to do to restore to us prosperity ?* We may attempt reduction of expenditure—we may chop and shift as we please — we may take out of one pocket and put into the other, and drain the country of gold to equalize the account with strangers—but unless we increase the productiveness of the country we cannot expect to thrive—it is mere imposture and make-believe wisdom. We are imposing on ourselves—getting certainly poor and increasing our indebtedness. By increasing the surplus produce of the country we rectify this at once, and permanently, and it is clearly the only certain and rational remedy. Who can doubt the wisdom of falling back then on a General Drainage Bill for Canada ? It can only be resisted by the obstinacy of ignorance. It is the first improvement in agriculture. It should precede all attempts at good farming. Both manure and labour are expended in vain without this preliminary improvement. The material resources of the country are prodigally wasted—the returns are small and uncertain ; and instead of abounding prosperity, we are constrained to content ourselves with debt and dependance at home and abroad.

If still unattended to, cellars must be forthwith cleansed from decaying vegetables and other impurities—white washing the walls. Let them be freely ventilated, as a sanitary precaution. Sow the different varieties of seed as the weather will permit. Continue draining as convenient opportunities offer.—

Complete unfinished fences. Take care to comminute diligently with the harrow, so as to produce the finest tilth. Give full feed to working teams. Take care that they be warmly housed, and not exposed to chills. Foraging crops, such as Lucern, ought to be more generally sown, to provide a green bite in the warm weather of summer—when the pasture becomes bare. Be at all times careful in collecting and preserving manures—covering the heaps with plaster, muck, or earth to prevent evaporation and unnecessary waste. Do not allow stock to trample the meadows, top-dressing the poorer fields with any well rotted spare manure. In ploughing, ever endeavour, where the quality of the subsoil will permit, to go a little deeper, thus renewing and fructifying by intermixture the surface soil. Take care to provide for a large supply of roots against next season, that your feeding resources may improve and keep pace with the improved quality of your stock. This is the only safe means of preserving the condition and retaining the perfections of improved breeds. Much money has been frequently wasted in purchasing improved stock, and permitting them to deteriorate year by year on insufficient keep. Before introducing such on your farm, you must have the means of supporting them in vigour. Take care to be generous to your lambing stock. Cleanse your hog-pens, using charcoal dust or plaster. Cart in muck, road scrapings, or waste soil and such substances of all kinds, as you may be able to procure to enlarge the compost heap.

The busy season for the garden is at hand. See that the ground is thoroughly prepared by deep ploughing or trenching and heavy manuring. Be careful to select good seeds. Your extra care and labour will repay better in vegetable gardening than in most other ways.

Canada, which has so long been suffering with the Western States, begins to show some hopes of reviving prosperity. The revenue of the country is improving,—while the expenditure has been lessened. Lower-Canada compares well with some western localities, and their neighbours of the United-States are far worse off than themselves. Another good crop will place Canada in as favourable a position as before the speculative times. But in order to enjoy uniform prosperity, it is now thought by many that Canada must lose no time in multiplying and extending her productive resources. Thus may the country become, in due time, self-supporting. We have woolen mills already in operation. Attention is being directed to the manufacture of Flax. In last months' Journal and the Transactions of the Board of Agriculture, we have dwelt at some length on this important subject. Arrangements have been made for the establishment of cotton factories. We need not allude to our iron foundries, producing super-excellent work in many cases. In Lower-Canada, especially, the inducements for investments in manufactures are many and tempting. We have abundant water power and cheap labour. Now that the abolition of the differential duties on canadian timber have supervened, we should avail ourselves of the natural facilities we enjoy for the introduction of other branches of artificial production, and endeavour, by the manufacture of artificial manures—from the refuse of our fisheries, and from the illimitable produce of these themselves—from doubling our surplus agricultural produce by judicious drainage and improved culture, and every other available source—we must endeavour we say, by every legitimate means, to make up for the deficiency—to equalize our exports and imports by permanently and progressively increasing the aggregate exports of the country. But in initiating these new productive branches of manufacture, we must have a care to the whole industrial production, and the existent exigencies of the province—to the demand at home, and the probable demand in foreign markets. We must endeavour by every means to prevent a glut at the outset, which might act most prejudicially in disheartening many enterprising and energetic minds.

Publications Received.

We have just received a publication, styled "The Orchard House," or Culture of Fruit Trees, in pots under glass, containing plans and estimates for construction, details of management and culture, and a List of Fruits best adapted for the purpose ; by Thomas Rivers, Sawbridgeworth, England ; with an Appendix, containing additional directions for growing Trees and Vines in Orchard Houses ; by William Saunders, Landscape Gardener, Germantown, Pa., with illustrations. This publication is a safe guide, and will well repay perusal.

We have also received various Catalogues of Trees and Plants—from Mr. W. C. Strong, at Nomantime Hill Nursery, Brighton, Mass. ; Mr. D. M. Dewey, Agt., Rochester, N.-Y., &c., &c., &c.

With other new publications, we have much pleasure in welcoming "Thompson's Mirror of Parliament," being a Report of the Debates in both Houses of the Canadian Legislature. A faithful Record of the opinions of the Representatives of the people on subjects of public general interest, is beyond all doubt desirable, — always supposing we are fairly represented. If well conducted, it will prove a reliable Indicator and Register of the progress of public opinion in this country. We have no doubt that in the hands of the enterprising proprietors it will realize everything we could desire.

We have the pleasure once more of calling the attention of our Readers to the valuable Pamphlet of Dr. E. VanCortlandt, of Ottawa City. We shall not fail to avail ourselves of its contents, and extract liberally at the earliest possible moment.

"The Council of the Board of Trade for the City of Ottawa, in submitting their report for the past year, are happy in being enabled to congratulate their fellow citizens generally, and the manufacturing and commercial interests particularly, on the healthy tone of business operations—the stability of public credit, and the bright prospects for the future such results afford.

"The country furnishes, amongst other valuable economic materials, some of the best building and ornamental stone in the world, as well as vast quantities for the very best hydraulic limestone, from which a cement, unsurpassed for hydraulic purposes by any other in the world, is manufactured. Our talented fellow-citizen, Dr. E. VanCortlandt, has lately published a small pamphlet entitled the Building Stone of the Ottawa, in which this subject is treated in the scientific and skillful manner so peculiarly the Dr.'s own. We cannot do more than merely enumerate the varieties he so happily describes : Granite, Calumet Sandstone, Chazy Sandstone, Calciferous Sandstone, Limestone, Arnprior Marble, Grenville Marble, Portage-du-fort Marble, Pakenham Marble, Transition Limestone, Trenton Limestone. Some of those, especially the marbles, are the most beautiful for texture and color found in any country. The City Council, much to their credit, ordered a large publication of Dr. VanCortlandt's pamphlet."

A FEW HINTS ON GARDENING.

Owing to the frosts and chilling winds that prevail during the month of April, and often into the early part of May, very little work is done in the garden ex-

cepting it be in the matter of planing out trees and bushes ; grafting and pruning, and preparing the ground by rough digging or bringing in manure. The second week in May is generally the time for putting in all kinds of garden seeds: any time from the first week in May to the last, sowing may be carried on. Kidney beans are seldom quite secured from frost before the 25th. I have seen both beans, melons, and cucumbers cut off in one night, when they were in six or eight leaves. If the season be warm and showery early sowing may succeed, but unless guarded by glass, or oiled-paper frames, the tender vegetables should hardly be put in the open ground before the 18th or 20th May ; corn is never safe before that time. The coldness of the ground and the sharpness of the air, in some seasons, check vegetation, so that the late sowers often succeed better than they who put the seeds in early. Having given some directions in various places about planting corn. Potatoes, melons, and some other vegetables, I shall now add a few memoranda that may be useful to the emigrant-gardener. If you wish to have strong and early cabbage-plants, sow in any old boxes or even old sugar-troughs, putting some manure at the bottom, and six or eight inches of good black leaf-mould on the top, and set in a sunny aspect. The plants thus sown will not be touched by the fly. If sown later in May, set your trough on some raised place, and water them from time to time. Or you may sow upon the open ground, and sprinkle wood-ashes or soot over the ground : this will protect the plants. The fly also eats off seedling tomatoes, and the same sprinkling will be necessary to preserve them.

In sowing peas, single rows are better in this country than double ones, as unless there be a good current of air among the plants they are apt to be mildewed.

Lettuces sow themselves in the fall, and you may plant them out early in a bed, when they will have the start of those sown in the middle of May.

Those who have a root-house or cellar usually store their cabbages in the following way : they tie several together by the stem near the root, and then hang them across a line or pole head downwards : others pit them head downwards in a pit in the earth, and cover them first with dry straw and then with earth above that. The stem with the root should be stored by till spring, when if planted out, they will afford good, early, tender greens at a season when vegetables are not to be had.

There are many substitutes for greens used in Canada. The most common one is the Wild Spinach, better known by its local name of Lamb's quarter. It grows spontaneously in all garden grounds, and may be safely used as a vegetable. It is tender, and when thrown into boiling water with a little salt, and cooked for five minutes, and drained, and sent to table like spinach, is much esteemed by the country people.

The Mayweed, a large yellow ranunculus that grows in marshy wet places, is also freely used : but be careful to use no wild plant unless you have full assurance of its being wholesome and that no mistake has been made about it. There is another wild green called Cow-cabbage that is eaten, but this also requires an experienced settler to point it out.

It is always well to save your own seeds if you can. A few large carrots should be laid by to plant out early in Spring for seeds. Onions the same, also beets, parsnips, and some of your best cabbages. Seeds will always fetch money at the stores, if good and fresh, and you can change with neighbours.

If you have more than a sufficiency for yourself do not begrudge a friend a share of your superfluous garden seeds. In a new country like Canada a kind and liberal spirit should be encouraged ; in out-of-the-way, country places people are dependent upon each other for many acts of friendship. Freely ye will receive, freely give, and do not forget the advice given in the scriptures, "Use hospitality one to another," and help one another when you see any one in distress ;

for these opportunities are cast in your way by God himself, and He will require the use or abuse of them at your hands.

Rhubarbs should always find a place in your garden : a cool, shady place and rich soil is best : throw on the bed in the Fall a good supply of long dung, and dig it in the Spring. A barrel without a bottom put over a good plant, or a frame of an old box, will make the stalks very tender and less acid. The Giant Rhubarb is the best kind to plant.

A bed of Carraways should also find a place in your garden ; it is always useful, and the seeds sell well, besides being valuable as a cattle medicine.

A good bed of pot-herbs is essential. I would bring out seeds of Balm, Thyme, and Sweet Basil, for these are rarely met with here. Sage, Savoury, Mint and Peppermint are easily got.

Sweet Marjoram is not commonly met with. I would also bring out some nice flower-seeds, and also vegetable seeds of good kinds, especially fine sorts of cabbage. You should learn to save your own seeds. Good seeds will meet with a market at the stores.

Most kinds of seeds grow more freely if soaked in soft water from twelve to forty-eight hours before sowing ; seeds of hard nature such as blood-beet, mangel and sugar beets, nasturtium, &c., often fail from want of attention to this circumstance. Rolling the ground after sowing is very beneficial, and will assist in making the seeds vegetate more freely ; when a roller is not at hand, it may be done with the back of the spade, by flattening the earth and beating it lightly.—Kidney or French beans, may be planted any time in May in drills two inches deep, the beans two inches from each other, the drills about eighteen inches apart. If a regular succession is required, sow a few every few weeks from the first of May, to the first of July. For climbers the best sorts are the white Lima, dwarf white haricot, bush bean and speckled red. Broad or Windsor Beans, do not succeed well in this climate, the summer heat coming on them before they are podded, which causes the blossoms to drop off.

The best soil to grow them in is a rich, stiff clay, and on a northern border shaded from the mid-day sun : sow in drills two feet apart, two inches deep, and the seed three inches asunder.

Blood Beet, Long and Short Turnips, may be sown in a good, rich, deep soil, about the first week in May. Draw drills about one foot apart, and one inch deep ; sow moderately thick ; when the plants are up strong, thin them out the distance of six inches from each other in the rows. Broccoli and Cauliflowers require a deep rich soil of a clayey nature, and highly manured. To procure Cauliflower or Broccoli the seed ought to be sown in a hot-bed early in March ; when the plants are quite strong and healthy, they may be planted out in the garden about the middle of May. Plant in rows two feet square. The kinds that will do well in this climate are the Early London, and French Cauliflower, Purple Cape and Walcheren Broccoli.

Cabbage, both early and late, may be sown any time in May. The best situation for raising the plant is a rich, damp piece of ground, shaded. Seed sown in a situation of this kind is not so likely to be destroyed by the fly. When the plants are strong they may be planted in rows, and managed the same as directed for cauliflower.

The best kinds for summer use are the Early York, Battersea and Vannack : for winter use the Drumhead, Large Bergen and Flat Dutch.

Cucumbers may be sown in the open ground any time in May. They require a good rich soil. Sow in hills four feet apart, leaving only four plants on each hill. The cucumber and melon vines are liable to be attacked by a yellow fly or bug. Soot, charcoal-dust or soap-suds, applied to the plants, will assist in keeping them off. Musk cantaloupe, nutmeg and water melons may also be sown at

the same time, taking care to sow the different kinds a good distance apart from each other, as they are apt to mix. Plant in hills three feet square, leaving only three plants in each hill. When the plants have grown about six inches, stop or pinch the leading shoot, which will make the plants throw out side shoots, on which you may expect to have fruit.

Carrots.—The most suitable ground for growing Carrots, is a deep rich soil, that has been well manured the previous year. Sow any time in May, in drills one foot apart.

When the carrots are up, thin them out, four inches apart, and keep them free of weeds. The kinds that are generally sown in the garden are, the Early Horn, Long Orange, and Red Surrey : for field culture the white Belgian and Altringham. The produce of one acre of field carrots, when properly cultivated, may be rated at from five hundred to eight hundred bushels. In cultivating them on the field system the drills ought to be two feet apart, and the carrots thinned out at least twelve inches asunder.

Celery.—This vegetable is much esteemed as a salad. To have early Celery the seed should be sown in a hot-bed, in the month of March ; for winter celery the seed may be sown any time before the middle of May. Sow on a small bed of fine rich earth : beat the bed a little with the back of the spade ; sift a little fine earth over the seed ; shade the bed with a mat or board till the seeds begin to appear. Celery plants ought to be picked out into a nursery-bed, as soon as they are two or three inches high. Cut their roots and tops a little, before planting : water them well, and shade them from the sun, until they begin to grow. Let them remain in the nursery-bed for one month, after which they will be fit to transplant into the trenches.

As a corrective to the sourness of very damp rich new soil, a light sprinkling of wood ashes is very useful. Leached ashes are very good on some soils. The most splendid cabbages I ever saw were raised on ground where the spent ashes from a leech barrel had been ploughed into the soil. The kind grown were the Conical cabbage and Portugal ivory-stemmed. The plants were from new seeds from the Cheswick gardens, and its cabbages caused quite a sensation among the country gardeners.

Hops.—This most useful plant no settler's house can dispense with : they are generally grown about the fences of the garden, around the pillars of the verandah, or porch of the dwelling-house ; or in hills in the garden. When in open ground, the hop must be supported with poles at least ten or fifteen feet high, set firmly in the ground. The hop must be planted in very rich mould, and early in the Spring, that is before the sprouts begin to shoot above the ground. Two good buds at least are required for every root that you set. The Hop seldom is of much benefit the first year that it is planted, though if the ground be very rich, and the roots strong, the vines will produce even the first year. A little stirring of the mould, and a spadefull or two of fresh manure thrown on the plant in the fall, when the old runners have been cut down, will ensure you a fine crop the second year. When plucked they should be carefully picked from leaves and stalks, and spread out on a clean floor in a dry chamber ; and when quite dry packed closely into bags and hung up in a dry place. Many persons content themselves with cutting the vines long after they are ripe for gathering, and throwing them into a lumber room, there to be plucked as they are required ; but this is a very slovenly way. Children can pick hops at the proper season, and store them by when dry, without much labour, and just as well as the mother could do it herself.

Asparagus.—This is a delicious vegetable. What the old bed requires in the Spring is to cut off the last year's stalks just above the ground, and burn them ; loosen the earth about the roots, and clean up the whole bed. As the sweatness

and tenderness of this plant depends upon its rapidity of growth, the soil should be made very rich.

Beans should be planted as soon as you feel securc from frost. They are ornamental when planted in hills two or more feet apart, with birch sticks about the edge, and tied together at the top.

We feel bound constantly to urge upon the attention of our readers the profit and importance of a good garden. Its influence is good every way. It spreads the table with palatable and nutritious food, and fills the dessert dishes with luxuries, and thus saves the cash which must otherwise be paid for beef, ham, veal, and lamb; besides promoting the health and spirits more than the meat would. Then a good garden is a civilizer. The garden and orchard beautify the home wonderfully and kindle emotions which never die out of the heart.

VALUE OF AGRICULTURAL PAPERS.

It is surprising to see the indifference manifested by farmers generally in regard to the success of Agricultural Papers. One would naturally suppose that every individual who cultivates the soil, would be deeply interested in everything calculated to increase his knowledge in that calling by which he lives; but strange to say, so far from this being the case, the majority of farmers do not even subscribe to an agricultural paper.

I am sure that this indifference arises mainly from a want of appreciating the benefits to be derived therefrom, and the very erroneous, but I am sorry to say, generally prevailing opinion, that "almost any man ought to know how to farm." If we talk to a doctor, a lawyer, or a merchant, on any agricultural subject, he will discourse with the greatest assurance, and ten to one if he does not set up his opinions in opposition to ours, and even offer his advice on some matters of importance: but let the farmer dispute the opinions of any of these worthies, and offer to advise *him* in *his* calling, and he will be filled with indignant surprise that a mere clod-hopper, should pretend to know anything about a profession which he had never learned. Now I confess I can see no difference between one man offering his advice about selecting a stock, studying a brief, or making up a prescription, without having learned how, and another man, holding forth on the best method of fattening stock, or renovating old pastures, without having learned how to do either.

Now I think the main aim of an agricultural paper should be, to disseminate knowledge concerning the art, and to give the farmer a more exalted opinion of his calling, for comparatively few men will take the trouble to acquire knowledge unless they think it will be of advantage to them. Let the farmer continue in the belief that he does not need book-learning—that his father got on very well without it, and why not he, and he will benefit very little by an agricultural paper, *even if he takes one*. But let him awake to the fact that his profession is the noblest in the world—one in which the brightest genius and most profound research may find ample scope, and he will be impelled to read and think, and will eagerly seek after and profit by anything that will throw light on his practice. This is the main advantage of an agricultural paper, first to awaken a spirit of inquiry, and then to feed it.

Surely no one will deny that more useful information can be obtained from a good agricultural monthly or weekly, than in any other way at the same cost and trouble, embracing as it does all subjects of interest to the farmer, and constituting a medium through which farmers may communicate their thoughts and

experience to each other. Have we a valuable horse or cow that seems in an unthrifty condition, and are we at a loss to know the cause—or have we a piece of waste land that we wish to reclaim—do we want information in regard to any operation we wish to perform, how eagerly do we seek the opinions of those who may have had experience in the matter, and sometimes put ourselves to considerable trouble and expense to obtain advice on the subject—while for 50 cents a year we can get a monthly paper, or for \$2 a weekly, affording the opinions and practice of the ablest and most successful men in the country on all these subjects.

In view of these facts, let me request every man who aspires to be a tiller of the soil, to lend a helping hand to promote the common good by encouraging those who are laboring to elevate his calling. There are many good agricultural papers published, and at a surprisingly cheap rate. Now is the time to subscribe. At the commencement of the year lose no time, but subscribe without delay to at least one good paper devoted to your interest; and he must be either supremely wise, or hopelessly stupid, if he does not find it the best and most profitable investment he has made during the year.—Geo. ESSON.—*Canada West.*

TURNIP CULTURE.

At a recent meeting of the York Township Agricultural Society, Mr. Philip Armstrong read the following paper upon turnip culture :

Mr. Chairman and Gentlemen,—After several requests, as the successful competitor in the last turnip match, under the auspices of the Etobicoke Agricultural Society, I have prepared a paper on the culture of turnips, which I shall now read. The reproach which is every day made to the husbandman, of his indifference towards new modes of culture, appears to me not to be well founded. He wishes first to see and compare them with the methods to which he has been accustomed, he has neither the knowledge nor the means of forming before hand a just estimate of the advantages which they offer him; he has no alternative, but to persevere in his old course till some neighbour, richer and more enlightened than himself, is able to present to him, by the new mode, results more advantageous than he has obtained from his own. Example is the only lesson profitable to a husbandman, and when his eyes and reason are convinced of its goodness, he is not slow to follow it, and by no other means can improved methods of agriculture be introduced and propagated. A good agriculturist will, in the first place, make himself acquainted with the nature of his soil, in order to know the kind of plants best adapted to it, and as in each locality the soil presents shades of difference, more or less marked, according to the exposure, composition, depth of soil, &c., the proprietor ought so to vary his crops, so as to give to each portion of the land the plants for which it is best adapted, and thus establish a particular rotation of crops upon the several divisions of his estate. And now we come to the point in question, namely—the Swede turnip—a most valuable root, either for domestic or animal use. It requires no argument to convince a man of the real value of a good root crop, after so many disappointments owing to the ravages of the fly and other causes, I have devoted much time and attention to the cultivation of roots, and especially that of turnips, and by the blessing of Providence, for the last sixteen years, without intermission, I have been successful. And now the question may be asked, what is a good crop, and the mode of your cultivation? A good crop will range from eight to thirteen hundred bushels per acre; and the mode of cultivation is as follows:—Com-

mence your preparations, in the fall of the year by giving a good manure, spread it well and plough it in, very shallow, and then in the spring cross plough it as deep as possible; then give a light harrowing; allow it to remain in this state until you have finished your spring cropping. Then turn to your turnip land and plough and harrow as often as time and circumstances will admit, and there is no danger of too high a state of cultivation for this crop. The seed should be sown on the same day your land is made ready, if possible, either in drills or broadcast; if in drills, twenty-four inches apart at least, and two pounds of seed per acre: drills decidedly preferable. The time for sowing, from the first to the twentieth of June, but, as a general rule, I prefer finishing on or about the tenth weather permitting. The land best adapted for the Swede turnip is either a clayey loam, or a light loam with a clayey subsoil; the former will yield invariably a better crop. And now we come to the fly, which of all things is most dreaded, and many of my neighbours have got it into their heads that I have a something they know not of, as a preventive, and that something every farmer in Canada may have if he adopts the principal laid down, that is to say: a thorough good tillage and due attention until the plant is matured. Apply your cultivator and hoe freely, and that in good time. I cannot pass, however, without adverting to the old system of turnip sowing. The land was prepared, and perhaps laid several days waiting for rain or a good season to sow, as they would term it; then, if in drills, a deep opening on the top of the drills, and the seed scattered in such a depth that it would be several days before the seed could germinate and the plants appear, and that such an irregular manner and weak state that the fly would consume them as fast as they appeared. Hence, in many instances, the conclusion would be, the seed was bad. But on a careful examination of the drills, there would have been found a puny white stem, with the seed leaf nipped off by the fly. But within the last year or two seed drills have been introduced, and our farmers have been more successful. There is another great defect which I shall now point out, and allow me to invite you to the field, in order that I may show why I have recommended such a process of culture; for be it remembered we are only speaking with regard to our own soil and climate, and now as we enter the field we see a piece of ground, well prepared to all appearance, and very systematic; plants abundant, healthy, and strong, and even long after the bulbs are formed. But all at once we discover a change; first, a flagging of the leaf, then the leaves begin to decay, turn yellow and fall off, the turnips have a very bad shape, and instead of a top like that of a turnip, a thick coarse stem; and if you examine them you will find that they are affected at the heart, and before the time of gathering, there will only remain the outside shell, and that of hard woody fibre. And now let us inquire into the cause. As you pass through the turnip patch thus affected, you will find in all cases the highest and lowest point of the fields the worse; hence we discover the cause at once, and attribute it to too shallow tillage; the roots in search of food have entered upon a harsh, stern subsoil, and this is the effect always produced, not only among the tender but even among the more hardy plants. And even our fruit trees in many instances are suffering very materially from the careless and indifferent manner in which they have been planted. The cause here spoken of may be produced as follows—either by too shallow a tillage, or large masses of dry manure put on in the spring, and the low places may be suffering partly from wet, either from surface or under water; hence in the latter case drainage is necessary. With regard to the cost (I speak here of my own) and the price of turnips, what they are worth on the ground. Allowing, then, for my team at the rate of twelve and sixpence per day, laboring men at three and ninepence, women or boys at one and tenpence-halfpenny per day, the whole of the expenses from the preparing of the land until the turnips are

carefully put away, and made safe for the winter, amounts to six pounds five shillings per acre ; then take the lowest average I have mentioned, eight hundred bushels per acre, at the rate of tenpence per bushel, amounts to £33 6s-8d, then deduct the expenses, £6 5s, leaves a balance of £27 1s 8d per acre. But if the distance be great from a market I should only rate them at sixpence per bushel, but might take a larger average than eight hundred bushels. Some may say how many loads of manure do you put on for the acre, and what do you value it at ? Such questions as these we leave with the farmer, but the inquiries may be answered in this manner, it depends entirely upon the state of the land, and kind of soil ; while some land would be in such a state as to produce a crop without manure, others might require twenty or thirty wagon loads. But I do not see why the turnip crop should be taxed for manure, as the successive crops will receive equal benefit. The turnip land is best adapted for barley or spring wheat, and may be seeded down, and thus you have at least four crops in succession. And now, gentlemen, let me say in conclusion, as this subject is intended for discussion, I have omitted much that might have been introduced, such as the nature of earth or soil, and their action upon vegetation, and also the nature and action of manures, and the influence and action of the atmosphere upon the plants.

HOW TO MAKE FARMING PAY.

Another step towards rendering farming a paying business, was then, as it now is, the adoption and carrying out of a renovating system. My idea was, that if twenty tons of grain and straw were removed from a field, not less than that number of tons of good manure must be returned to it. To carry out this theory, my stables and barn-yard were so arranged and constructed, that no manure, either liquid or solid, was lost. The manure from the horse stalls, instead of being out in a heap, where it would soon heat and become fire-fanged, was taken out on a wheel-barrow from the stable and scattered about the yard under the open sheds. The manure from the cattle stalls was treated in the same manner. The liquid manure was, and now is, collected beneath the stable floor, and pumped into wooden conductors which carry it to any desired part of the sheds, where it is absorbed by the stable manure. This aids its decomposition and keeps it from being fire-fanged ; and as it is all under shelter, there is no danger that the manure will be saturated with water, so as to make it unnecessarily heavy to haul out, nor will it lose any of its fertilizing qualities by leaching. When manure is exposed to the influences of the weather, where it can leach, the best part of it is always carried away first.

Another step in carrying out a renovating system is, to consume as much coarse grain as possible, in making beef and mutton. A farmer, in order to make farming pay well, must be a consumer as well as a producer. Point us to a farmer who does not consume, yearly, a good portion of his coarse grain in making beef and mutton, and of course does not make a good supply of barn-yard manure, and we will point out a system of management which will soon impoverish and ruin, for one generation, any good farm, unless a vast amount of foreign manure is applied to the soil. Every farmer should make his own manure as far as is practicable. It is a most ruinous policy to expend large sums, annually, for foreign manure or for any kind of fertilizers, when all the available substances of a farm are not wisely used up in making manure in some shape.

One of my first steps towards renovating my farm, when I commenced farming, was—and I have never abandoned it—to keep as many steers or bullocks

during the winter as I could conveniently, so as to consume all the coarse fodder and coarse grain, ground into meal, that could be used up economically. Of course, my cattle have always been fed in stalls, and nothing is wasted. I always endeavor to have all their food palatable, and make them eat everything up clean. And while multitudes of farmers aim to keep their stock during the winter on the *least possible allowance*, my aim is to make them eat as much as I can, by feeding a variety of food *every day*.

It is by no means an economical way to consume fodder or grain of any kind, by feeding only *one* kind at a time. Some farmers confine their stock for a long time on cornstalks, for instance, and then keep them on hay for a number of weeks, and then switch off on to straw, or something else. Stock of all kinds experience a very great inconvenience many times, from such changes of food; just as a man would whose food for one month might be mush and molasses, and the next month nothing but wheat bread, and the next month bean broth, or beef soup, or nothing but potatoes, squash, or something else.

There is one very important consideration in feeding animals—and this is all intimately connected with my subject—which not one farmer in a hundred ever thought of, until it has been pointed out to him, which is, *mingling different kinds of food*, for the purpose of rendering a larger amount of the nutriment contained in them *assimilable*.

Suppose, for example, that a man were to subsist for one day on *beef*, the next day on *pork*, the next day on *beans*, and the next day on *wheat bread*. He will not feel as well, nor be able to labor as many hours each day, as he would if he should eat a portion of every kind of the food mentioned at each meal. Now, the true reason for the fact, is this; when only one kind of food is eaten at a meal, more or less of the nutriment is voided in the excrement, which, had it been brought in contact with other food during digestion, would have been *assimilated*, thus supplying the waste of the body or going to make fat.

So with the feeding stock; if we grind together oats, rye, barley and Indian corn, equal quantities of each, stock will derive much more nutriment from the meal thus mingled, than they will if each kind is fed *separately*. So with feeding all coarse fodder. I have always found that I can make my stock *eat more* by feeding corn-stalks, hay, and straw, when well mingled together, than they will eat when each kind is fed separately; and more nutriment will be assimilated when thus fed out, than if they are not mingled.

There will be much nutriment voided in the excrement, even when we exercise all possible economy in mingling and feeding the produce of the farm. Consequently, everything that has not been assimilated by animals should be carefully deposited in the soil, where it will build up a crop of grain or grass for the succeeding year. For this reason, all manure should be sheltered; and I am satisfied that it pays quite as well to protect manure as it does to protect stock. The better an animal is kept, the more valuable will be the manure, and the better it pays to protect it from the influences of the weather. The ordure of cattle, which consume several pounds of any kind of meal per day, will be worth twice as much as a fertilizer, as that is from very poor cattle, which are compelled to subsist on straw and fodder that is not very nutritious.

I have always considered raising stock one of the most important steps towards making farming pay. But when a man computes *appearances* in the matter, and is always influenced by what seems to be the *present cost* to produce a given result, and his stock will seem more like the "lean kine," spoken of by Moses, (Gen. 41 : 19,) than like the stock of a thriving farmer.

In the autumn of 1848, I had a lot of rather good steers, two years old, which I wished very much to dispose of for needed cash; but no one was willing to give me \$25 per head for them. I had but little hay that season, and but a li-

mitted quantity of cornstalks. Every one who came into my barn and saw my fodder and the number of cattle, would shake his head and say, if you keep all those cattle until spring on this quantity of fodder, I would like to see them, &c. One good old farmer, who now rests from earthly toil, when he saw how much each animal received, said: "It is a piece of consummate folly for you to feed your animals so much. You will never see half the value of what you feed." And then went on to tell how *he* kept *his* stock, &c., without feeding any meal or hay until towards spring. I kindly told him that if I could not make such an operation pay, I would have the satisfaction of doing *one* thing as it ought to be done. Now for the result.

Those steers received, night and morning, a bushel each of cut straw, cornstalks, and a little hay cut with it, and about two quarts per day of corn and oat-meal, mingled with the straw after wetting it. Towards spring the quantity of meal was increased to about four quarts per day. Each steer consumed about twelve bushels of meal, which would then have sold for about forty cents per bushel—say \$5 worth for each steer. I managed to have a field of early pasture, sufficiently large for the cattle to fill themselves, before most other people had even *thought* of having pasture. Each steer received as much meal for two weeks, when *in the pasture*, as he did before they were allowed to feed on grass. After they had run to grass two weeks, I received fifty dollars per head for them; and they made a large lot of excellent manure, which increased the grain crop of my farm full one-quarter *more* than there would have been *without* manure. I will not stop to foot up the account, to determine whether or not "it paid," for the data are before us. Fifty dollars per head was then thought to be an exorbitant price for such steers. Such has ever been my system of management; and it has always seemed to pay so well, that I have followed it from year to year, and when distributing seventy-five cents worth of meal among a few calves per day, or among any other stock, the question often arises, "*will it pay!*"

Experience always answers, that if a calf or steer be fed during the winter, five or six dollars worth of meal of several kinds of grain, in *addition* to the straw and other fodder which he eats, he will be worth in the spring, enough more to pay for the meal he has eaten, than he would have been without having eaten any meal. And besides this, the good effect of the meal will be seen in an animal until the next winter, just as the effect of manure on a field is seen from year to year.

A neighbor of mine spent a day with me, a few days since, who, seeing the meal, and cut straw, and turnips, which my cattle received, laughed heartily at me when I told him I fed everything regularly, three times per day, in order to induce them to eat *all they would*. Said he, my practice is directly the *reverse* of yours: "I endeavor to have my cattle live on *as little* as they can."

As this respected friend takes no agricultural paper, I have no hesitancy in penning what I replied to him—that such a system of feeding would never do *for me*, nor for any other farmer whose aim is to make farming a paying business. This esteemed friend scouts at everything which is published on agricultural subjects, and if a friend supplies him with the best of agricultural reading gratuitously, he will not read it. But mark the difference.

He commenced farming on *new* land, and mine was *old*, impoverished land. *He* never believed it will pay "to make such a fuss about manure," nor to make animals eat all they will in winter, &c. Now, to sum it all up briefly, *he* complains that, "for some *unknown* reason," his crops of all kinds "*seem to be rather lighter* from year to year," while *I know* that my crops *increase* every season, and I shall be greatly disappointed, if my fields do not produce more the coming season than they ever did before.

S. EDWARDS TODD.

GERMINATION OF SEEDS.—London gives the following—from which it would appear that the grasses are most rapid in germination; then perhaps cruciform plants; then leguminous; then labiate; then umbelliferous; and lastly, rosaceous; although there are many exceptions to this order:

Wheat, millet	- - -	1 day	Orache,	- - -	8 days
Spinach, beans, mustard	- - -	3 days	Purslane	- - -	9 days
Lettuce,	- - -	4 days	Cabbage	- - -	10 days
Melon, cucumber, cress	- - -	5 days	Parsley	- - -	40 days
Radish, beet	- - -	6 days	Almond, chesnut, peach	- - -	1 year
Barley	- - -	7 days	Rose, hawthorn, filbert	- - -	2 yr's

DWARF OKRA.—This, to us, is a new variety of the okra plant, and it is highly recommended by those who have grown it, as it affords as large a yield of pods to each plant, and it requires very much less space to grow. Its height is about three feet, and the pods are much larger than the common sort.

PASTURE—HOW MANY COWS TO AN ACRE.—In Cheshire, England, which is a great grazing country, the land that has been under-drained and top-dressed with ground bones, will carry one cow to each acre through the Summer, but the land not thus treated will only carry one cow to two acres. The dressing of bones upon pasture land is 12 to 15 cwt. per acre once in seven years. But even if not repeated at that time, it still continues better than it was before the bones were applied.

Now how many acres of pasture, on the average, does it require in this country to the cow? Would it not be economy to improve our pasture lands up to the Cheshire standard?

PIG-BREEDING.—Notwithstanding the fact that more people are interested in the breeding of pigs than in that of any other class of domestic animals, the attention paid to improvement of the stock is very small. How few farmers know that the sow should always be larger than the male, and that he should always be of the most perfect form, of good color, and perfectly sound and healthy, because almost invariably the pigs take the qualities of the sire instead of the mother. That is, his good or bad points will preponderate largely over those of the sow. Farmers please think of this fact, and profit by it.

CORN—SHRINKAGE IN DRYING. In measuring "premium crops of corn" generally, the quantity is ascertained by weight or measure as soon as the ears are gathered from the stalk. This never gives the quantity of merchantable corn, for the reason that corn, as it is often gathered, will shrink twenty per cent. Experiments have been tried where the quantity of newly-gathered ears supposed sufficient to make a bushel of shelled corn, weighed 75 pounds, which, after being thoroughly dried, only weighed 60 pounds—nine of cobs and fifty-one of grain. The proportion of cob by weight to grain will generally average about one-sixth; and we think the difference in weight of ears between the time of harvest and Spring is never less than ten per cent, unless the corn stands until very ripe, and is then gathered in a very dry time. The shrinkage is more in the cob than in the grain, but there will be a considerable loss upon the grain, stored in a good crib, from Autumn till Spring.

LARGE OR PEAVINE CLOVER.

We find the following article on this variety of clover, about which there has been considerable inquiry of late, in the Mohawk (Herkimer county) Courier, and it is, we presume, from the pen of the editor of the Ag. Department of this paper :

The largest variety of clover, sometimes called "peavine clover," and from being extensively raised for seed in the southern part of this country, known in some parts as "Herkimer clover," has some qualities that commend it to the use of dairymen.

Firstly, its enormous growth. It yields fully double the amount of herbage produced by any other clover or grass we cultivate. It has been objected to by some as being *too large*. Its stems grow very long and large in rich soil, and not being able to support their weight, a considerable portion of them often lie flat upon the ground, and hence become more or less injured. Weight for weight, such hay is not as good as that made from timothy, red top, nor June grass ; nor is it as good as from clover that has not fallen down, but still it makes a valuable fodder.

I am now keeping part of my cows upon this kind of clover that grew at the rate of six loads to the acre, as large as I could draw on a common hay rigging. It was coarse indeed ; but it was well cured, and comes out bright and free from mould or discoloration by heating, and without loss of leaves. The cows eat it readily and with a good relish, consuming even the coarsest stems. They keep in good health and flesh, and are in every respect doing finely upon it. The value of this, like any clover, depends very much upon the manner in which it is cured. When partly dried, its strength is quickly steeped out by a shower of rain ; or its leaves lost, and its goodness burnt out by drying too long in the sun ; and to be good must be cut in full blossom.

Secondly. This kind of clover is less liable to injury by drouth than any other, and much less so than the grasses. As soon as it gets a hold in the soil, its large and long roots strike down below the reach of drouth. I have never known it to be effected by the driest seasons we have had since I commenced cultivating it.

Thirdly. It ripens at the same time with timothy, and hence is better where timothy is to be cultivated with it. The earlier kinds will be greatly injured by standing till timothy is ripe enough to cut ; and if cut at its proper season, the timothy will not be full grown.

Fourthly. By ripening slowly, it remains a longer time in a suitable state for cutting.

Fifthly. While through its large leaves it derives most of its support from the air, its large roots extending through the ground loosen and enrich it. The exhaustion of soil for a given value of fodder is much less than with timothy.

THE AGRICULTURAL MEDALS OF ENGLAND, FRANCE AND BELGIUM.—As works of art and exponents of a special object, there is a great contrast between these tangible recognitions of an individual superiority. The English medals are of silver, the obverse of which are perfect blanks, so far as the purpose for which they were awarded is concerned. The Belgium is silver-gilt, and rises very perceptibly above the English in the order of merit. The French first gold prize medal and the *médal d'honneur* are of solid gold and unmistakable worth, and they state with complimentary precision the nature of the class, the excellence of which they are destined to record. The head of the Emperor is on the other

side—a very deep die, struck with singular felicity and sharpness, and bears the name of “*Caque, fecit.*” These several medals have been recently awarded to Messrs. Burgess and Key for their reaping-machine. Added to the personal presentation of the valuable medals by the Emperor, a draft for 1,000 francs upon the Imperial treasury, was handed to these gentlemen.

FORCING ASPARAGUS FOR PRIVATE USE.—A foreign journal gives the following directions :

Make a hot-bed as for cucumbers, and put on the dung when in proper heat, four inches of good loam and dung. Procure three year old plants and plant them as close as you can conveniently all over the surface, spreading the roots. Cover three inches and close the lid. Give a little air at all times except at night and in frost, by raising the front of the lid, and when the heat becomes strong give abundance of air. The color of the buds will depend upon this. In forcing for market the roots must be buried and the quality of production is often extremely poor, whereas by covering only three inches, it is very tender and agreeable.

THE BRADFORD WATER-MELON.—This melon was very highly recommended by a correspondent of the Country Gentleman last year. A writer in the Farmer and Gardener thus speaks of it :

“The seed, last year, was not planted until the 5th of June, and some of the melons were ripe on the 12th of August. This year they were planted earlier, but ripened some days later. The rind is a greyish-green color, closely traversed by fine dark green veins : flesh varying from light to deep red, extremely sweet and tender, sometimes separating from the rind like the Orange watermelon ; size varying from quite small to quite large. One great recommendation of the Bradford to me, is, that there is no danger of mistaking as to its ripeness. Whenever the tendril nearest the melon dries up, the fruit is ripe. This I consider a great advantage, as I have never before found a variety which could be certainly depended upon. All the signs of ripeness—dying of the tendril, hardness of the rind, cracking when pressed, sound when tapped with the knuckles, &c., are fallible with most of them.”

FLAX MANUFACTURE.—During the past nine years Mr. Stephen A. Allen, of Boston, has been engaged in experimenting with flax, and he has a mill near Boston, where various fabrics composed partly of cotton and flax are manufactured. He lately, in an address to the manufacturers of Rhode Island, stated that he believed flax could be cultivated and treated in such a manner as to make goods from it as cheap as those of cotton. He asks farmers to try the cultivation of flax. The sale of the seed alone would pay for all the labour. In reference to this subject the *Commercial Bulletin* (Boston) says : “The American Flax Company, of this city, have in operation at Watertown a mill where they have perfected their machinery to work up the straw into a fibrous material, which has been successfully spun into yarns, and woven into cloth with the different mixtures of wool and cotton. The straw after passing through the crusher, comes out the quality of tow ; it then passes through the various processes necessary to remove any of the woody substance and the gluten ; and from the bleachery comes out a beautiful white, resembling cotton. We have seen plain cloth, calicoes, jeans and hosiery, with a mixture of from 25 to 50 per cent. of flax cotton with the cotton and wool. With the former mixture the fabric presents a body superior to entire cotton ; and with the latter the presence of the mixture (unlike the mixture of cotton and wool) is hardly discernable.”

HOW TO RAISE SEEDLING POTATOES.

After the vines having seed-balls on have been well dried, after being frosted in the fall, collect as many balls as may be wanted, squeeze the pulp out in a basin of water, spread the seed on a board set upon the kitchen mantal until well dried, rub them and blow out all but the best and heaviest seed. Sow them the next spring in a hot-bed, as you would tomato seed, and at the same time you would to raise early tomatoes ; transplant after spring frosts, as soon as the ground will pulverize well into rich new or well-manured old ground, in rows, one set in a place, two feet apart each way. Cultivate well, by hilling up as the young vines grow, to prevent them from falling down and mildewing prematurely. The better the tillage the finer will be their size and the more abundant will be the yield. From one rod square of rich new ground of a clay soil, I raised by the above mode, the last season, two bushels of some half-dozen distinct kinds from the seed-balls gathered from the pure white Meshannock, three-fourths of which were large full-sized potatoes, though planted quite late in the spring. A lot of the finest in quality and size, which, together with several varieties of the second years' growth, I have buried, and after they are all well tested, those that are worthy of cultivation I shall name and distribute to all who may want samples. I plant altogether upon the one-eyed plan, as recommended by Mr. McWilliams, and have for the last four years, and succeed four-fold better than by the whole potato plan. If planted in hills two by three feet, I would recommend three or four eyes in each hill ; if in drills, not more than six inches apart in the row. The following are a part of the advantages of the one-eyed system : Five-sixths of the seed is saved, a larger yield is secured, and the proportion of the large to the small ones is increased three-fold over the old and whole potato plan.—*Ohio Recorder*.

A DIGGING-HARROW.—Mr. O. Coe, of Port Washington, Wisconsin, sends us a cut and description of a new farming tool he has got in use to supersede that worst of all agricultural tools, the drag-harrow. This machine has its teeth upon revolving wheels that dig up the surface as it is drawn forward, leaving it light as well as pulverient ; the effect being entirely different from that of the harrow in common use, which, although it drags and scratches the clods into small pieces, will, if continued long enough in motion, have the effect to compact the soil closely together, just as tamping the dirt with a sharp stick in a post-hole makes it more compact than it is when pounded with a blunt maul.

This new digger is said to be an excellent implement to put in small grain with, as it covers the soil evenly, and leaves the ground in a good condition for the seed to vegetate. The teeth, Mr. Coe says, dig the soil six inches deep, and the machine does not pull any harder than an iron-tooth harrow, cutting the same width, and nothing like as deep. To dig the surface nine or ten inches deep, he thinks, will not require half as much power as to plow it the same depth. It works admirably upon Indian corn stubble, tearing the roots out of the ground, and fitting it at once for wheat-sowing. Of course it will not work among roots, or fast stones, and, we suppose, not well upon sod ground. We should like to see this new digger "down East" as soon as possible.

COAL VERSUS WOOD. We often wonder at the pertinacity of some old farmers in the vicinity of tide-water and railroads, where coal can be had at a low rate, compared with the selling value of wood. They stick to the old-time fashion of days when wood was the only fuel, and maintain wood-lots upon land worth \$200

or \$300 an acre, to furnish their annual supplies of back-logs and fore-sticks, with as much pertinacity as though their lives depended upon nothing but a sufficiency of firewood. Do such men ever think of relative values? Probably not.

A tun of anthracite coal (2,240 pounds) measures 28 bushels. Its average cost at tide-water may be taken at \$5 a tun, and hickory wood at \$8 a cord.—The coal is fully equal to two cords of wood of the best quality, and we don't know how many cords of such wood as we often find for sale or such as farmers use, that they could sell \$4 or \$5 a cord. No man in the vicinity of New-York can afford to keep woodland or burn wood as a common fuel. Prof. Mapes contends that a man cannot afford to keep arable land in the vicinity of this city or any other high-priced locality in apple trees, much less in forest trees, except just so far as may be agreeable for shade and ornament—certainly not for the purpose of growing fuel. Not many could afford to hire men to cut and haul wood, and prepare it for the stove or fire-place, if it had no other value. The labor would cost more than it was worth, where coal is not more than \$6 or \$8 a tun.

TEASELS AS A CROP.

It is worth while for farmers to consider whether Teasels as a crop are not worthy of more attention. We have seen it stated that a fair average crop is 200,000 burs per acre, and we think a fair average price is \$1,50 a thousand. Their cultivation is not a new thing in this country, though but little attended to. Nor is it difficult. A Mr. Wells, (N. L. we think,) of East Windsor, Conn., has grown them many years, and found it profitable.

The most suitable soil is a rich clayey loam, of rather a moist nature, such as would produce two tuns of hay per acre. The best preparation is to grow potatoes upon the turned soil, without manure; the next Spring manure heavily, plow eight inches deep, pulverise the soil thoroughly with a cultivator and then level smooth with a bush drag. The seed, after soaking one night, is rolled in plaster, and dropped by hand in shallow drill marks, thirty inches apart. It should be sowed very thick, sometimes half a bushel per acre, as it sometimes vegetates badly.

Like cotton, or broom corn, if too thick it is "thinned to a stand." The time of planting is when the ground is in good order, about the first of June. Don't cover the seed more than half an inch deep with fine earth, but press it hard with "a spatter," made of a plank, with a convenient handle. In about two weeks the rows can be seen, where a hand or horse-hoe must be put to work. At the second hoeing, the plants may be thinned out leaving them four or five inches apart. The after culture is to keep the ground absolutely clean till about the middle of November, when the plants are covered with straw, held in place by dirt, to remain till first of May, or till freezing nights are past, when the plants are uncovered, and weeds kept down till the plants grow, as they soon do to cover the ground closely.

Soon after the flowers drop, the burs must be cut with stems about four inches long, and carried to the drying-house, where they are spread upon open-work shelves of slats, poles, or small rails, in tiers one above another, so as to give a free circulation of air. They may be placed a foot thick upon shelves of this sort. A good hand can cut 15,000 or 20,000 a day, but the harvest should commence by the time half the flowers in a field are off. The top burs drop their flowers first. These are called "King," but are not quite as good as the

burs next below, which are called "Queens." A stalk has from four to six No. 1 teasels, and twenty to thirty, and sometimes fifty, which are merchantable. The most common method of disposing of the teasel-stalks is by mowing, drying, and burning on the ground. Two crops in succession generally do well, but more than that is not recommended.

CASHMERE GOATS.—I notice in the Co. Gent. of the 19th of Jan., an article on "Cashmere Goats," recently imported by the Hon. W. H. Stiles, of Georgia, and with the exception of those of Dr. Davis, said to be the only ones imported into this country. Permit me to call your attention to those of my friend ORIS BREWER, of Boston. Mr. Brewer imported nine from Turkey (in Asia) in 1858. In July, 1859, he writes me that they had increased by the addition of three kinds—that they appeared to be hardy and healthy, and that they would be valuable for their fleeces, a specimen of which I herewith send you, which is certainly very nice. Mr. Brewer said that if any one wished to purchase, he would dispose of one or two pairs, as he had imported them merely as pets, to run in his park with his deer and other animals. It appears that considerable attention is now paid to these animals, and that thus far they bid fair to be valuable for their fleece, which brings \$8 per pound in New-York. An experiment is being made by crossing with the Angora goat, and by those who have tried it, is said to succeed well. I can see no obstacle to growing this valuable animal, as they are a native of the Himalaya Mountains, and will live on any high lands, even those that are not well adapted to the sheep.

Camden, N. Y.

GEO. TROWBRIDGE.

TO PRESERVE STAKES, &c., IN THE GROUND.—Quite recently, while walking in the garden with the Hon. J. W. Fairfield, Hudson, N. Y., he called my attention to the small stakes which supported the raspberry canes. The end in the ground, as well as the part above, was as sound and bright as if lately made, but he informed me that they had been in constant use for twelve years! Said I, "Of course they are kyanized?" "Yes," he replied, "and the process is so simple and cheap that it deserves to be universally known, and it is simply this, One pound of blue vitriol to twenty quarts of water, and then add the remainder.

"The end of the stick is then dropped into the solution, and left to stand four or five days; for shingles three days will answer, and for posts six inches square, ten days. Care is to be taken that the saturation takes place in a metal vessel or keyed box, for the reason that any barrel will be shrunk by the operation so as to leak. Instead of expanding an old cask as other liquids do, this shrinks them. Chloride of zinc, I am told, will answer the same purpose, but the blue vitriol is, or was formerly, very cheap, viz: three to six cents per pound."

Mr. Fairfield informed me that the French Government are pursuing a similar process with every item of timber now used in ship-building, and that they have a way of forcing it into the trees in the forest as soon as cut, ejecting the sap and kyanizing it all on the spot. I have not experimented with it, but Mr. Fairfield's success seemed to be complete.

The process is so simple and cheap as to be within the convenience of every farmer, and gardener, even, and I therefore thought it so valuable as to warrant a special notice of it.—*R. G. Pardee.*

PURIFICATION OF FOUL WATER—AN IMPORTANT DISCOVERY.—Mr. Thomas Spencer, the discoverer of electrotype, appears to have made another discovery

of a different description, which bids fair entirely to eclipse even his former one in importance and value. He seems to have penetrated into nature's grand secret, whereby she converts all kinds of foul and contaminated water, as it filters through the strata, into the pure and wholesome spring; and not only so, but he has shed a new light on the nature of ozone in connection with this discovery. It is impossible here to do justice to these discoveries, but we may state that Mr. Spencer has experimentally ascertained that the magnetic oxide of iron which abounds in rocky strata, and in sands, &c., attracts oxygen, whether it exists in water or in air, and polarises it—that this polarised oxygen is the salubrious ozone—that this ozone, as formed, destroys all discolouring and polluting organic solutions in water, and converts them into the sparkling and refreshing carbonic acid of the healthful springs. Even sewage water can be thus almost instantaneously purified. Moreover, Mr. Spencer has discovered that the apparently mechanical process of filtration is itself magnetical, and it is now known that all substances are constitutionally more or less subject to magnetical influence; thus, all extraneous matters suspended in water may be rapidly attracted in filtration, and so separated; and this may be done whether on a great scale or a small, either by the magnetic oxide or black sand of iron, by a mixture of this with ordinary sand, or by various other means; and Mr. Spencer has discovered a solid porous combination of carbon with magnetic oxide, prepared from Cumberland hæmatite, which is said to have very great filtering power.—*Builder.*

TREATMENT OF RINGBONE MESSRS. EDITORS.—In the Country Gentleman of Jan. 12 you say "there is no cure for confirmed ringbone." A few years since, one of my horses was badly ringboned upon both hind feet, and very lame. A friend upon seeing his lameness, remarked that he could give a recipe that would surely cure the lameness, but not remove the bunches. I tried it as directed, and a permanent cure of the lameness was effected within a month. I was requested to keep it a secret, and I will say nothing about it, but let the Country Gentleman! do the talking. Recipe :

$\frac{1}{2}$ pint spirits turbentine.
 1 ounce oil organum.
 1 ounce oil amber.
 1 ounce oil of spike.
 $\frac{1}{2}$ an ounce aqua fortis.

Mix in a bottle, and apply daily (Sundays excepted) with a swab. L. T. M. Vermont Center, N. Y.

LAND DRAINAGE.

TO THE EDITOR OF THE "LEADER."

SIR,—In the leading papers of the day the most interesting topic of discussion is how to furnish employment to the large number of useful laboring men, at present in destitution amongst us, or about to leave us, perhaps for ever, in consequence of the failure of any immediate profitable occupation to be afforded them by their employers. One of our own correspondents proposes the growth and manufacture of flax. The *Globe* in its editorial remarks also moots the point of the establishment of manufactures to which our energy is to be directed after the difficulties of the years from 1857 to 1860 as those of from '37 to '40 and '47 to '50, were followed by the construction of canals and railways respectively.

My appreciation of the difficulties under which we labour leads, I think, to the root of the evil. Our attention should be turned to discover something which will be general in its effect and universal in its application. We should see that the foundation upon which we are building is in a sound state before we go into the details of the superstructure. It is certainly hard to draw a comparison between productive industry and commercial activity, and the old fable of the quarrel amongst the members of the body, places in its truest light the relation which exists between the different and yet concurrent interests of all nations. Yet all these interests do not spring up exactly miscellaneously. Commerce could not exist until production called it forth. Roads would not be formed until traffic almost burst them open, and manufactures cannot successfully be established till the staple is produced and the demand forms a market. So, though these interests are mutually dependent and supporting, yet some one takes precedence as that from which the rest rapidly proceed and follow. This is affirmed by one of the best writers on political economy to be agriculture, and he contends that the fruits of the earth are the main-spring of all the various efforts and labors of mankind. If this assertion can be supported as a general argument, surely in Canada, of all nations in the world, the agricultural interest may assert itself as a paramount and most worthy of earnest attention and careful development. Undoubtedly in our soil we possess one grand staple, and to the proper handling of this let us apply our intelligence, our industry and our capital, before wandering forth in search of superficial specifics. In the proper cultivation of our soil there is, at the present moment, ample room for the remunerative employment of every man in the country, every day in the year, if the means and intelligence of our people were brought to the shrine of this, the mainstay of our existence as a people.

But with us farming is of all occupations left to its own desires and the empericism of its casual devotees. No effort is made for the formation of an agricultural school. Agriculture is never thought to stand in need of special education, and being supposed to be self-producing and self-sustaining, capital is rarely dreamt of being applied to it as a profitable investment. Our very Legislature, composed as it is of men who boast themselves before their constituents as the representatives of the FARMER, THE BONE AND SINOW OF THE COUNTRY, passes the subject with the establishment of a few agricultural societies, and almost a recommendation to care for themselves as best they may, leaving the practical farmer to struggle on with difficulties which slight legislative provisions would remove entirely from his path.

In the earlier years of agriculture in this Province, as in most parts also of the United States, the cultivation of wheat yielding an ample remuneration, was almost the only object of production; but in these latter days, this crop has immensely fallen off or entirely failed. For this misfortune one remedy is proposed in the abandonment of wheat and the culture of flax; and the specific is found in devotion to the dairy, and many others are started, each independent of the other.

Now, farming is a system, and demands attention to all of these in their turn and place; and when a loss is experienced, it is not to be cured by the abandonment of one crop and the substitution of another to the total exclusion of the first. We must look for a more radical treatment. The question should be: Does the soil possess those conditions necessary to healthy vegetation? And to this I answer, that the most needful is in almost all cases that which is, perhaps, the most neglected; I mean proper drainage. It is this which imperatively demands the intervention of Parliamentary regulation and assistance. There are many difficulties even in surface drainage, which at present are left to the precarious attention and discretion of local authorities, totally ineffectual to the

purpose, for which practical remedies should at once be provided and enforced by general enactment; but beyond this, there remains the subject of deep under-draining. That will require direct aid, and it was to this branch of farm labor that I allude as capable of affording remunerative employment at all times, to any number of our population. Three men have just finished draining a ten acre field for me, the first work in which was done on the 8th December, after the heavy frosts commenced. The lower half of the field was moderately stiff clay and the drains averaging four feet deep, in ascending passed from the clay through sandy loam into a gravelly sub-soil at the upper portion of the field, where a good run of water was found. The work was done by the piece, and the men have been occupied 123 days, during which they have laid 490 rods of drains, averaging 4 rods per day for each man at 10d. per rod for digging, laying pipes and gulling in. By a little foresight, work of this kind can be performed during the whole length of all our winters, especially in the clay lands. The main difficulty in the way at present, is the want of means to carry out so expensive an undertaking on a large scale.

By the census returns of 1851-2, the land held in the county of York alone is given as a little over 390,000 acres, 220,000 being under cultivation. Of these acres, 2,000 farmers occupied from 50 to 100 acres each. I will leave it to you, Sir, and your readers to estimate the effect upon the condition of the laboring classes amongst us if these men were incited, encouraged and assisted to drain even from five to ten acres every year at an expense averaging say, \$25 per acre.

And when there has been witnessed in Britain the immense benefit produced to the cause of agriculture by this thorough system of drainage, brought about, too, by the intervention of Government, is it possible that our Government cannot be persuaded to consider seriously and favorably a Canadian Land Drainage Act. It appears that at present, for ordinary purposes, there is no difficulty in the way of this Province borrowing money at five per cent., how much more would the capitalists of England be willing to advance money for a purpose which is thoroughly understood amongst them, and known to be no chimerical or speculative scheme, but a positively and absolutely beneficial and remunerative outlay. Some years ago, under the then careful system of English husbandry, the average wheat crop of England was twenty (20) bushels per acre, at present the results of thorough drainage have raised the average to thirty (30) bushels. Our produce has fallen to 12 or at most to 14 bushels per acre, and there can be no doubt that the *certain* product of our lands could be at least doubled in many cases, I am confident, it would be trebled by the adoption of the same means.

Yours, &c.

H. J. BOULTON.

Humberford, Feb. 10, 1860.

D R A I N A G E .

It has been often said and admitted, that he who taught us to grow two blades of grass where only one had been raised before, would be a benefactor to mankind. But how much greater a benefactor will be he who shows our farmers how they can grow, perhaps, two bushels of wheat where hitherto only one has been the yield. That wheat has been, possibly too much, the staple

article of Canadian agriculture cannot be denied ; nor will it be disputed that, while depending so much as we have done, and are likely to do, upon our wheat exports, the hopes of the farmer and the prosperity of the province have alike suffered through a partial failure of the grain crops. Grant that the wheat crop of 1859 was an agreeable surprise, and a welcome advantage to commercial, as well as agricultural interests. Yet this improved state of things resulted more from the will of Providence than the agency of man. The cruel frosts of June, which were so much mourned over at the time, contributed more than anything to the abundant harvest of last year, and the cold which cut down the gardens killed or made less hurtful the destructive insects which in other years ravaged the field. If Canada is to retain her position as a wheat growing country, and if our agricultural exports, of which wheat must always be the most important, are to assist in balancing our trade imports, careful attention will have to be given to every circumstance calculated to render our wheat crops more reliable. Foremost among these means stands the question of drainage. It would take up more space than an editorial article in a newspaper could give to go into the particulars of farm drainage. It will be sufficient for our present purpose to affirm that by means of good till-trainage, which after all is not so expensive as at first sight might appear, in consequence of the soil being made thoroughly drier and warmer, and being lighter, the young wheat would be able, during the temperate warmth of spring, to push a vigorous root through the then teeming soil, and put forward strong and healthy shoots. It is believed that by these means the young wheat may be advanced in its growth fully ten days or a fortnight, and thus reach a state of maturity ere the dry hot weather sets in that would render comparatively harmless the insect scourge which under other circumstances, has done so much mischief. This consideration alone is of the utmost consequence to the country at large, and if the estimate of the advantages to be derived from drainage are only one half of what are represented, it is clear that to adopt land drainage on a large scale, would add, say fifty per cent to our home resources. Throughout Canada, farm drainage, as yet, has been rather an experiment than a practice, more an indulgence than a recognized necessity, and has been resorted to only by men who had the money to do it. But rich as Canada is in natural resources, our agriculturist, except in some favored cases, are not blessed with much superabundance of floating capital ; and if any one wishes to realize the full difficulty of want of money from private individuals, only let him go forth and try to borrow some ! How then are our broad fields to be prepared for the successful and *reliable* growth of wheat ? The suggestion is, that in Canada, as in England some years back, the Government should originate a plan of pecuniary assistance to farmers by way of loans for drainage purposes. There does not seem to us any insurmountable difficulty in the way of such a scheme. It would assuredly be a popular movement ; and if carried into effect, would go far to disabuse the country of the Clear Grit misrepresentation so busily circulated that the Ministry think more of place and power than of the practical wants of the people. The Inspector General has won merited renown by his financial success with the New Canadian Loan. The Post-Master General has been equally deserving of praise for the admirable postal arrangements he has concluded for the benefit of Canada, by means of our railways and ocean steamers. And now let our Minister of Agriculture come forward with a judicious plan to assist our farmers to drain their land, and thus grow more wheat, and, depend upon it, the hearty blessing of the whole country would attend such patriotic legislation.—
Toronto Colonist.

MONTREAL RETAIL MARKET.

	DONSECOURS.			
	s.	d.	a.	s. d.
FLOUR.				
Country Flour, per quintal	14	0	a	15 0
Oatmeal, per quintal	10	6	a	11 0
Indian Meal, per quintal	0	0	a	0 0
GRAIN.				
Wheat, per minot	0	0	a	0 0
Oats, per minot	2	0	a	2 1
Barley, per minot	3	9	a	4 0
Pease, per minot	3	9	a	4 0
Buckwheat, per minot	3	9	a	4 0
Indian Corn, yellow	5	0	a	5 6
Rye, per minot	0	0	a	0 0
Flax Seed, per minot	5	6	a	6 0
Timothy, per minot	14	0	a	15 0
FOWLS AND GAME.				
Turkeys, (old) per couple	5	0	a	7 6
Turkeys, (young) per couple	0	0	a	0 0
Geese, (young) per couple	4	0	a	6 0
Ducks, per couple	2	6	a	4 0
Ducks, (wild) per couple	3	0	a	3 6
Fowls, per couple	2	6	a	3 0
Chickens, per couple	0	0	a	0 0
Pigeons, (tame) per couple	1	3	a	2 0
Pigeons, (wild) per dozen	2	6	a	3 0
Partridges, per couple	0	0	a	0 0
Woodcock, per brace	0	0	a	0 0
Hares, per couple	0	0	a	0 0
MEATS.				
Beef, per lb	0	4	a	0 9
Pork, per lb	0	5	a	0 7
Mutton, per quarter	5	0	a	7 0
Lamb, per quarter	2	4	a	0 0
Veal, per quarter	5	0	a	12 3
Beef, per 100 lbs	35	0	a	40 0
Pork, (fresh) per 100 lbs	35	0	a	38 9
DAIRY PRODUCE.				
Butter, (fresh) per lb	1	0	a	1 1
Butter, (salt) per lb	0	8	a	0 9
Cheese, per lb, skim milk	0	0	a	0 0
Cheese, per lb, sweet do	0	0	a	0 0
VEGETABLES.				
Beans, (American,) per minot	0	0	a	0 0
Beans, (Canadian) per minot	7	6	a	10 0
Potatoes, (new) per bag	3	9	a	4 6
Turnips, per bag	0	0	a	0 0
Onions, per bushel	0	0	a	0 0
SUGAR AND HONEY.				
Sugar, Maple, per lb, (new)	0	4½	a	0 5
Maple Syrup per gallon	0	0	a	0 0
MISCELLANEOUS.				
Lard, per lb	0	8	a	0 9
Eggs, per dozen	0	8	a	0 9
Halibut, per lb	0	0	a	0 0
Haddock, per lb	0	3	a	0 0
Apples, per barrel	10	0	a	20 0
Oranges, per box	0	0	a	0 0
Hides, per 100 lbs	0	0	a	0 0
Tallow, per lb	0	4½	a	0 5
BREAD.				
Brown Loaf	0	10	a	0 0
White Loaf	0	9	a	0 0