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THE

CANADIAN AGRICULTURAL JOURNAL.

VOL. I. MONTREAL, MARCH 1, 1844. No. 3.

USE AND PREPARATION OF THE FOOD OF VEGETABLES.

To understand the process of nature by which certain elements of earth, air, and water are transformed into living plants, and the best method of preparing these elements so as to produce the largest crops at the least expense, are objects worthy of the careful and profound study of every cultivator of the soil.

If we take 100 pounds of ripe hay, oats, wheat, or corn, including the roots, stems, and seed, and burn them carefully in the open air, we shall have only about 3 per cent. of alkaline earths left, most of which can be dissolved in water. If we burn a pound of oil, whether animal or vegetable, the whole of these substances (which are truly "the fat of the land" will be transformed into visible air and vapor. The atmosphere and water are nature's great storehouse for the serving an exhaustless supply of vegetable food. By *respiration*, *fermentation*, and *rotting*, all organic structures are transformed into gases and soluble salts. It is from the lime dissolved in the ocean that the oyster elaborates its shell, and the coral insect rears its massive mountains of coral rock. It is mainly from the phosphate of lime held in solution in its mother's milk, taken from her food, that the sucking calf elaborates its solid bone. Without lime to be dissolved in her gastric juices, and taken into her circulating blood, the hen can make no solid shell to her egg. The unnursed infants in the great cities of London and Paris, brought up without milk, and fed on arrow-root and other food that contains little or no lime, have soft, cartilaginous, rickety bones, simply because neither animals nor plants can make *something* from *nothing*.

As a general rule it is strictly true, and moreover it is a truth of great practical importance, that a feeble, diseased stem in wheat, liable to rust, &c., and a shrunken berry, are owing to some removable defect in the food of the plant. So different are the essential elements of the seed of this plant from those of of its straw, that it is practicable to raise wheat that will yield twice as much grain in weight as there is weight of straw, taking it from the root. That it is also practicable to grow wheat which will give five times as much straw as grain, most farmers know by sad experience.

It is more than twenty years since I first began to use pulverized charcoal to absorb the gases given off by decomposing vegetable and animal matter, urine, and the like, to be applied to garden and field crops. Its value in correcting the taint in meat, and purifying rain-water in filtering-cisterns, led me to believe that it would be just the thing to absorb the food of plants from the atmosphere, into which so much passes, and hold it about their roots in a condition that neither dew, rain, snow, frost, nor the heat of the sun, would injure it or take it away. To labor hard to save and draw out manure on to one's fields, and then lose 60 or 80 per cent. of this vegetable food by its solution in water, and washing away to form something like the Genesee flats in the bottom of Lake Erie, I never regarded as very good economy—which, by the way, is the soul of good husbandry.

The direct application of urine to the soil, after the German practice, is bad economy, unless the soil contain a large portion of humus or vegetable mold, for its tenacious retention. It is a better plan to have a reservoir filled with pounded charcoal under the stable floor, or near to the stable, into which the liquid excretions of all animals should be conducted like cider from the press. When nearly, or quite saturated with urine, this coal will be manure of extraordinary power and durability—for nothing in the soil, but the roots of growing plants, will be likely to extract a particle of this vegetable food.

After wheat, corn, or grass has taken up all this nourishment, the coal (unlike lime, which has parted with its carbonic acid in the same way) is insoluble in water, and remains, as in a filtering cistern, to absorb and hold, for the benefit of the growing plant, more vegetable food from every rain that falls to the earth. For be it remembered, that dew, rain, and snow—the poor man's manure, bring back to the earth all the gaseous elements given off by all the fires, respiration, and other decomposition of solid and liquid matter.

For the same reason, coal should be largely used in the formation of compost heaps. And where the farmer has straw which he can use to make beds for his horses and cattle in the stable, this, with a quantity of coal pounded with a flail, can be spread upon the stable floor, to absorb all liquid excretions. All these excrementitious substances should be kept under shelter. Wood ashes, lime, and muck, or vegetable mold, are valuable ingredients in all compost heaps. The coal stratum should be placed between the lime and the manure, and the whole should be covered with turf or more coal.

The analysis of soils abounding in fragments of limestone rocks shows a marked deficiency of this important element in their composition. The reason of this perhaps unexpected deficiency I will now explain:

Disintegraded limestone is decomposed by the vital action of plants, and its carbonic acid is taken up by their roots. It will then combine with more of this gas which abounds in the air and soil, and will again give it out to growing vegetables. It is in this way that plaster (sulphate of lime) after it has parted with its oil of vitriol, often produces such wonderful effects, although the amount applied is less than one forty thousandth part of the soil from which plants draw their nourishment. The action of the sulphuric acid, as I understand the matter, I will not stop to elucidate. But I wish to fix public attention upon the circumstance, that when lime in the soil has parted with its acid, whether sulphuric or carbonic, and especially the latter, it is soluble in water, and hence very liable to be washed out of the soil by rains, &c. All water that has passed through a soil possessing sufficient lime to be good wheat land, is *hard*, or holds lime in solution of which it has robbed the soil. The same is true, in a less degree, with regard to teaching of the soil and its loss of allumina, potash, and soda. The cultivation of the earth, without allowing any vegetables to grow upon it, would exhaust its fertility very rapidly.

The remedy for this is, to cultivate less land in grain crops, and cultivate it far better; to remove all excess of water by draining; to plough deep, and turn up to the sun virgin earth from below, and apply

thereon manure, coal, lime, ashes, and salt. Instead of applying large quantities of quick lime at distant periods, it is far better to apply a less quantity and often, to make up for the loss that occurs from its being dissolved in water and carried with it into rivers and the ocean.

Leached ashes are valuable, when applied to grass lands; and are far from being worthless on wheat, rye, oats, and barley—all of which need their silicate of potash to give them a good firm stem. Grass and wheat know well how to convey the apparently insoluble elements in leached ashes up into their organic structures, as did the trees from which these ashes were obtained. D. L.

Buffalo, Dec. 17, 1843.

New Genesee Farmer.

EVERY FARMER SHOULD TAKE AN AGRICULURAL PUBLICATION.

Mr. Editor:—I have for a long time entertained the opinion that farmers generally are not interested enough in agricultural publications. It may be true that many of our most intelligent farmers fully appreciate them; but there are others who know not the value of the information these publications afford, and who are *ignorant of their own ignorance* and need of information. There are prejudices in the minds of some farmers against all agricultural reading, or "book farming," as they term it. They have known some fanciful theory to be advanced in an agricultural paper, which, from their own experience, they are confident is unsound; and from this, are ready to condemn any thing thus advanced as void of practical utility. Some writer has recommended that lime be applied to certain soils as a dressing for corn, whereupon they have dropped their corn into lime, or have dropped a handful of lime upon their corn. The consequence is, their corn never comes up, and "book farming" is by them ever after despised. I have heard of instances something like this. I will not deny that there have been erroneous opinions widely circulated in agricultural papers—that certain articles and practices have been recommended too highly to farmers. But notwithstanding this I am fully confident that the influence of these publications has been good—that the / have been instrumental in improving our agriculture, and consequently of benefiting the farmers. There is *chaff* in the literary and agricultural as well as in the vegetable world, but he must be unfortunate indeed, whose harvest is *all chaff*.

I do not believe that any practical farmer who will subscribe for such a paper (the Maine Farmer, for instance,) *pay for it* and read it for a year, will at the end of that period be any poorer in consequence. It hardly seems possible that any sensible farmer can read your paper, containing as it does, the matured ideas of some of the best practical and theoretical farmers in the country, without deriving some hints for the improvement of his own practice, which will amply repay him for all the time and money expended. He may be much benefitted, even if he does not follow precisely and throughout the directions of a single article. In reading and applying the best directions, a share of common sense is necessary. What may apply to one farm may not to another so well: differences of soil, situation and climate require a different management; and a person who expects to be profited by an agricultural paper without any thought on his part, is laboring under a mistake. These publications are valuable, for they tend to encourage thought and investigation, and to give the farmer an increased interest in his occupation, as well as to impart knowledge. That instruction is best which not only enlarges one's own ideas but contributes to mental activity. By becoming acquainted with the ideas and practices of others, our confidence is increased in whatever we have in our own management that is really good, while our errors are quite likely to be discovered when brought into contact with what is superior in others.

Some have said that they already know how to manage a farm better than they are able to manage their own. I would ask such if they do not think it possible, with greater knowledge, and only their present means,—the same labor and capital,—to carry on farming more successfully than ever before? It requires not a little knowledge to manage a farm in all its departments, laying out a given amount of labor and capital, in the *best manner possible*. And I do not think it is doing injustice to the farmers of our State to say that there is not a single farm in Maine which is thus managed. I will go farther, and say that I do not believe there is a person in the State who has the requisite knowledge to do it. There is, however, a great difference in the management of farms among us; but let the best conducted farm in the State be pointed out, and perhaps every intelligent farmer would see something about it which he *knows* might be done better and to greater profit. If the best farms are susceptible of improvement, then all are:—if the best informed farmers need to progress in knowledge, then all have something to learn: and I know of no more efficient helps to the farmer in this work than our well conducted agricultural journals.

Farming is a complicated business. It embraces a wide field, which it requires time and deep study to explore. Some have turned their attention to one branch, some to another, and every intelligent, thinking farmer is capable of giving useful information upon some branch of his business. Let them exchange ideas and impart information to each other as they are able. He who imparts is not impoverished—he who receives is enriched.

The above communication we copy from the "*Maine Farmer*," and we recommend it to the attention of our subscribers. We can do this without hesitation, because it is not our own production.

THE ADVANTAGE OF SCIENCE TO AGRICULTURE.

Mr. Breck—I recollect seeing in a recent number of your well-conducted journal, an article commenting on an extract from one of the agricultural papers, in which the writer treated in a spirit of ridicule the idea of any advantage accruing to agriculture through the agency of "ammonia, alkali," &c.

It is strange, passing strange, to me, that men of apparent intelligence should be disposed rather to tickle the prejudice and bigotry of the illiterate, than to commend and encourage the enlightened efforts of those whose researches have resulted in developing such important improvements—or truths which are the elements of improvements—as those which have been brought to bear so successfully upon agriculture within the space of the last quarter of a century. I say it is strange that such should be the fact, yet it is not uncommon. There are those among us—writers for the public press, too—who, as soon as a principle of deduction of science is recommended to the farmer, for test, to see if it may not be of benefit to him in some particular case, are ready to prejudice him against it by the cry of "moonshine" or "humbug."

I frankly confess I have no charity for such persons. If they are sincere in their detraction, it is their igno-

rance which prompts it—and arrogant ignorance *deserves* no charity:—if they are not sincere, and *think* differently from what they say, then they are *hypocrites*, and of the worst kind, too, for they serve as false lights that may lead others astray. If, however, in most cases, these persons had *ability* and *honesty* in the proportion that they have *arrogance* and *bigotry*, they might commend what they now denounce;—but happily for the cause of agricultural improvement, the influence of such individuals can constitute no very serious impediment to its progress—for, what is *truth*, will *prove* itself so, and must ultimately triumph.

It is stated upon good authority, that the wheat-growers of France have succeeded in doubling the product of wheat in that kingdom within the last ten years, chiefly through the agency of charcoal.

Now, who discovered the value of this important agent in effecting such results? Was it the conception of any of that class just alluded to, who distrust science because its application to agriculture is *new*, or who ridicule it out of pure ignorance and bigotry, or to cater for the gratification of deep-rooted prejudice and sapient self-conceit? Was it the discovery of any of the family of *Know-enoughs*,—the frothy declaimers against "book-farming," who are satisfied with knowing as much as their fathers know, and *glory in knowing no more*? No—no. Agriculture is indebted to Science for this important discovery. It was the suggestion of French chemists that led the wheat-growers of France to adopt the use of charcoal on their fields—and the acquaintance, with this fact and the theory, no doubt, that led Mr. Pell, also, to use it for the same purpose and with such signal success.

To whom are we indebted for the great advantage which has accrued to our farmers from the knowledge of a remedy for our soils, and of the valuable properties of lime as an amendment to various grounds? Do we owe these discoveries to any of those boastful "practical men," who sneer at the science and the learning of books? No:—this, too, is to be charged to the credit of *science*.

Such facts as these—*these alone*, indeed—are sufficient to confound with shame the shallow detractors of science as an aid to the farmer—and until *they* can originate discoveries by their boasted "practical experience," as important as these, they will better act the part of Wisdom in holding their speech, than in betraying their stupidity in senseless slurs at that which is above their comprehension or too exalted to suit their grovelling inclination. Very truly yours, D.

New England Farmer.

MODE OF MAKING MAPLE SUGAR.

Joel Woodworth of Watertown, Jefferson county, whose maple sugar, refined to the degree of loaf sugar, obtained the premium at the late Agricultural State Fair at Rochester, thus describes the process of manufacture in a letter *to the Society's committee on that subject.* We copy from the Watertown Jeffersonian.

Gentlemen—I herewith submit to your inspection 50lbs of my maple sugar. The following is a statement of making and clarifying the same:—

In the first place I make my buckets, tubs and kettles all perfectly clean—I boil the sap in a potash kettle, set in an arch in such a manner that the edge of the kettle is defended all around from the fire; I boil through the day, taking care not to have anything in the kettle that will give color to the sap, and to keep it well skimmed. At night I have fire enough under the kettle to boil the sap nearly or quite to syrup by the next morning; I then take it out of the kettle and strain it through a flannel cloth into a tub, if it is sweet enough, if not I put it into a cauldron kettle, (which I have hung on a pole in such a manner that I can swing it on and off the fire at pleasure.) and boil it till it is sweet enough, and then strain it into the tub and let it stand till the next morning; I then take it and the syrup in the kettle and put altogether into the caulron and sugar it off. I use to clarify, say 100 lbs of sugar, the whites of five or six eggs well beaten, about one quart of new milk and a spoonful of saleratus, all well mixed with the syrup before it is scalding hot; I then make a moderate fire directly under the cauldron, until the scum is all raised, then skim it off clean, taking care not to let it boil so as to rise in the kettle before I have done skimming it; I then sugar off, leave it so damp that it will drain a little. I let it remain in the kettle until it is well granulated. I then put it into boxes made smallest at the bottom, that will hold from 50 to 70 lbs. having a thin piece of board fitted in 2 or 4 inches above the bottom, which is bored full of small holes, to let the molasses drain through, which I keep drawn off by a tap through the bottom. I put on the top of the sugar in the box *a clean damp cloth, and over that a board well fitted in* so as to exclude the air from the sugar. After it has done or nearly done draining, I dissolve it and sugar it off again, going through with the same process of clarifying and draining as before.

I do certify that the above is a correct statement of my mode of making maple sugar.

JOEL WOODWORTH.

PRACTICAL OBSERVATIONS ON DRAINING, WITH OTHER SUGGESTIONS FOR THE IMPROVEMENT OF LAND.—BY GEORGE BROWN.

1. Swinnerton, Macclesfield.

This little work shews more practical knowledge and scientific research than is generally found in so small a compass; and will well repay the reader by many useful and valuable hints. We extract from page 10 the following, in which we perfectly agree with the writer.

"One great error," he says, "into which English agriculturalists have fallen, is the system of diagonal or cross-draining. By cutting across the hill, the drains may be so placed as not to touch those veins from which the water flows, and thus the whole of the labour and expense may be thrown away. For instance, suppose those layers of subsoil in which the water chiefly flows to be three feet perpendicular from each other, with a stratum of clay between, the cross drains may be so cut as not to touch either one or the other of them.

"Another great evil attending the system of cross drainage is, that the water falling on the surface naturally runs from the side of the drain above it till it comes to the one below. The ridges running in a contrary direction to the drains, divide and throw the water into the furrows, thus accelerating its course so as sometimes to throw it over the drains. By this system the water is not drawn from the centre as by the other plan, but is allowed to flow from one drain to another, and thus the distance between the drains is in reality doubled. But even supposing it to answer as well in drying the land (which is not the case,) the very fact that it requires nearly twice the number of drains is sufficient to condemn it. Let the fall be ever so great, there ought to be no deviation in the direction of the drains. They should be made to run up and down hill. By this plan you cut through the different strata of the subsoil and open a passage at the lower level into the drains for the water, which would otherwise burst out on the face of the slope."

We quote the following statement of a fact which came under the author's observation, in conclusion.

"Of a field which was summer-fallowed for wheat, one half was drained, the other half not; in every other respect the whole field underwent the same treatment. The crops on the two halves were carefully kept separate, and it was found when the wheat was thrashed, winnowed and measured, that the drained half yielded just fourteen bushels per Scotch acre more than the undrained half. The Scotch acre is nearly a fourth part greater than the statute acre."

A LEAF TAKEN FROM THE LEAGUE'S BOOK.

"Free-trade, a very fine thing—if you can get it."

TO THE SHOEMAKER.

Are you in favour of Free-trade?

Certainly: Free-trade must be a good thing.

Is there any duty on foreign boots and shoes?

To be sure there is. How could we exist without it?

Have you any objection to taking off the duty?

Take off the duty on foreign boots and shoes? You must be insane to think of such a thing. Why, as it is there is a Frenchman now in Regent Street, Le Hocq, getting over hundreds of dozens of French boots and shoes every month. He has run away with a good many of my customers already. The duty ought to be doubled.

TO THE GLOVEMAKER.

What is your opinion of Free-trade?

I am quite in favour of Free trade.

How do you find business just now?

We are sorely pressed by the competition with French gloves.

But you are protected by a duty?

Of course we are. Would you expose us to an open competition with the Continent?

Then you are not prepared to consent to the repeal of the duty on gloves?

The notion is absurd. We could not carry on business for a month without the protecting duty.

TO THE SILK WEAVER.

Will you favour me with your opinion on Free-trade?

How can you doubt? Free-trade is a great principle, and ought to be carried out.

Certainly. What is the present state of the silk trade?

I am happy to say, that after a period of considerable depression we are now steadily reviving, and our people well employed.

Very glad to hear it. What is the amount of the protecting duty in favour of British silks?

From 29 to 30 per cent.

Do you consider that a sufficient protection?

Barely sufficient. In good times we can just manage to hold our way against the French competition.

What would be the effect of repealing that duty?

How can you ask such a question? The whole silk trade of the country would be ruined, and every man employed in it be thrown out of employment.

But then with respect to the "great principle" of Free-trade?

Oh, it is utterly inapplicable to the silk trade. No man in his senses would attempt it!

TO THE TAILOR.

Are you in favour of Free-trade?

I am for freedom in everything.

Good. Is there any duty on foreign-made clothes?

A duty on foreign-made clothes! Why, would you have those French tailors allowed to send their clothes here free of duty, and no protection given to the hard-working tailors of England? We should have half the London people getting their clothes made in Paris.

Perhaps we might. But these protecting duties are all against Free-trade.

Take off as many of them as you please; but as to allowing foreign coats and trousers to come in free of duty, it would be infamous!

TO THE CLOCK AND WATCH-MAKER.

Have you ever considered the subject of Free-trade?

To be sure. Everybody talks about it just now.

What is your opinion about it?

It is a very good thing with certain limitations.

Pray explain yourself.

I think corn should be perfectly free. It is dreadful to think of a tax on the staff of life. But manufactures must be protected. We cannot exist without protection.

Then you think that the principle of Free-trade can only be partially applied?

I am quite sure that you cannot apply it to the clock and watch trade without ruining us all.

TO THE COTTON-SPINNER.

Are you friendly to the principle of Free-trade?

Every enlightened member of the community is so.

What is the state of Cotton Manufactures at present?

A greatly improved one. We have now full employment for all hands; but we have had a long period of depression.

Your branch of manufactures has attained great importance?

It is the most important in the kingdom.

Are you much affected by foreign competition?

Undoubtedly. The manufacturers of the Continent are meeting us in all markets abroad, and they would take away a great part of our home trade but for the protecting duty that we have.

What is that protecting duty?

Ten per cent. on cotton yarns, and ten to twenty per cent. on cotton manufactures.

Then it would not be a safe thing to remove that protecting duty, even to advance the principle of Free-trade?

You must not think of such a thing. It would be madness to attempt it. Remove all restrictions from trade; but above all things protect your cotton manufactures.

TO THE FUNDHOLDER.

What is your view of the Free-trade question?

I think it delightful; I rejoice in seeing this great principle brought into discussion.

What do you live upon?

The interest of my money in the Funds.

How is that interest paid?

Out of the revenue of, course.

Which is the largest branch of the revenue?

The customs produce 21 millions per annum.

Are not the import duties on goods great restrictions on trade?

Extremely so; most burdensome and abominable.

Have you any objection to see the interest on Consols reduced from 3 to 2 per cent. in order to carry out this great principle of Free-trade?

What! reduce the interest of the public debt! violate the national faith! disgrace the national honour! Sir, you are a wild theorist! Carry out your principles of Free-trade by all means, but, above all things, secure your revenue.

TREATMENT OF SWINE.—The American Farmer gives some excellent hints on the above subject. It recommends that hogs be fattened early in the season as warm weather is more favorable for taking on fat than cold.

Nothing is more true, than that an animal cannot fatten while it is suffering with cold and discomfort. Fat consists of upwards of 70 parts of carbon; but if all the carbon is consumed in keeping up the animal heat, how can any be supplied to form fat? It is impossible. If you wish to fatten your swine easily and economically, give them shelter, warm and clean beds, and fresh water two or three times a day, as well as food, and the American Farmer says a rubbing post, which we believe is by no means a bad idea. Twice a week they should have salt, and at all times charcoal or rotten wood or both. Pigs should also have warm feed.

MEAT-SALTING INSTRUMENT.—This instrument resembles a common syringe of more than ordinary dimensions, and, although not quite so simple in its construction, it is intended to be used in the same way as the syringe, provided the point or tube be not exposed to the air. The advantages to be derived from the use of the instrument are explained by the fact that a joint of meat may, in the simplest manner, be salted in less than ten minutes. The brine is made of the usual ingredients, and after the salt and other substances are completely dissolved, the liquid is poured into the machine, and the nipple or tube (the circumference of which is perforated with three small holes) is inserted into the most solid part of a joint of meat, and the contents are by a strong pressure forced through the fibres until the brine is seen to escape on the surface. For this purpose a smaller quantity of pickle is used than is employed in the ordinary method of curing meat, and the bone (if there be any) in the centre becomes thoroughly impregnated with the fluid. By the present mode of salting meat, it is a matter of some difficulty to inject the brine into the innermost part of a large joint, whereas by the process which is adopted in the use of Mr. Carson's instrument, the size or substance of the meat presents no additional trouble to the operator.—*Genesee Farmer.*

LIQUID MANURE.

All substances, whether organic, earthy, or saline, which are employed to fertilize the soil, or become the food of plants, can only be rendered thus serviceable to vegetation when they are presented to the roots in solution, or in a fluid state, and although this may at first appear rather a sweeping position, yet such is the real fact. Every attempt which has been hitherto made to make plants imbibe the most minutely divided powders which chemistry can produce, has been entirely fruitless. Davy ineffectually tried the finest impalpable powder of charcoal, and with much perseverance I have fruitlessly employed the earths, saline substances, and organic matters, for the same purpose. Moreover, it has been unanswerably shown by many very accurate experiments, at the varied repetition of which I have personally assisted, that the quantity of nourishment absorbed by the roots of plants, is always in proportion to the impurity of the water with which they are nourished: thus some beans were made to vegetate under three different circumstances; the first were grown in distilled water; the second were placed in sand and watered with rain-water; the third were sown in garden mould. The plants thus produced, when accurately analyzed, were found to yield the following proportions of ashes:

1. Those fed by distilled water,..... 2.0
2. Those fed by rain-water,..... 7.5
3. Those grown in soil,.....12.0

And again, all attempts to make plants flourish in the pure earths, have utterly failed when they have been watered with pure water; yet a totally different result I have invariably experienced when I have employed an impure solution or liquid manure. My trials have been entirely supported by those of M. Globert, who, having formed of the four earths, silica, allumina, lime, and magnesia, a soil in the most fertile proportion, in vain essayed to make the plants flourish in it when watered with pure water only; but every difficulty was removed when he moistened it with the water from a dunghill, for they then grew most luxuriantly.

The employment of artificially prepared liquid manure is very extensive on the continent. They prepare it throughout many of the German States, and in the Netherlands, by sweeping the excrements of their stall-fed cattle into under-ground reservoirs, mixing it with four or five times its bulk of water, according to the richness of the dung; five reservoirs are generally employed, of such a size that they each take a week to fill; and thus each has four weeks allowed to ferment before the mass, which in this time becomes of an uniform consistence, is removed, by means of a portable pump, into water-carts, or large open vessels, and distributed over the fields by being let into a transverse trough, pierced with holes; or the Flemish plan may be adopted (especially when the manure is of too considerable thickness to flow readily through the holes,) of taking it into the fields in the water-carts, open at the top, (furnished with slight moveable covers,) and then distributing it out of the cart very evenly by means of a scoop; and I have invariably perceived the advantage of plowing the liquid into the soil as soon after it was spread on the land as possible.

"All urine," said a late distinguished chemical philosopher, "contains the essential elements of vegetables in a state of solution." By a careful analysis, human urine, in its fresh state, was found by Berzelius, to contain the following substances:

Water,.....	93.300
Urea (the peculiar animal matter of urine,	3.010
Sulphate of Potassa,,.....	0.371
Sulphate of Soda,.....	0.316
Phosphate of soda,.....	0.294
Common salt.....	0.445
Phosphate of ammonia,.....	0.165
Muriate of ammonia,.....	0.150
Acetate of ammonia, acetic acid, and animal matter soluble in alcohol.....	1.714
Earthy phosphate (earth of bones) with fluate of lime,.....	0.100
Uric acid,.....	0.100
Mucus of the bladder,.....	0.032
Silicia (earth of flint,).....	0.003
	100.

Thus it will be seen that there is hardly a single ingredient found in urine which is not either a direct food for vegetation, or furnishes by its decomposition, a supply in another form.

The urine of the horse is nearly as rich in animo-vegetable matters; its composition, according to the experiments of Fourcroy and Vauquelin, is as follows:

Water and Mucus.....	94.0
Urea,.....	0.7
Carbonate of lime (chalk).....	1.1
Carbonate of soda,.....	0.9
Benzoate of soda,.....	0.4
Muriate of potassa,.....	0.9
	100.

The following are the constituents of the urine of the cow, as found by Professor Brande:

Water,.....	65.0
Urea,.....	4.0
Phosphate of lime,.....	3.0
Muriates of Potassa and ammonia,.....	15.0
Sulphate of potassa,.....	6.0
Carbonates of potassa and ammonia,.....	4.0
Loss,.....	5.0
	100.

In some experiments by Mr. Gregory, at Leyton, who watered half a grass field with urine, the portion thus treated yielded nearly double the quantity of hay produced by the unmanured portion; and the use of the urine of the cow, so extensively employed for grass lands by Mr. Harley, in the neighbourhood of Glasgow, was attended with results equally satisfactory, producing, when diluted with water or soap-suds, very superior crops.

I have been employed, with decided effect, in my own garden, for vines, peach, and standard apple trees, liquid manure, prepared either by mixing one part of cow dung with four parts of water, or the collected rainage of the stable and cow-house. Of these, the vine is far the most benefited by application; but to whatever fruit tree the gardener has to apply manure, there is no form so manageable and so grateful to the plant as the liquid.—*Johnson's Far. Encyclop.*

TAPIOCA PUDDING.—A pudding so closely resembling Tapioca as not to be distinguishable, may be made in the following way:

Take a quart of mi' or water—set it over the fire, and when it boils smartly, stir in eight table spoonsful of dry

potato starch, as meal is made into a hasty pudding. Then, while very hot, stir in a small piece of butter, and separate as much as possible the little lumps of starch from each other. Then make a custard, and stir in the preparation of starch ; spice, and bake like a Tabioca pudding. It costs less than half as much, and if made rightly none will know the difference. It is eaten with any sauce best liked, or without, according to taste.

The above proportions will make a large pudding. The judgment can be used in reducing them, and one or two trials will insure success.

Most of the Tapioca of the shops, we have no doubt, is made from potato starch. If it is not so made, it might be. No one would know the difference. One pound of Tapioca costs as much as three pounds of starch.

The Canadian Agricultural Journal.

MONTREAL, MARCH 1, 1844.

GOVERNMENT HOUSE,
February 17, 1843.

SIR,—In reply to your letter of the 14th instant, I am directed by the Governor General to acknowledge the receipt of two numbers of the Agricultural Journal, and to express his regret that you should suppose that His Excellency did not estimate the public spirit which induced you to undertake the publication of so useful a Periodical.

I am desired to add, that as you are of opinion that the notification of His Excellency's countenance and support is likely to promote the success of the Journal, you are at liberty to announce it, as His Excellency highly approves of the publication and would willingly encourage it.

The Governor General is happy to find that there is still a prospect of your being able to publish in the French as well as in the English language, and desires me to transmit the enclosed cheque for twenty pounds, as a contribution from him towards defraying the additional expense that will be incurred in accomplishing an object which, His Excellency trusts may prove of service to the French Canadian Farmers, by imparting such useful knowledge as may gradually lead to the introduction amongst them of an improved system of Agriculture, and thereby essentially better their condition. I have the honor to be, Sir, your most obedient Servant,

J. M. HIGGINSON.

WM. EVANS, Esquire.

It affords us much gratification to publish the above letter which we had the honour to receive from the Private Secretary of His Excellency the Governor General, handing us twenty pounds currency, to aid us in translating our Agricultural Journal and publishing it in the French language. We do not indeed value the amount of the pecuniary aid so much as we do the approval by His Excellency, of our Journal, its usefulness—and our motives. It will be a new and powerful stimulous to our future exertions, and give more confidence to our humble endeavours, to promote the improvement of Canadian Agriculture, than we ever had before. We had always to regret the want of such countenance and support. It was almost useless to point out the necessity and expediency of introducing improvements in our agriculture, if the same necessity and expediency could not be perceived by others as well qualified to judge of both as we are. In recommending what we conceive to be of vital importance to nine-tenths of the population, it is extremely discouraging when we find all we submit on the subject disregarded, and not viewed in the same light as by ourselves. We trust, however, that the time is arrived that public opinion will be more favourably disposed to consider the true state of Canadian Agriculture, and adopt measures for its amelioration. It is of the utmost importance that His Excellency the Governor General has been graciously pleased to signify his approval of circulating useful agricultural information amongst the Canadian farmers. It is, at all events, a good example for all those who have any pretensions to be interested in the real prosperity of the country and its inhabitants. Now is the time to unite, and if the wealthy classes will only come forward, and contribute in any reasonable proportion to the liberal aid so generously contributed by the Governor General, towards publising an Agricultural Journal in the French language, we may have it sent to the remotest farm house in the Province, and we have not the smallest doubt of its producing improvement in the present system of agriculture. It is absurd for any one to say it will not be productive of good. Let the trial be fairly made before we pronounce it to be useless. No attempt ever has been made to instruct the Canadian farmers in agriculture. If the farmers in the British Isles were to have been so neglected, they would perhaps be as far behind in improvement as we are in this country. It was not the farmers who encouraged the most useful improvements, but the landed proprietors, and others unconnected with agriculture. We should not, therefore, expect from our Canadian farmers, who are generally deficent in education, what English, Irish, or Scotch farmers never did for themselves, until encouraged, and set an example to, by others, who were at the first expense of making experiments. The old country farmers in Canada have the advantage of knowing before they come here, the English practice of agriculture, and they every year have means of acquiring new information by emigrants arriving, and by reading agricultural periodicals. The French Canadian farmers have not these advantages, and though in many places they may have the example of old country farmers before them, yet they have not information to read, and study at their leisure, in their houses. An Agricultural Journal in their own language, would induce them to read and reflect upon what was proposed, and recommended to them. There is much valuable information on the subject of agriculture published in France; selections might be made from these publications that would interest Canadians. We do not wish to exclude from our Journal any useful information that is offered to us respecting agriculture. If, therefore, any individual conceives he can offer information that is useful, let him hand it to us, and it shall appear, if deserving the character of usefulness. If we had only twelve

hundred subscribers, we should be able to publish two or three thousand copies, and half this number we would dispose of at a very low rate for distribution to the poorer classes of Canadian farmers.

The want of sufficient capital is severely felt in Canada, and particularly amongst the agricultural class. It was always one of our principal objections to the carrying trade, of the produce of other nations, that it employed a very large proportion of the capital belonging to individuals connected with Canada, in a way that was not the most beneficial for the general interests of this country. The carrying trade is not the best suited for countries possessed of small capital, because the whole of this capital would be required to give activity to internal industry, which is always entitled to the preference. It is by the productions of our own country we must supply all our wants, so far as regards the means of the farmer. The abundance and excellence of our own productions will afford us the means of internal commerce, as well as of external commerce, and those who wish both to be prosperous should do all in their power to augment the amount and value of our own productions. This is the true mode of insuring a flourishing internal and external commerce. A very eminent author observes: "The internal commerce of the country, though, from its minute ramifications, it is less obvious and striking, besides being the most considerable, is likewise the most advantageous. For both the remittances and returns of this commerce are necessarily home products. It sets in motion a double production, and the profits of it are not participated in by foreigners. For this reason, roads, canals, bridges, every means, in short, which promotes internal circulation, is favourable to national wealth." We perfectly agree in opinion with this author, and would wish to see our means of communication by roads, bridges, rail-roads, and canals, extended in every direction throughout the country, where there would be any chance of their being useful or paying the interest upon the expenditure, for the present. Convenient means of access to market encourages production, and is a great benefit both to producer and consumer. Capital may be much more safely and profitably employed in the improvement of land, and production of crops, where there is easy means of access to market, than where such means do not exist. Capital employed in agriculture under favourable circumstances, must be much the most beneficial mode of employing it for such a country as this, because it would give employment to a large number of persons, and should always reproduce itself, with a profit, to be again employed in the same way, and with similar results. As a reasonable encouragement to agriculture, the farmer or landowner should always be able to realize his expenditure and a fair profit. He should have from the produce a fair allowance for the productive service of the land, as rent—for the productive service of the capital embarked, as interest—and for the productive service of skill, and labour, that has set the whole in motion, as wages: in fact, the annual produce should replace the outlay of money, and manure, live stock, &c. so that he may be put in possession of a value equal to what he commenced with, allowing for all that we have enumerated, and a fair profit besides. By this fair remuneration capital might be kept up, and augmented constantly. If there is due protection from foreign competition, and the land managed with order, economy, and intelligence, under a judicious system of cultivation, we would hope that the farmer possessed of sufficient land might be enabled to realize a surplus, after replacing the entire value of his capital, and defraying the reasonable expenses of himself and his family. If he is then able to employ the whole, or any part of this surplus, in creating a new produce, by the cultivation of more land, or the purchase of more cattle, and the hire and support of more labourers, and, in consequence, at the end of the year, have produce sufficient to replace all this expenditure with a profit, and all this be again employed in the same way the year after, our capital and production would soon be augmented and doubled, and our condition vastly improved. It is in this way alone that we could really augment capital, and with the greatest benefit to every class of this community. It is in our power to realize this favourable change in our circumstances, by adopting the proper means.

There is a reasonable protection and encouragement for capital employed in agriculture now, which we never had before, and we should avail ourselves of this advantage. It is impossible to devise any plan that will produce so much general benefit to the inhabitants of Canada, as by an improving, and prosperous agriculture, producing abundantly what will be required to insure internal, and external commerce. The farmer, raising a surplus, to be exchanged or sold to the merchant or tradesman for what they may require of foreign produce, and English and Canadian manufactures. The prosperity of Canada is so manifestly dependent upon the amount and value of her own productions, that it is astonishing every educated man in the province, who is permanently settled in the country, would not be anxious to increase the amount, and improve the value of this production. The occupied lands of the country are neglected, when they might with certainty be made to yield an annual production of more than double the value they do at present—an augmented value that would be equal to an increase of several million of pounds currency, to the inhabitants of the country. If this would not be a matter of some importance to accomplish, we confess we know not what would.

The author we have selected from, says again:—"The faculty of amassing capital, or, in another word, value, I apprehend to be one cause of the vast superiority of man over the brute creation. Capital, taken in the aggregate, is a powerful engine consigned to the use of man alone. He can direct towards any one

channel of employment, the successful accumulations of many generations. Other animals can command, at most, no more than their respective individual accumulations, scraped together in the course of a few days, or a season at the utmost, which can never amount to anything considerable; so that, granting them a degree of intelligence they do not seem possessed of, that intelligence would yet remain ineffectual, for want of the materials to set it in motion. Moreover, it may be remarked, that the powers of man, resulting from the faculty of amassing capital, are absolutely indefinable; because there is no assignable limit to the capital he may accumulate, with the aid of time, industry, and frugality."

FARMING TOOLS.

It is a matter of considerable importance to the farmer, and to those employed by him, that farming implements and tools should be of the most improved construction and best materials. With such tools, the work can be executed with greater ease to the operator, and in a much better manner than with tools of defective shape, and inferior quality, that are generally imported to this country. Manufacturers should know that the tools they make should be for usefulness to the purchaser, as well as for profit to those who sell them—small tools of very common use on all well cultivated farms, such as spades, shovels, hay, and dung forks, &c., are sold at high prices here, compared with the English prices for these articles that are of the very best description. Spades and shovels for use on a farm should invariably be steeled, and made of hammered iron, not cut out of sheet-iron, as those are that we import here. Those at present imported might be suitable enough for public works,where they are so subject to be abused; but for making drains and other work upon a farm, the very best description of spades and shovels are necessary,and with such, a man could do double as much work, and in a better manner, than with those we have to use here. They are soft, blunt, and will not keep a sharp edge to work well. The importing merchants are under a great mistake if they suppose that farmers would prefer buying bad tools, at almost any price, to giving a fair price for good ones. There is abundant opportunity in England of seeing the best agricultural implements and tools to be found on earth, and it would be reasonable to make a fair experiment of importing the best description and allowing farmers an opportunity to decide whether they will give the preference to the best or be content to buy the bad kind. They never had an opportunity, during our residence in Canada, of choosing between bad and good, because of the latter there was none. We do not offer these remarks to annoy or injure the merchant, but in order that a better description of tools may be imported—first on a small scale, to try the experiment. It is to be regretted, that, in this age of improvement, the farmers of Canada should not be able to obtain the best and most suitable tools for their work. We have seen spades, and hay forks, such as are used on farms in England, that one of them would be better than half a dozen of those generally to be had here. These articles were brought out by emigrants.

BUILDINGS OF THE FARM.

It is necessary that there should be buildings upon the farm, to enable the farmer to preserve his hay, grain, and other seeds, and to thrash and prepare the produce of the land for use and sale; to keep his working horses, and cattle; to divide, shelter, and feed his other live stock; and to prepare and collect manures. For the economy of labour, *the buildings should be* as near as possible to the centre of the cultivated grounds. Most of the produce of the farm has, in the first place, to be conveyed to the farm-buildings—and the manure has to be carried from them to the fields; it is therefore important that the cultivated parts of the farm should not be so very distant from the buildings that time would be wasted by the men and working cattle in travelling. But although a central situation of the farm-buildings is desirable—it is often necessary or expedient to sacrifice this convenience, in order to secure others. *A primary object is,* the obtaining a sufficient command of water for domestic purposes, and the use of the live-stock. This cannot be obtained in every situation, and convenience of position, therefore, in the buildings must often be sacrificed in order to obtain the necessary supplies of water. Sometimes water can be procured in sufficient quantity by sinking wells: but it is always better that it be obtained by a constant flow or current, that the stock of the farm may be supplied at all times without the labour of drawing water from a deep well. It is also found that *the water from a constant flow or* current is better and more wholesome for stock, than that from deep wells. Where a brook or rivulet of any kind does not exist, water can be frequently conveyed from a distance to the buildings in drains or pipes. When farm buildings are to be erected, a previous examination of the means of procuring this most necessary material should never be omitted. However beneficial, then, it be to place the farm-buildings in a central situation, this object must be often sacrificed in order to secure the great advantages of having a convenient supply of water—without much labour in obtaining it.

The extent and arrangements of the different parts of farm-buildings, depend on the nature and size of the farm,and on the species of management to be pursued upon it. It is very injudicious to have the farm-buildings of larger size than is necessary. Their erection, in the first instance, amounts to considerable expense, and cost something to maintain them in good order. It is therefore wasting capital to have farm-buildings larger than is required for the farm. The most convenient disposition of the out-houses of a farm, is in the form of a square, open at one side to

the south so as to admit air to the cattle in the yards, and allow sufficient sunshine to them in winter. The yard might be divided, to seperate the aged cattle from the young—and it is also necessary to have a yard for sheep, connected with a sheep-house, divided so as to separate the young and old sheep, and the ewes with young at the lambing season. The barns should be placed in the centre on the north side of the square, so as to be in the most convenient position to furnish straw to the cattle-houses and stables. There should also be a granary for the purpose of holding corn, and seeds of all kinds. This building should stand alone, on the south side of the square, detached from all other buildings and raised from the ground to protect it from vermin. It should be furnished with binns for the different sorts of grain, and be kept dry, clean, and well ventilated. In the several divisions of the yard, there should be placed moveable racks, for holding straw, or other provender for the cattle and sheep. There should be troughs for containing water, and in sheep yards, small troughs for feeding with roots or grain. The cattle-houses should be laid out with attention to ventilation and cleanliness. They should have open channels behind the animals to carry off the urine to properly constructed cisterns, unless there are vaults below the stable to receive both the dung and urine, which is the best plan, where it is possible—and ground favourable. The most perfect cattle house is, where each animal has a separate stall, the stalls being divided by low partitions formed of planks, of just sufficient size to keep the animals from interfering with each other. To those partitions are fixed vertical rods or bars of iron, moving upon each of which is a ring, to which is attached the chain which passes round the neck of the animal; and, further, these stalls are divided by low partitions from a centre pathway along which the food is conveyed to the cattle on each side of it.

We shall continue this in our next number.

FARM-YARD.

The judicious construction of the Farm-yard is of great consequence to the making manure and preserving it from waste. In Canada, where so large a quantity of snow falls, and is blown into, and collected in the farm-yard, it is extremely difficult to preserve the manure from waste. It should, therefore, if possible, be kept under cover, or taken to the fields immediately on being uncovered. We do not see how the urine of cattle and horses can be preserved here in winter unless in cisterns under the stables, where the urine might be conveyed before it would be frozen. Where there is abundance of litter, by keeping cattle and horses constantly well littered, the straw would imbibe and retain most of the urine. In the summer, and when compost heaps are not frozen, the urine and liquid manure might be constantly thrown into and upon the compost heap, would soak into it, and not be lost—but when the compost heap is frozen in winter this cannot be done. Cisterns would very soon repay the expense of their construction. A very large proportion of the best of our manure is lost in Canada, in consequence of ill constructed cattle-houses, stables, and farm-yards. Any farm that has moss-land attached to it, might produce a large quantity of manure, by carting into the farm-yard in summer some of this moss-soil, and allowing the cattle to work it with their feet, and by mixing soil of a different quality with it—and also by adding to it salt lime, and gypsum, and finally putting it up in a heap in the fall, and when sufficiently fermented, spreading it upon grass land, as a top-dressing, or previously to sowing. Lime is said to be very necessary on any lands where iron ore abounds. Moss will answer well for working into light and sandy soils, and will greatly improve them, as will sand, out of the hill side, improve moss-lands. Dressing or mixing soils, with earths of different quality, will almost invariably produce improvement. This mode of improvement is generally in the power of farmers, and we do not believe there is a better mode, though it is one that is very seldom resorted to in Canada.

SHEEP.

In the neighbouring States of the Union, the sheep are generally of the Merino breed, and for mutton they are all but useless. The wool must be the principal object of keeping such sheep. We would be sorry to see this breed of sheep introduced to any extent into Canada. We think the New Leicester, and South Down would be much preferable, because they will yield both wool and mutton of good quality. We may have as good mutton and wool here as in the British Isles, and the Leicester and South Down sheep would be a much greater ornament to our pastures, as well as to our tables, than the wretched Merino sheep. The latter may be easy to keep, as the object is only wool, but we do not think they can be profitable. The unimproved Canadian Sheep are not a good stock, but by crossing with the South Down, or Leicester, they might be much improved, and become profitable stock. Properly constructed sheep-houses, and yards are essential to make sheep a good and profitable stock for the farmer. Unless the lambs are preserved, which they cannot be without good food and shelter, sheep cannot be a profitable stock. We shall refer to this subject again.

At an agricultural meeting lately held in the United States, the application of manures was discussed, and as this subject is of great consequence to farmers, we shall give such portions of the discussion, as we think will be useful.

The Hon. Mr. Allen commenced the discussion by observing:—

Next in importance to seeking extended knowledge of the countless substances which may be applied as manure, is that knowledge which qualifies us to make the most judicious and useful application of the various articles we spread over our fields.

There are many and contradictory opinions concerning

the proper time and manner of applying the manure of barn-yards to soils. This is used to some extent by every farmer, and to this my remarks shall be chiefly confined. The leading questions on which variant opinions arise, are, should it be used in its long or unfermented state, or should it be decomposed before it goes to the field?—should it be spread on the surface and there left, or ploughed under the soil?—what season in the year should fields be manured?

Now, on these questions theorists and doctors differ widely; and we certainly shall not expect in this discussion, to come to any unquestionable conclusions. Perhaps we can pursue no course more likely to impart light and guidance, than in a free disclosure of our personal practices and the results that have followed.

Mr. Allen goes on to state that he generally applied his manure on the surface, particularly to grass lands, and thought it the best mode of application. Thus he speaks of it:—

Other authoritative names were yearly added to the denunciators of surface manuring. After several experiments, I determined to pursue the former course, and manure on the surface. This was believed to be best on my farm. All my manure for mowing land is composted. It is an object to increase the quantity, even at expense of strength. Much of the enriching qualities of unmixed barn manure, would, no doubt, pass into the atmosphere, if spread on the surface; and probably theorists have reference to this when they speak in such strong language against surface manuring.

Compost manure, when proper materials are used, and in suitable proportions, we think will draw more fructifying gases from the atmosphere than will be discharged into it. But, if farmers will use unmixed manure, let them plough it under the soil. We feel confident, however, that very little should be used in this way.

The proper seasons for manuring fields, cannot be fixed by any rules which *all* farmers would find it practicable to observe. My practice has been to manure at all seasons, when it could be done without injury to the soil or the growing crop. It will no doubt be most effective when applied near the time of vegetation.

With the various extracts in the form of salts, I have made few experiments, and those have been applications to the surface. A different course may in some cases be preferable—if so, we hope to hear it recommended in the progress of this discussion.

The order of nature, all farmers must observe, is to lodge the food which is to nourish future plants near the surface. Art is seldom successful when its grasp is extended beyond established laws.

The application of salt was next discussed. A letter from the Hon. Mr. Welles stated that he had made several experiments with salt—that when applying 30, 20, and 15 bushels to the acre of grass land, vegetation was destroyed—but on applying only 4 or 5 bushels to the acre, the result was favourable: the grass was of a deep green, and the feed was preferred by the cattle. Mr. Welles concludes as follows:—

I have pursued the subject in the variety of modes as herein detailed, to give some proof of the utility of salt when carefully applied, and of its power when otherwise used. To show this in the latter case, and as it may be as desirable to others as to me, I would add, that there were on my ground, set out more than half a century since for ornament and fashion's sake, several score of the tree called the Lombardy Poplar. These are great exhausters of the soil, and it became desirable, from their extensive roots and suckers, to get rid of them. For this purpose, I had recourse to the power of the article of which we treat. I cut down the trees, making a hollow in top of the stump: to this an augur was applied, and a hole bored to the depth of from 4 to 6 inches: 2 or 3 quarts of salt was put on the stump, and so effectual was it that no sucker ever appeared. The object was thus fully effected.

The discussion then proceeds, and we give it almost entire, as reported in the New England Farmer.

Mr. Buckminster stated that as to the best modes of applying manures, he had found much difficulty. He once adopted the theory that we could lose nothing, on the whole, by burying manure deep in the soil: he thought if it did not benefit the soil so much the first season, it would in time make its appearance in the crops, and nothing would be lost—that if the first crop did not get much of it, the second or the third would find it; and as he was satisfied that manures did not sink down in the soil, he thought his chief care should be to prevent its evaporation.

But after many trials, he is now well satisfied that in *heavy loams and clays*, we *may* bury our manures so deep under the green-sward furrow as to lose them. They lie in lumps and waste away without giving much aid to the growing blades.

He thought it better to overhaul the winter manure in the spring—let it ferment and become as fine as your time will permit: mix it with loam and other matter; apply it to the surface and plough a shallow furrow, or harrow it in thoroughly. Yet he agreed that there was no great objection to ploughing in long green manure on lands that had been planted the previous year; for when you till the ground, you mix the manure very intimately with the earth. It is not so when you bury it under the green-sward furrows.

He had also used ashes to good advantage on meadow lands when spread upon the surface at the rate of 50 or 60 bushels to the acre.

Dr. C. T. Jackson (a zealous friend of the farming interest, and always ready to lend it the aid of his learning,) inquired whether any gentleman had used salt in the interior, as it was important to know the difference in its effects when applied on the seaboard, and away from the influence of the ocean.

Mr. Everett, of Princeton, said he had a field of corn which was much infested with worms, and by the recommendation of a neighbor, was induced to try salt, which he applied at the rate of two bushels per acre, with the desired effect. The corn grew well, and where the salt was strewed most profusely, the crop was most luxuriant. The field had not been ploughed for a number of years. He manured in the hill, and not very heavily, and yet the succeeding crop of wheat was good: he attributed these results to the application of salt.

Mr Merryman, of Auburn, said he has used salt successfully in destroying worms in his garden; he had put it about his beans, corn, &c., and perceived that where it was applied, the plants were more luxuriant. He puts brine in his compost heap, and thought salt a valuable manure, but too expensive for general use in his section of the country. In regard to applying manure, he was not confined to any particular mode. It was a general practice among his neighbors to carry out the barnyard manure in the fall, but this he thought a bad plan. His custom was to carry his out in the spring, clean his yard, and spread his manure on the green sward and plough it under. That none of the moisture may be lost, he has men carting and spreading while another is ploughing it in—and in this way he raised 40 or 50 bushels of corn per acre. When manure is carted out in the fall, it loses much of its strength by the escape of the gases—but these are retained in a great measure when it is suffered to lie compactly in the barn-yard until spring. He uses compost for grass lands alone, spread on in the fall. He applies a liberal quantity of manure for corn, from 40 to 50 loads per acre. Planting one year with corn and then laying down to grass, he gets good crops for six or seven years. He ploughs his land from 4 to 6 inches deep.

Dr C. T. Jackson asked information relative to the application of liquid manures. He said the disagreeable odor from urine would be entirely prevented by mixing it with salt muck or peat and a small quantity of gypsum. He recommended to farmers to take 20 casks of peat or muck in a dry state and one of gypsum or plaster of Paris, and have urine mixed with the same; this would produce an excellent manure. Casks half filled with this composi-

tion, might be placed in convenient situations in the city to receive urine: a chemical operation would take place, the effect of which would be the production of sulphate of ammonia and carbonate and humate of lime, in considerable quantities, and the disagreeable effluvia arising from the liquid when kept in the original state, would be prevented. Soapsuds may be saved in the same way, and make excellent manure. In South Berwick, Me., has seen a process of converting all the liquids from the barns and out-houses into good manure, using clay instead of gypsum. The liquid part of animal excretions, he thinks equal in value to the solid part. In answer to the inquiry whether any loss accrued to the compost bed by its being exposed, he said much would be saved by keeping it under cover: it should not be kept too wet, nor yet too dry, as in the last state it will not decompose well. A small quantity of lime or ashes should be mixed with it in the spring to make it more active.

Mr. Cole, of the Cultivator, said that "he had used salt only for turnips and asparagus—for the latter it was an excellent manure and destroyed the weeds. It promoted the growth of turnips and destroyed insects. When spread on the surface he used about 15 bushels to the acre, when applied in the drill to turnips half that quantity was sufficient. In raising early turnips for the market they are generally injured by worms, which evil may be obviated by using salt. He knows a gardener who raises large cabbages, and fine smooth turnips for early use by a liberal application of salt, on land that has been long under cultivation."

Mr. Hobbs, of Weston, remarked, that farmers are unwilling to give up the practice of manuring in the hill. He was reluctant to adopt a different mode himself, but now he prefers spreading a compost on the surface and plough in with a light horse-plough, and does not approve of burying the manure deep. He found that a pint of ashes strewn upon each hill of corn had a good effect. He had not much experience in the use of salt, excepting its effect in destroying poplar trees by applying it to the stump.

Hon. Mr. Cook, from Berkshire, observed that Judge Buel recommended ploughing in manures, and he and his neighbors had been induced to follow his instructions, and they had looked one, two and three years, for the benefit of the manures, and then gave it up and abandoned the method. They were fully satisfied it was not good to bury manure deep. He said we are advised to follow nature: he professed to have much respect for her, but he would not follow her implicitly. She leaves her rubbish where it will not soon ferment.

Mr. Everett, of Princeton, said he had used plaster in dry ground successfully; that in a field of potatoes he experimented on four rows through the middle of the piece: in two rows he manured in the hill, in the other two no manure was used. To one of the rows with manure, and one without, he applied about a table-spoonful of plaster to each hill. The potatoes had a yellow, sickly, appearance when they were dressed with the plaster, but in a week recovered, and looked well through the season, and the rows with the plaster could be distinguished at a distance of a mile from the field. When the potatoes were dug, the result was as follows:

1st row with manure alone, it took	28	hills for a bushel	
2d	" with manure and plaster,	15	" "
3d	" plaster without manure,	20	" "
4th	" neither plaster or manure,	38	" "

In moist land, he found but little benefit from the plaster.

Mr. Giles C. Hall, of Chatham, Conn., who owns a large farm on Connecticut river, of 3 or 400 acres, remarked, that he was a stranger in the place, but felt very happy in having an opportunity to meet the farmers of the old Bay State. He thought agriculture was much in advance in our State of that of his own. He esteemed it a privilege to be present and hear the discussions. He had derived much instruction and benefit from reading our agricultural papers. He was a working man, and was accustomed to drive his own team and hold his own plough. He considered ashes one of the best manures; when applied to the roots of fruit trees, where the soil was broken, they were highly beneficial. He spoke of the use the Brooklyn (N. Y.) farmers make of ashes, buying all they could get up the Connecticut river—carry them home, raise vegetables, and sell them to us—while we, on the river, are making "notions"! Barnyard manure applied in the proportion of 40 or 50 loads to the acre, well mixed, and ploughed lightly or harrowed to the depth of 2 or 3 inches, he thought most beneficial. Manure spread upon grass should be very fine and put on in the spring, and sand or any other substance placed about the roots of grass, was good. Soot and mortar from old chimneys are strong manures.

Dr. Jackson remarked, that ashes and lime alone would render a soil fertile. Mr. O. Mason, of Providence, and himself, had analyzed soil, a blowing sand, which had been manured with ashes alone for 7 or 8 years, at the rate of 200 bushels to the acre, and found there was three per cent. gain of organic matter after the crop was taken off. The Long Islanders cruise along our coast and the coast of Maine, and purchase all the ashes they can find. Light soils are the most benefitted by ashes, while heavy clay soils are but little.

In answer to the inquiry what the difference in value was between the leached and unleached, Dr. Jackson remarked that the first effects of unleached ashes are most powerful, but the effects in succeeding years show, that leached ashes are equally good. It should be remembered that the lime which is added to leached ashes more than repays the loss of the alkali.

Mr. Buckminster said that ashes should be applied to light lands only. He found that on wet lands they produced moss and were injurious.

Mr. Stone said that he found ashes to be excellent for fruit trees, and for vegetables generally. They are too valuable to exchange for soap, for soap boilers do not pay enough.

Mr. Robinson, of Webster, stated that he had used ashes and lime as a manure for potatoes, two parts of the former and one of the latter, using half a pint of the mixture to a hill, applied at the time of planting, the soil light and loamy. Where this manure was used 7 hills produced as much as 12 not thus manured. The lime had been slacked some time."

[More fully to explain the course pursued in the application of salt, since suggested by several respected gentleman at the meeting on the 23d inst., Mr. Welles requests us to say.

1st. That the application appears to be more beneficial as the distance from tide water increases.

2d. As to economy; that the salt used in the compost heap, is, as far as it can be obtained, the residuum of the provision cask. This is to be had at about half price. The salt that has been used for strewing on the surface, has been of course fine bag salt.

3d. If there should be any putrid substances mixed with the salt, it would doubtless further promote vegetation, but this belongs to a different subject.]

In "Liebig's Chemistry of Agriculture" there is much useful information, and proved by actual experiment. He says that:—"One hundred parts of wheat grown upon a soil manured with cow-dung (a manure containing the smallest quantity of nitrogen) afforded only about 12 per cent. of gluten, and 64¼ of starch; whilst the same quantity, grown on a soil manured with human urine, yielded the maximum of gluten, namely 35 per cent." This we believe can be proved in practice. Putrid urine is employed in Flanders as a manure with the best results, and is considered in that country one of the most powerful manures they have. During the putrefaction of urine ammoniacal salts are formed in large quantity, and, it is said, exclusively: for under the influence of heat and moisture, uria the most prominent ingredient of the urine, is converted into carbonate of ammonia, and it is ammo-

nia which indirectly yields vegetable albumen, the principal constituent of plants. As the food consumed by animals must supply them with what is necessary to support their flesh, and to produce milk, their excrements must be deprived of a part of what the food contained, particularly of nitrogen. When, therefore, a field is manured with animal excrements, a smaller quantity of matter containing nitrogen is added to it than has been taken from it, in the form of grass, herbs, and seeds. Liebeg says:—"By means of manure, an addition only is made to the nourishment which the air supplies." In a scientific point of view, it should be the care of the agriculturist so to employ all the substance containing a large proportion of nitrogen which his farm affords, in the form of animal excrements, that they shall serve as nutriment to his own plants. This will not be the case, unless those substances are properly distributed upon his land. A heap of manure lying unemployed upon his land would serve him no more than his neighbours. The nitrogen in it will escape as carbonate of ammonia into the atmosphere, and a mere carbonacious residue of decayed plants would, after some years, be found in its place. In this manner most of the manure made by Canadian farmers is actually lost to them, by suffering it to remain unemployed in the farm yard until all its best qualities are evaporated. It is then most generally carted out to the field in the heat of summer, and must consequently lose the greater part of the good that may have remained in it, before it is ploughed into the soil. Manure may be very profitably applied to the surface of the soil, when vegetation is active, and it is a most excellent mode of applying it to grass land, or young crops of grain, as it immediately supplies the growing plants with what they require—but to keep it in the yards, without mixing in compost heaps, or to expose it in the field in the heat of summer, until all the best qualities are lost, is very injurious to the farmers who follow this practice, and it is a general one amongst Canadian farmers, we are sorry to say. We hope, however, that it will be discontinued, and a more judicious system of managing manure adopted at once.

In these different substances, some one of which is never wanting in the food of the graminivora, there is added to the nitrogenized constituents of this food, to the vegetable albumen, fibrine, and caseine, from which their blood is formed, strictly speaking, only a certain excess of carbon, which the animal organism cannot possibly employ to produce fibrine or albumen, because the nitrogenized constituents of the food already contain the carbon necessary for the production of blood, and because the blood in the body of the carnivora is formed without the aid of this excess of carbon.

The function performed in the vital process of the graminivora by these substances (sugar, gum, &c.) is indicated in a very clear and convincing manner, when we take into consideration the very small relative amount of the carbon which these animals consume in the nitrogenized constituents of their food, which bears no proportion whatever to the oxygen absorbed through the skin and lungs.

A horse, for example, can be kept in perfectly good condition, if he obtain as food 15 lbs. of hay and 4½ lbs. of oats, daily. If we now calculate the whole amount of nitrogen in these matters, as ascertained by analysis (1-5 per cent. in hay, 2-2 per cent. in the oats,) (15) in the form of blood, that is, as fibrine and albumen, with due proportion of water in blood (80 per cent,) the horse receives daily no more than 4½ oz. of nitrogen, corresponding to about 8 lbs. of blood. But along with this nitrogen, that is, combined with it in the form of fibrine or albumen, the animal receives only about 14½ oz. of carbon. Only about 8 oz. of this can be employed to support respiration, for with the nitrogen expelled in the urine there are combined, in the form of urea 3 oz., and in the form of hippuric acid, 3½ oz. of carbon.

Without going further into the calculation, it will readily be admitted, that the volume of air inspired and expired by a horse, the quantity of oxygen consumed, and, as a necessary consequence, the amount of carbonic acid given out by the animal, is much greater than in the respiratory process in man. But an adult man consumes daily about 14 oz. of carbon, and the determination of Boussingault, according to which a horse expires 79 oz. daily, cannot be very far from the truth.

In the nitrogenized constituents of his food, therefore, the horse receives rather less than the fifth part of the carbon which his organism requires for the support of the respiratory process; and we see that the wisdom of the Creator has added to his food the four-fifths which are wanting, in various forms, as starch, sugar, &c., with which the animal must be supplied, or his organism will be destroyed by the action of the oxygen.

It is obvious, that in the system of the graminivora, whose food contains so small a proportion, relatively, of the constituents of blood, the process of metamorphosis in existing tissues, and consequently their restoration or reproduction, must go on far less rapidly than in the carnivora. Were this not the case, a vegetation a thousand times more luxuriant than the actual one would not suffice for their nourishment. Sugar, gum, and starch, would no longer be necessary to support life in these animals, because, in that case, the products of the waste, or metamorphosis of the organized tissues, would contain enough of carbon to support the respiratory process.

Man, when confined to animal food, requires for his support and nourishment extensive sources of food, even more widely extended than the lion and tiger, because, when he has the opportunity, he kills without eating.

A nation of hunters, on a limited space, is utterly incapable of increasing its numbers beyond a certain point, which is soon attained. The carbon necessary for respiration must be obtained from the animals, of which only a limited number can live on the space supposed. These animals collect from plants the constituents of their organs and of their blood, and yield them, in turn, to the savages who live by the chase alone. They, again, receive this food unaccompanied by those compounds, destitute of nitrogen, which, during the life of the animals, served to support the respiratory process. In such men, confined to an animal diet, it is the carbon of the flesh and of the blood which must take the place of starch and sugar.

But 15 lbs. of flesh contain not more carbon than 4 lbs. of starch, (16) and while the savage with one animal and an equal weight of starch could maintain life and health for a certain number of days, he would be compelled, if confined to flesh, in order to procure the carbon necessary for respiration, during the same time, to consume five such animals.

It is easy to see, from these considerations, how close the connection is between agriculture and the multiplication of the human species. The cultivation of our crops has ultimately no other object than the production of a maximum of those substances which are adapted for assimilation and respiration, in the smallest possible space. Grain and other nutritious vegetables yield us, not only in starch, sugar, and gum, the carbon which protects our organs from the action of oxygen, and produces in the organism the heat which is essential to life, but is also in the form of vegetable fibrine, albumen, and caseine, our blood, from which the other parts of our body are developed.

Man, when confined to animal food, respires, like the carnivora, at the expense of the matters produced by the metamorphosis of organized tissues; and, just as the lion, tiger, hyæna, in the cages of a managerie, are com-

pelled to accelerate the waste of the organized tissues by incessant motion, in order to furnish the matter necessary for respiration, so, the savage, for the very same object is forced to make the most laborious exertions and go through a vast amount of muscular exercise. He is compelled to consume force merely in order to supply matter for respiration.

Cultivation is the economy of force. Science teaches us the simplest means of obtaining the greatest effect with the smallest expenditure of power, and with given means to produce a maximum of force. The unprofitable exertion of power, the waste of force in agriculture, in other branches of industry, in science, or in social economy, is characteristic of the savage state, or of the want of cultivation.

If we now compare the capacity for increase of mass, the assimilative power in the graminivora and carnivora, the commonest observations indicate a very marked difference.

A spider, which sucks with extreme voracity the blood of the first fly, is not disturbed or excited by a second or third. A cat will eat the first, and perhaps the second mouse presented to her, but even if she kills a third, she does not devour it. Exactly similar observations have been made in regard to lions and tigers, which only devour their prey when urged by hunger. Carnivorous animals, indeed, require less food for their mere support, because their skin is destitute of perspiratory pores, and because they consequently lose, for equal bulks, much less heat than graminivorous animals, which are compelled to restore the lost heat by means of food adapted for respiration.

How different is the energy and intensity of vegetative life in the graminivora. A cow, or a sheep, in the meadow, eats, almost without interruption, as long as the sun is above the horizon. Their system possesses the power of converting into organized tissues all the food they devour beyond the quantity required for merely supplying the waste of their bodies.

All the excess of blood produced is converted into cellular and muscular tissue; the graminivorous animal becomes fleshy and plump, while the flesh of the carnivorous animal is always tough and sinewy.

If we consider the case of a stag, a roe-deer, or a hare, animals which consume the same food as cattle and sheep, it is evident that, when well supplied with food, their growth in size, their fattening, must depend on the quantity of vegetable albumen, fibrine, or caseine, which they consume. With free and unimpeded motion and exercise, enough of oxygen is absorbed to consume the carbon of the gum, sugar, starch, and of all simular soluble constituents of their food.

But all this is very differently arranged in our domestic animals, when with an abundant supply of food, we check the process of cooling and exhalation, as we do when we feed them in stables, where free motion is impossible.

The stall fed animal eats, and reposes merely for digestion. It devours in the shape of nitrogenized compounds far more food than is required for reproduction, or the supply of waste alone; and at the same time it eats far more of substances devoid of nitrogen than is necessary merely to support respiration and to keep up animal heat. Want of exercise and diminished cooling are equivalent to a deficient supply of oxygen; for when these circumstances occur, the animal absorbs much less oxygen than is required to convert into carbonic acid the carbon of the substances destined for respiration. Only a small part of the excess of carbon thus occasioned is expelled from the body in the horse and ox, in the form of hippuric acid; and all the remainder is employed in the production of a substance, which, in the normal state, only occurs in small quantity as a constituent of the nerves and brain. This substance is *fat.*

In the normal condition, as to exercise and labor, the urine of the horse and ox contains benzoic acid (with 14 equivalents of carbon;) but as soon as the animal is kept quiet in the stable, the urine contains hippuric acid (with 18 equivalents of carbon.)

The flesh of wild animals is devoid of fat; while that of stall-fed animals is covered with that substance. When the fattened animal is allowed to move more freely in the air, or compelled to draw heavy burdens, the fat again disappears.

It is evident, therefore, that the formation of fat in the animal body is the result of a want of due proportion between the food taken into the stomach and the oxygen absorbed by the lungs and the skin.

A pig, when fed with highly nitrogenized food, becomes full of flesh; when fed with potatoes (starch) it acquires little flesh, but a thick layer of fat. The milk of a cow, when stall-fed, is very rich in butter, but in the meadow is found to contain more caseine, and in the same proportion less butter and sugar of milk. In the human female, beer and farinaceous diet increase the proportion of butter in the milk; an animal diet yields less milk, but it is richer in caseine.

If we reflect, that in the entire class of carnivora, the food of which contains no substance devoid of nitrogen except fat, the production of fat in the body is utterly insignificant; that even in these animals, as in dogs and cats, it increases as soon as they live on a mixed diet; and that we can increase the formation of fat in other domestic animals at pleasure, but only by means of food containing no nitrogen; we can hardly entertain a doubt that such food, in its various forms of starch, sugar, &c., is closely connected with production of fat.

In the natural course of scientific research, we draw conclusions from the food in regard to the tissues or substances formed from it; from the nitrogenized constituents of plants, we draw certain inferences as to the nitrogenized constituents of the blood; and it is quite in accordance with this, the natural method, that we should seek to establish the relations of those parts of our food which are devoid of nitrogen and those parts of the body which contain none of that element. It is impossible to overlook the very intimate connection between them.

If we compare the composition of sugar of milk, of starch, and of other varieties of sugar, with that of mutton and beef suet and of human fat, we find that in all of them the proportion of carbon to hydrogen is the same, and that they only differ in that of oxygen.

Whatever views we may entertain regarding the origin of the fatty constituents of the body, this much at least is undeniable, that the herbs and roots consumed by the cow contain no butter; that in hay or the other fodder of oxen no beef suet exists; that no hog's lard can be found in the potato refuse given to swine; and that the food of geese or fowls contains no goose fat or capon fat. The masses of fat found in the bodies of these animals are formed in their organism; and when the full value of this fact is recognized, it entitles us to conclude that a certain quantity of oxygen, in some form or other, separates from the constituents of their food; for no fat could possibly be formed from any one of these substances.

FLAX.

We have frequently recommended the cultivation of flax, but as yet, a very small quantity is grown in Canada, and that of inferior quality, in consequence of the very defective manner of preparing the soil for that crop, which, above all others, require most careful cultivation. It is considered in Holland, and Belgium, that the soil should be cultivated by trenching with the spade, to such a depth as would admit of the roots of the flax to go down into the soil from twelve to eighteen inches. Hence the straight root of the flax plant is generally half the length of the stem over ground. If we would prepare our soil in this way for flax, we have no doubt it would grow here as well as in the Netherlands. The growing of flax and hemp must be made a regular business, or we cannot succeed in making it profitable. As we have

often observed already, we require that mills should be erected for the purpose of dressing and preparing the flax and hemp for exportation, or for home manufacture—and the flax and hemp should be purchased from the farmer in a green state, by the owners of these mills. If the farmer was sure to have a market for the crop in a green state, and a fair price, we should soon have abundance of flax and hemp cultivated in the country, and it would be productive of vast benefit, giving us an article that might be advantageously exported, both seed and fibre. This matter is well deserving the attention of all who desire the prosperity of Canada, and it is astonishing it has been so long neglected. The following selection is from a late English newspaper, and will show what value is set upon the flax crop in England and Ireland. We would be very glad to see flax so extensively cultivated as to supersede some of the uses of cotton, for many purposes:—

Value of the Flax Crop.—The following letter, showing the importance of the flax crop to the farmer, when proper attention is paid to its preparation and cultivation, appears in the Newry Telegraph:—Mr. W. Blakely, a tenant of the Dean of Dromore, on the townland of Corcelany, near Warringstown, grew, last season, three statute acres of flax, which he managed strictly according to the directions of the society for the promotion and improvement of the growth of flax in Ireland. The produce of this field has been recently purchased for 15s per stone, by Messrs. M'Murray and Hening, of Warringstown, the eminent cambric manufacturers, who say it is equal, if not superior, to any flax they ever saw before, and that they have given 36s per stone for foreign flax of an inferior quality. A large portion of this flax has been delivered to Messrs. M'Murray & Co., but some still remains to be dressed by the machinery of Mr. Henry, of Kealy. Should this part be as productive as that already furnished, the entire produce of the three acres will be 120 stones, which, at 15s, will give to the farmer £90, but he has a certainty of 100 stones, which will realize £75. This flax is now in process of conversion into cambric pocket handkerchiefs, is capable of being spun to 30 hanks to the pound, and is to be spun by the hand. Mark, now, the employment this will give. It will give constant employment, for twelve months, to 132 women to spin it; 18 weavers will be occupied a like period in weaving, and it will employ 40 women a year to hem-stitch (or vein) the handkerchiefs—thus giving constant employment, for twelve months, to 190 persons. It is curious to trace the result of the process which this flax is now undergoing. It will produce 210 webs of cambric, each web containing five dozen handkerchiefs, each dozen will be worth 40s; and the entire, when finished, will be worth £2,100. The report of the Belfast market shows that £11,000 changed hands on the last market day of this article alone.

Agricultural School.—An agricultural school has been formed in the Township of Orrell, near Wigan, where, besides the usual rudiments of education, the pupils are taught the best method of cultivating land, and the science of agriculture generally. The farm on which they work is seven acres in extent.

The Royal English Agricultural Society have advertised a long list of premiums to be awarded at the next great annual meeting, to take place at Southampton, on the 25th July next. There are four for Essays on the state of Agriculture in Norfolk, Essex, Cheshire, and Wiltshire, and we copy one of them—that for Norfolk. These premiums will show that the object of the Royal English Society is to obtain the best information on the present state of English Agriculture, and the means of improving it. We also copy some others, that they may suggest what would be expedient for us to adopt, to forward the improvement of Canadian Agriculture. We have a good example to follow.

2. Influence of Climate.

Twenty Sovereigns or a Piece of Plate of that value, will be given for the best Essay on the Influence of Climate upon Cultivation within the limits of Great Britain and Ireland.

There being good reason to suppose that the discordant practices of farming in different districts may be partly attributed to the influence of climate, competitors for this prize must endeavour to describe those practices, and to trace them to the variation of climate.

Under the term climate must be included the degree of cold or heat, moisture or drought, arising whether from latitude, elevation, neighbourhood to or distance from the sea, &c.

Variation in practice may be looked for in the management of artificial and natural grass, the growth of root-crops, the depth of ploughing, the time of sowing, the choice of white crops, &c.

3. Indications of Fertility or Barrenness.

Fifty Sovereigns, or a Piece of Plate of that value, will be given for the best Essay on the Indications which are practical guides in judging of the Fertility or Barrenness of the soil.

Many attempts having been made to explain the productiveness of the Soil by chemical or physical causes, without any decided result, it appears desirable to assist the researches of natural philosophers by making them acquainted with those obvious signs, whether of colour, consistence, or vegetation, by which surveyors and farmers are enabled to give at once a practical opinion upon the probable nature of land which they inspect.

4. Agriculture of Norfolk.

Fifty Sovereigns, or a Piece of Plate of that value, will be given for the best Report on the present state of the Agriculture of the County of Norfolk;—stating the ordinary course of cropping adopted in the different soils of the county; the breeds of cattle, sheep, and pigs most generally bred or fed within it; the state of its drainage; the implements used; the number of horses or other cattle employed in the different operations of husbandry; the tenure on which the farms are generally held; the wages of labour; the average amount of the poor's rate; and whether any and what alterations and improvements have been made in the system of agriculture pursued within it since the Report made to the Board of Agriculture by Arthur Young, which was published in the year 1804, and by Nathaniel Kent, which was published in the year 1796.

9. Keeping Farm-Horses.

Twenty Sovereigns, or a Piece of Plate of that value, will be given for the best account of the way of keeping Farm-Horses in good Condition, both in Winter and Summer.

Competitors must state—

1. The quantity of food given, and the average cost of such food.
2. The work performed by the horses.
3. The length of time they have been kept on the food described.
4. Whether kept in yards, stables, or pastures.

10. Any Agricultural Subject.

Twenty Sovereigns, or a Piece of Plate of that value, will be given for the best Essay on any Agricultural Subject.

These Essays must be sent to the Secretary, at 12, Hanover Square, London, on or before March 1st, 1844.

Rules of competition for prize essays.

1. That all information contained in Prize Essays shall be founded on experience or observation, and not on simple reference to books, or other sources.

2. That drawings, specimens, or models, shall accompany writings requiring them.

3. That all competitors shall transmit a sealed note, containing their names and addresses, with a motto on it to correspond with the one inscribed on the essay.

4. That the Society shall have the power to publish the whole or any part of the Essays which gain the prizes: and the other Essays will be returned on application of the writers.

5. That the Society is not bound to give an award, unless they consider one of the Essays worthy of a prize.

6. That, in all reports of experiments, the expenses shall be accurately detailed; that only the imperial Weights and measures are those by which calculations are to be made. that prizes may be taken either in money or plate, at the option of the successful candidates; and that no prize be given for any Essay which has already appeared in print.

NOTICE.

It is requested that all communications addressed to the Society, of experiments on land—whether of draining, liming, manuring, or other operation—be accompanied with the cost of such operation, with the value of the land to rent previous and subsequent thereto, and analysis of the soil upon which such experiments have taken place; or a specimen of the Soil to be analysed, by persons employed by the Society: it is also further requested that, in communications relative to experiments on land in foreign countries, the measures be stated in English values.

Those members who have tried subsoil-ploughing, whether successfully or otherwise, are requested to communicate the result to the Secretary, in the hope that, by comparison of the statements, some judgment may be arrived at as to the soils and situations which are, or are not, suited for this operation.

By order of the Council,

JAMES HUDSON,
Secretary.

We copy the following article from a most excellent journal, *the Marine Farmer*. Though it was intended to apply to the citizens of the United States, it contains useful hints to the people of every country.

THE PHILOSOPHY OF LIFE.—"The time, faith, and energy." Perhaps there never was a period in our history, when greater necessity existed for the recuperative energies of the people, and of the country, than at the present moment. Thousands have been injured by the vicissitudes of trade and the changes of fortune. The rich have become poor, and the independent have lost their means of support. Many under such circumstances are disposed to despond. They fear that their chances have gone by, that the tide of their affairs has been at its flood and is subsiding, that the future has little hope or no encouragement for them. Not so, however, in a country like ours, if they possess health and energy, and are on the sunny side of fifty. Ingenuity, industry, and perseverance, "time, faith and energy" will accomplish much.—Some of the most eminent men that ever lived were comparatively obscured in early life.—Adversity not only tested their energies, but it roused and excited their minds. They saw the necessity of an extraordinary struggle; and nerving themselves to the trials and temptations of life, they rushed on boldly, and in most cases with success. The truth is, that experience, although a severe, is a most excellent task-master. No one knows better how to enjoy wealth than the individual who has acquired it through the sweat of the brow. Few understand the real mutations and the true philosophy of life, who have not seen the air-blown bubbles of youth and hope fade away as they attempted to clasp them, who have not realized much of the disappointment and vexation to which flesh is heir. It is only by trial that we feel the spirit of manhood within us, and with a moral courage, worthy a lofty and intellectual nature, determine not to be intimidated by a single blow of misfortune, or be disheartened because clouds and darkness occasionally obscure the prospect. This at least is the true policy. The Deity has given us many noble attributes. We live in a world which presents many means of sustenance. Our country is rich in soil, fertility, in health and in enterprise. Millions yet unborn may grow up and prosper upon her bosom, while new sources of industry, of wealth, and of prosperity, are developed with every year of our national existence. Again, then, we say to those who have suffered, or are suffering from the mutations of fortune, be not cast down, do not despair. Gather a lesson from some of the frail, but green and glorious vines, which, born in darkness and obscurity, spring forward and court the sunshine and the light, as essential to their existence. The gloom of to-day may serve but to prelude the glory of tomorrow. The thick cloud which hovers above, and darkens our path, may soon pass away, and give place to the blue skies and the golden sunshine. "Nature," observes an eloquent writer, "scatters the seeds of genius to the winds, and though some may be choked by the thorns and brambles of early adversity, yet others will now and then strike root; even in the clefts of the rock, struggle bravely up into sunshine, and spread over their birth-place all the beauties of vegetation." So with the ways of fortune. It is a cherished theory of ours, that sooner or later, even in this life, the beings who cling to truth, virtue, and integrity, who have hope in heaven, and make proper use of the faculties and energies with which they are blessed by Providence, will ultimately succeed, and may, in the true spirit of philosophy, smile upon the storms and tempests, by which, for a time, they may be surrounded. "Time, faith, and energy," are especially essential after such a convulsion as has been experienced in the monetary and commercial world of this Union. The worst, we feel satisfied, has gone by. The *Future* should not be disregarded, for in that future, with the proper faculties, animated by the proper motives, and pursuing steadily and vigilantly, laudable objects, contentment, peace and prosperity will assuredly be found. ROBERT MORRIS.

GOOD FELLOWSHIP OF ROOKS.—There is one trait in the character of the rook which I believe peculiar to that bird, and which does him no little credit—it is the distress which is exhibited when one of his fellows had been killed or wounded by a gun, while they have been feeding in a field or flying over it. Instead of being scared away by the report of the gun, leaving their wounded or dead companions to his fate, they show the greatest anxiety and sympathy for him, uttering cries of distress, and plainly proving that they wish to render him assistance, by hovering over him, or sometimes making a dart from the air close up to him, apparently to try and find out the reason why he did not follow them,

"While circling round and round
They call their lifeless comrade from the ground."

If he is wounded and can flutter along the ground the rooks appear to animate him to make fresh exertions, by incessant cries, flying a little distance before him, and calling to him to follow them. I have seen one of my labourers pick up a rook which he had shot at for the purpose of putting him up as a scarecrow in a field of wheat, and, while the poor wounded bird was still fluttering in his hand, I have observed one of his companions make a wheel round in the air, and suddenly dart past him, so as almost to touch him, perhaps with the last hope that he might still afford assistance to his unfortunate mate or companion. Even when the dead bird has been hung *in terrorem* to a stake in the field he has been visited by some of his former friends, but as soon as they have found that the case was hopeless they have generally abandoned that field altogether.—*Jesse's Gleaning's in Natural History.*

POVERTY.—At a late celebration, a poor man who was present offered the following toast: "Here is a health to *Poverty*—it sticks by you when all other friends forsake you."

In 1272 a man was paid but about four cents a day for labor. At that time a Bible with marginal references cost $133, requiring the entire wages of thirteen years labor.

MONTREAL MARKET PRICES.

CORRECTED BY THE CLERKS OF THE MARKETS.

New Market, February 29.

Wheat,.....per minot,.....	5/6 @ 5/10
Oats,..... do	1/0 @ 1/3
Barley,..... do	2/0 @ 2/3
Peas,..... do	2/0 @ 2/6
Buckwheat, do	2/0 @ 2/2
Rye,..... do	2/6 @ 3/0
Flaxseed,... do	4/6 @ 5/0
Potatoes,.... do	1/3 @ 1/6
Beans, American, per bushel,.....	4/0 @ 4/6
Do. Canada,... do	6/0 @ 6/8
Honey, per lb,.....	0/4½ @ 0/5
Beef,... do	0/2 @ 0/5
Mutton, per qr.....	1/3 @ 4/6
Lamb,... do	1/0 @ 2/0
Veal,..... do	3/0 @ 10/
Pork,.....per lb,.....	0/3 @ 0/5
Butter, Fresh, do	0/9 @ 0/10
Do. Salt, do	0/6 @ 0/6½
Cheese,..... do	0/3 @ 0/4½
Lard,..... do	0/5 @ 0/6
Maple Sugar, do	0/4½ @ 0/5
Eggs, per dozen, fresh,.....	1/0 @ 1/3
Turkeys, (old), per couple,.....	6/0 @ 6/8
Do. (young) do	3/0 @ 5/0
Geese,..... do	4/0 @ 6/0
Ducks,..... do	2/0 @ 3/6
Fowls,..... do	2/0 @ 3/0
Chickens,..... do	1/2 @ 2/6
Partridges,..... do	2/6 @ 3/0
Hares,..... do	1/0 @ 1/3
Apples, American, per barrel,.....	6/0 @ 9/0
Do. Canada,... do	5/0 @ 12/6
Flour, per quintal,.....	12/6 @ 13/4
Beef, per 100 lbs.,.....	12/0 @ 25/
Pork, Fresh, do	22/6 @ 27/6
Hay, per 100 bundles,.....	20/0 @ 27/5
Straw, per 1200 lbs.,.....	12/6 @ 17/6

St. Ann's Market, February 29.

Wheat, per bushel,.....	5/0 @ 5/6
Oats, do	1/0 @ 1/2
Barley, do	2/0 @ 2/3
Peas, do	2/3 @ 2/6
Potatoes, do	1/2 @ 1/8
Beef, per lb,.....	0/2 @ 0/4½
Mutton, per qr.....	2/0 @ 4/6
Lamb,... do	1/0 @ 2/6
Veal,..... do	2/6 @ 10/0
Pork,.....per lb,.....	0/3 @ 0/4
Fresh Butter, do	0/9 @ 0/11
Salt do do	0/5½ @ 0/6½
Cheese,..... do	0/3 @ 0/4
Eggs, per dozen,.....	0/9 @ 1/0
Ducks, per couple,.....	1/6 @ 2/6
Fowls, do	2/0 @ 2/6
Chickens, do	1/3 @ 1/6
Geese, do	3/6 @ 5/6
Turkeys, do	4/0 @ 8/0
Partridges, do	2/6 @ 3/0
Fresh Pork, per 100 lbs.....	20/0 @ 26/3
Beef, per 100lbs.,.....	12/6 @ 25/0
Oatmeal, per 112 lbs.....	6/0 @ 7/0
Apples, per barrel,.....	5/0 @ 10/0

FARMER'S BOYS.—There is a wholesome change going on in public sentiment, which promises to do much for the improvement of the country, and the condition of the people—we mean the change which is taking place among the young in relation to the great work of tilling the soil. A few years ago, and the young men in the country left their father's farms as soon as they could get away from them, and the fathers themselves not unfrequently encouraged them to it. A hard hand and a sun-burnt face were deemed poor recommendations for life, and the more "*genteel*" modes of getting a living were sought by the young. But they are beginning to look at the matter in a different light. The dull times through which we have passed lately, have opened their eyes to the fact, that after all, there is nothing like a farmer to stand through all times, and they are quite content to stay at home. The result will be that our farms will be better cultivated, and produce more—that large farms which are now not half cultivated, will be divided and well husbanded—and that we shall have a large and virtuous population scattered all over our fertile hills.—*Nashata Telegraph.*

NATURE AND ART.—When we contemplate at midnight the starry sky, when not a cloud veils the bosom of its deep immensity, sensations sublime, holy, pure, overwhelm us with reverence and delight—sensations that gush into grateful praise, almost ere we can arrange them into thoughts. Yet the permanent impressions which such contemplations have, are exceedingly limited. When, again, we contemplate St. Paul's Church, at London, or St. Peter's, at Rome, our sensations are neither so sublime, so holy, nor so pure, as in the previous case, but they leave a far more permanent impression. And why? Principally because the erection of a work of art like St. Peter's, or St. Paul's, has cost an incalculable amount of labour to human creatures like ourselves; we view it as a triumph of the genius, devotedness, and industry of our race; and while we admire the glory and the beauty that hover around its every part, still our more pervading feeling is wonder at the fertile and persevering energy that produced it. But such a feeling mingles only feebly with our contemplation of God's starred and gorgeous heaven. The habitual knowledge and persuasion of his infinitude, and omnipotence, from the very astonishment which they excite, diminish the astonishment at which those attributes may evolve into mathematical tangibilities. This will show you why art and artists have had such a prodigious influence, on literary effort and development.—*Maccall's Agents of Civilization.*

HOW TO MAKE A D. C. L.—The following recipe for making a doctor of civil law is given from the very last instance of College Cookery:—"Take any body—if a Prince, so much the better—let it stand for about half an hour, till the strength begins to evaporate. Continue to butter freely, and stuff with common sage. Pour a quantity of milk and water into both ears, but have the milk and water as frothy as possible. Throw in a little flowry matter, about enough to make a common puff, and wrap round with cloth, when your doctor of civil law will be made to your satisfaction."—*Punch.*

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