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AGRICULTURAL REVIEW.

FEBRUARY.

CONTENTS:—Official Department.—Meeting of the Board of Agriculture for Lower Canada.—A second Agricultural Society in Verchères.—Petition of Gaspé No. 1 Agricultural Society.—Delegates to the Agricultural convention in Toronto.—Importation of stock by the Board.—Our Rambles.—The South shore from Montreal to River du Loup.—M. Lebel's farm at River du Loup.—Agriculture as a pursuit.—Agricultural writings.—Calendar of operations for February.—The farm, orchard and nursery.—Kitchen and fruit garden.—Flower garden and Lawn.—Hot House and Conservatory.—Grapery and Orchard House.—Plants in rooms.—Apiary in February.—The making and draining in the Eastern Townships.—Patent Moss Baskets.—The potato, its origin, history and cultivation.—Flax.—Underdraining.—Differences in practice.—Experiments with special manures.—Two heaps of manure.—Gypsum.—County of Ottawa Agricultural Society No. 2.—Cattle Markets in Sherbrooke.—Horse breaking.—Diseases of horses.—Carrots, feeding to horses.—The check-rein.—Horticultural.—Keeping apples during winter.—Strawberry huts.—Wintering bees.

Official Dep't.

BOARD OF AGRICULTURE FOR LOWER CANADA.

Wednesday, 8th Jan. 1862.

The Board met at the Board Rooms, according to notice, at 10 o'clock, A.M.

Present—Hon. L. V. Sicotte, President.

O. E. Casgrain, Vice-President.

Major Campbell.

B. Pomroy, Esq.

T. C. A. Turgeon, Esq.

F. M. Ossaye, Professor of Agriculture.

"Extracts of Proceedings."

A Petition from the Verchères Agricultural Society and others from the county, praying for the organization of a second Agricultural Society, is taken into consideration.

Mr. A. Vandandaigue, one of the Board of Directors of the Society, is introduced to the Board, and gives all the necessary information on the question.

1st. *Resolved.*—That the formation of a second Society is granted on account of the great special difficulties arising from the existing Society, and acknowledged by the Board of Directors themselves. But that the Board of Agriculture renews its declaration of opposition, in principle, to the formation of a second society in any County.

The petition of the Gaspé Agricultural Society No. 1, to the Board, praying for permission of applying its funds to the building of a flour mill is rejected, the Agricultural Act not providing for such an expenditure of the government grant.

Moved by Major Campbell, seconded by Mr. Turgeon, and

2nd. *Resolved.*—That the following resolution, adopted on the 28th March, be registered again in the proceedings of this Board: "That all checks from this Board be signed by the Treasurer and endorsed by the Presidents.

3rd. *Resolved.*—That a committee of the Pre-

sident and Major Campbell be appointed to receive the accounts of the Secretary-Treasurer, and report at the next meeting.

4th. *Resolved.*—That two members of this Board be appointed to attend the meeting of the delegates of the Agricultural Societies of Upper Canada, to be held in Toronto, to take into consideration the amendments to the Agricultural Act proposed during the last session of Parliament, and that these members be the President and Major Campbell. The instructions of the Board are to forward the adoption of the amendment act such as passed the Lower House.

5. *Resolved.* That in the opinion of this Board, Agriculture would derive great advantage from the importation for a few consecutive years of improved stock of cattle. That in order to procure the best results as the most prompt and the most general, the Board recommends to all the Agricultural Societies of Lower Canada to appropriate for the period at least of three years an annual sum for the importation of good stock. That this Board in order to facilitate these importations and to diminish the expense thereof, engages itself to purchase these animals and deliver them to the different Societies without other charges than those of purchase and carriage.

And the Board adjourned.

The following circular was addressed by the president to all the agricultural societies.

To the Secretary of the Agricultural Society.

Sir,

The Board of Agriculture in forwarding to you the foregoing resolution, invites your Society to second their efforts in an enterprise which ought to produce considerable results and advantages,—above all, if all the Societies are willing to give their co-operation. Should each Society employ a fourth, a third, or its whole grant from the government to the importation of these animals during several years, each county would be enriched by enabling all the farmers to increase the value of their stock; and this would become the most certain source of great progress and

greater wealth. An immense advantage is at once obtained everywhere without other effort, which would extend itself to all other branches of Agriculture. The Board, in undertaking the purchase and transportation of the animals, overcome the greatest difficulty, and allow each county to employ its grant, without the expense of agencies and troubles of all sorts. The Board of Agriculture has a right to trust to the assistance of gentlemen in England and France placed at the head of Agricultural Associations to enable it to obtain the best conditions and the best information.

OUR RAMBLES.



OTWITHSTANDING our desire, it will be impossible in this number to give an account, however short, of our visits to farmers on the south shore of the St. Lawrence. Our space would not suffice, but we will endeavour to accomplish a part of our task each month, and to place before our readers and the public an abundance of useful and practical knowledge; this is the real and sole object of "Our Rambles," and we will do our best to fulfil our promise. It is

too evident to enlarge upon, and we are happy to be able to say that our exertions in this, the practical department of the "Review," has received the entire approbation of our numerous subscribers. The propagation of the science of agriculture does not only consist in theory, but in the study of cause and effect, subject to the severe test of practical and useful employment, and we are of opinion that placing before our readers the practical experience of others who have devoted both time and money to the advancement of agriculture, will eventually lead to good and useful results. It may be true that we have no persons of title here to give an "eclat" to improved methods of culture, or to the inventions of new and useful instruments of utility, but we have among us hardy and industrious

farmers, who with a spirit of true independence, are rapidly advancing in the useful and practical branches of husbandry, and we are proud to say, second to none in the world in integrity, intelligence, and knowledge. Since our last account we have visited the south shore of the St. Lawrence from Quebec to Rivière du Loup en bas, and at both sides we have remarked with pleasure the steady advancement in the method of culture adopted, and it cannot be denied in all the localities we have visited. There we have noticed the germ of improvement which will at no distant time become fully developed. Here a field of turnips. There a field of potatoes, planted, weeded, and moulded by the plough—here a new meadow with long and straight ridges—deeply ploughed lands, and well drained—a superior class of *cross-breed* animals—large and spacious barns and out-buildings, indicating the abundance of the products, and the ease and contentment generally of the proprietors, and above all we have met with many men who are proud to work for the advancement of agriculture, by adopting the most recent and uniform method of culture. With such intentions success will be certain, and at no very long period of time; and the day is not far distant when our vast and fertile country will be covered with an improved system adapted to the special circumstances of our climate, its soil, the amount of capital invested, and the markets furnished for consumption.

At Rivière du Loup (en bas) we found almost every feature different from what we saw and reported on our visit to Mr. Fortier's, in the vicinity of Quebec, and to which we made a special allusion in our last number; here we have no near markets as Quebec or Montreal, for the sale of the vegetable products, but here we find a means of consumption of the produce by the lumbermen on the south shore of the St. Lawrence, and for the sale of a large quantity of hay, and Mr. Miller of Kamouraska, informs us, and that after some years of residence there, that he sent off some 10,000 bundles of pressed hay every year, varying in price from \$8 to \$9 per 100 bundles. From this sum must be deducted \$1 per 100 bundles for pressing, which leaves a good balance as a remuneration, especially when we call to mind that 300 bundles per arpent is an average yield, and Mr. Miller informs us that his yield is occasionally 500 bundles per arpent upon land specially prepared for it.

Here is an average yield of \$20 per arpent in hay alone, either without much capital or much labour necessary. This is a real good result, and Mr. Miller deserves credit for having brought it before his neighbors. The parish is situated on the borders of the St. Lawrence, and could furnish to any enterprising proprietor the same results; it would require some slight machine for pressing it, but the cost would be trifling. Three Rivers, which is situated about 90 miles from Montreal, exports a large quantity of hay that is raised there to the latter place, and a large proprietor there has constructed a hydraulic press, which reduces the quantity to a very small compass. Some of it is exported to Cuba, where the price of hay is very high, and we cannot understand why some of the farmers of Rivière du Loup object to the raising of hay, assigning as a cause the want of a sufficient market for exportation. Our information permits us to state that at the Rivière du Loup the average price of hay is from \$7 to \$8 per 100 bundles, for consumption in the neighbourhood, and this consumption must increase as soon as the Temiscouta road is opened up, and there is also an increase of consumption on the south shore to the lumbermen. There and Quebec may now be said to be at hand owing to railroad communication. All that the farmers want in the neighbourhood is, an enterprising man like Mr. Miller, and then the market for exportation would be soon opened up.

We met at Rivière du Loup many enterprising men, and it is neither capital, interest, or knowledge that is wanting, but it is the want of example to stimulate others into action for the moment. If any enterprising man will direct his attention to this point, he will doubtless be followed by many, and he will render to this locality in particular, essential service. We were informed that a similar movement is to take place in the spring, and that Mr. William Beaubien intended to direct his attention to this important subject.

We must still insist upon the want of an export market; this once established, would encourage the farmer to cultivate what pays best, and what is best suited for the locality.

On the south side of the St. Lawrence from Quebec to Rivière du Loup, except the level land situated behind St. Valier and de Montmagny, the soil is generally stony in some places, especially at L'Islet;

one-third of the land is not arable owing to rocks and boulders, but such like lands can be cultivated. They are very productive, and the product of the grain itself is heavier and fuller in the ear than upon some other description of land. The explanation of this fact is found in the property of attraction that exists between bodies for this attraction is produced according to the density thereof, and because this rocky soil is more dense than either sand or clay, the surface attracts with greater force the different gaseous substances in the atmosphere, and it is for this reason that plants produce a larger yield and greater weight of grain. Such is the explanation that science alone could develop and account for the great yield of grain on arable land situated on rocky bottoms. Long houlders prevent the free use of the plough and other agricultural implements, they render the land difficult to work, and require one to adopt a system of culture where the least amount of labour is required, such as the production of hay, but the small capital of the farmers in the neighborhood render it almost impossible. Now let us see how in such a locality the farmer must work for a profit under the peculiar circumstances in which he is placed.

We have to offer to Mr. E. Fraser our sincere thanks for the kindness shewn to us during our visit to Rivière du Loup, when he was kind enough to take us to Mr. Lebel's, a director of the Temiscouta Agricultural Society, and one of the most distinguished and enlightened farmers we have had the pleasure of meeting, and certainly the most methodical one. The three miles of road which we passed to get to his house, offered a *natural McAdam*, thus affording a ready means of transport. Mr. Lebel's house is placed on a slight hill a few arpents from the river, commanding a magnificent view of the St. Lawrence. Lord Elgin admired much this situation when he passed it going to sea bathing. From it may be seen the Saguenay Mountains, with the expansive river which terminates in the horizon, upon the bosom of whose waters floats vessel without number, transporting merchandize and products to all parts of the world. It is we conceive one of the most beautiful sites in the vicinity.

In conversation Mr. Lebel informed us that certain difficulties exist in the County Agricultural Society in reference to the place of exhibition. L'Islet and Trois Pistoles would appear to have com-

bined together to deprive the Rivière du Loup of the exhibition, but we know too much of the zeal of the directors of the Green Island Society, to believe them guilty of a like accusation. A very simple method to settle the difficulty is that employed by the Montcalm Agricultural Society and with good success: the exhibition takes place in the parish where there are the the greater number of subscribers, provided that it cannot take place two successive years in the same parish. Their subscription this year amounts to \$800, a result which is owing in a great measure to the activity of the Secretary, Mr. de Cossin, and this success is owing to his exertions.

Mr. Lebel informed us that the next annual exhibition would take place at the Rivière du Loup, and we trust that this fact will establish harmony and good feeling among the members. Here and elsewhere we would strongly advise the establishment of experimental farms and depots for stud horses, being a most powerful means of ameliorating better the culture of the land, and the breed of horses, and it must be borne in mind that the establishment of such like farms does not necessarily entail a great outlay.

We will take Mr. Lebel's farm for an example, his system of culture requires but little change. It would be necessary to furnish perfect and recently invented agricultural implements, with a condition that they should be used and reported by him as to their success and utility. His farm buildings are all that are required and are sufficiently convenient. The animals are of a superior class, and have been much ameliorated under a good system of breeding, and furnishing to them good and sufficient fodder and bedding. So to turn Mr. Lebel's farm into a model farm would require but a small outlay, say for the purchase of implements, \$100; for the purchase of an entire horse, \$1,000, one of superior breed and quality; all of these to remain the property of the Agricultural Society,—Mr. Lebel having only the use of the animal gratis for his own stock, and the products to be sold each year by auction to the members of the Society, the profits to return to Mr. Lebel.

Young men requiring instruction in the practice of agriculture might be engaged to him, their time and work being considered equivalent to their board and lodging. It is this system that is established in France from which results so much benefit.

We have already said that we saw little to change in the system adopted by Mr. Lebel; he has abolished the old system still followed by his neighbours, of seed after seed, followed by natural meadow for year after, like a sort of perpetual motion. He has adopted the system of rotation, perfectly coinciding with our own views, bearing in mind the special locality, and this observation applies equally to the theory as well as the practice, which are so closely bound together.

The rotation is precisely that which we found on Mr. Fortier's farm, (see our last number) commencing by a green crop followed by grain, receiving timothy and clover; this rotation lasts 9 years and is followed by one or two years of seed to finish the rotation, and we feel certain that such a system would give the greatest amount of return to the County of Temiscouata. The hills that could not be sown should be left for pasture until after the hay harvest, a time when the meadows offer a more abundant pasture, and when hay is not easily sold at market, it should be consumed in the fattening of oxen during the winter, added to which must be the green and root crops of the 1st year's rotation, and the produce is by this means converted into beef, which is easily sent to market.

The produce of the dairy, the wool, and the sale of horses, offers also a source of profit, and it must be borne in mind that the produce of the seed crop will not be diminished by the adoption of this system where meadow forms so important a part; for it is a well established fact that with a good quantity of manure, and the green crops which tend so much to clean the soil of all noxious weeds, that the product of grain is often three fold.

Thus for an example if we take a farm in this locality of 80 arpents of arable land, subjected to the ordinary rules of culture, half in seed and half in pasture, we have 40 arpents of seed crop giving annually say 600 minots. The same farm, subject to the above improved system or method of agriculture, will have 60 arpents in hay, and 20 in seed, and it has been shewn that upon the 20 arpents the product is three fold, and the farmer will obtain annually from the 20 arpents 900 minots. Those figures are given as an illustration, for we have seen the yield much exceed the above named results. Now if we take a detailed view of Mr. Lebel's system, we find that his green crop consists principally of potatoes, planted

entirely by the plough; the manure he spreads in the spring when the potatoes are planted; later, Mr. Lebel weeds them with a grubber, one of his own invention, which although not elegant in shape, answers the necessary requirements. They are dug up with the plough. The following year spring wheat is sown, and the yield converted to the richness of the soil. He sows 2 minots of wheat and 4 minots of oats per arpent, and it is worthy of remark that this amount of seed sown is that followed in Europe. The object of sowing so much seed is, that it chokes up any bad weeds which so much injure a light grain crop, and it is in this, the first grain crop, that timothy seed and clover is sown,—one gallon of timothy and 2 lbs. of clover seed per arpent, and experience has shown that in this locality it is sufficient, although it appears so small.

The wheat crops have given 250 bundles of 6 to a minot, which makes 42 minots, and this yield will compare with any of the most fertile farms of France or England. The meadow will give from 250 to 300 bundles the arpent. The meadow receives when necessary a spread of manure and a good harrowing, so as to preserve its productive state. Oats sown on these meadows yield 200 bundles of 3 to the minot, which form 66 minots per arpent.

We will now pass on to the stock of animals. Here we see a sensible improvement owing to a little care in fodder and good food. The plan of the stables and barns are very good, and the fodder can be given with great facility, without it being necessary to go out of the barn. Here Mr. Lebel made an observation which ought to be borne in mind: he was in the habit of distributing water to his animals by means of a pump placed in the stable, but was led to infer that animals by being long kept in the stable became feverish, and drank a great deal and very frequently; the diarrhoea or lax followed, and the animals became lean, and this notwithstanding rich and good fodder. He resolved to suppress the water and to allow the animals only to drink at noon and at the river, since that time the lax ceased, and the animals are much better. It is certain that such a practice followed in Europe was followed by like results, and we would like to know the opinion of our readers on this matter.

We also found here a windmill for thrashing grain, made for a very low price, and owing to the continuance of wind in

that locality, is much recommended by the farmers there.

From Quebec and below Mr. Lebel's, the constancy of N. E. and S. W. winds are found to be a good auxiliary to the farmer; and it is not difficult, and with little expense a farmer is able to thrash 100 bundles of grain per hour. The mechanism for this windmill is worth about \$100; it consists of a cylinder carrying four arms, the upper part is moveable and is placed above the cylinder, and the thrashing seems to be performed with an equal pressure. Two cylinders regulate the feeding of the machine, and with a little extra contrivance the grain might be received from the cribble ready for market.

But what more particularly attracted our attention was the remarkable order and neatness displayed by Mr. Lebel, he has constructed a work shop for the reception of all the tools and farm implements, as well as for his harness, and a good supply of dry wood necessary for his use in the repair of the farm implements, and we must confess that we never saw so good a set of useful tools so systematically arranged.

If it is true that we may judge the workman by his tools, we may with a certainty say that Mr. Lebel is a good workman, and to him we would certainly accord that title, and we would also remind the Board of Agriculture for Lower Canada, that in him we have a true champion of agriculture, worthy of all encouragement and national recompense.

AGRICULTURE is a pursuit, which has been, among the mass of farmers in the Province, considered as possessing little if anything of a character appertaining to scientific; and if the reverse can be shown, and that too practically, we augur the best destiny for the country, as the most certain means of ensuring its future wealth. The principle concerned in rotation of crops is one now well recognised. That the effete materials of one vegetable may serve as nutriment for another is demonstrated by the fact that by persisting in planting one vegetable, say potatoes, the ground becomes eventually so exhausted of the proper strament as to be unfitted longer for its support. Hence the necessity of a rotation or a change of the vegetable planted or sown. It is unquestionably reserved for chemistry, having full cognisance of the elementary constitution of a plant in its primitive condition, and the necessary composition of the soil from which it draws its

nutriment, to say what soils are best suited for it, and if unsuited, in what these deficiencies consist, so that artificial measures may be adopted to supplement the defect. In many instances as we have attempted to show in "Our Rambles"—this may be effected by a judicious rotation—we say judicious, because all vegetables do not furnish the necessary nutriment by discharge at their roots, for those which are destined to succeed them. Hence the necessity for a scientific head to manage and control, and the necessity of a model farm, on which the theoretical principles of science may be practically exemplified.

Under the fostering care of our own government, within the last few years, several model farms and colleges of Agriculture have been established throughout the Province. There, the young agricultural student, for a very small premium, receives practical instruction in the profession to which he proposes to devote himself; and gets an insight into the working of all auxiliary helps and aids which the march of improvement has furnished to assist nature and a kind Providence in making the barren land fruitful.

While the use of schools like these to the rising generation cannot be too much overvalued, and ought wherever it is possible to be taken advantage of—the next best thing is to subscribe to and carefully study a journal such as this, devoted to this one great work—the advancement of the productive interests of the world and the elevation of the labouring masses upon whom these interests directly depend. No intelligent man will deny that wise practical books and periodicals, showing how the earth can be drained, fertilized, and prepared for the reception of the seed sown, and how the crops can be cultivated and harvested—books, ever pointing out the deficiencies of the old, urging the importance of new adaptations and sometimes suggesting the most feasible means,—books insisting that Agriculture involves principles as fixed and definite as the laws of planetary motion, and that these principles should be studied and known by every tiller of the soil—we say, such books are agencies of incalculable importance, and should be cordially supported and patronised by every one who desires the prosperity of his country and the advancement of his race.

This is our object. We strive, it may be in a humble way, to inculcate in all who

are in anywise connected with industrial pursuits, correct ideas of the value and nobleness of their calling, and stimulating them to new efforts for its elevation and progress. All our teachings may not be correct; but if the promulgation of truths and principles established by the inductions of science and a long series of careful experiments, and if the publication of the experiences and observations of sound practical men are calculated to benefit those whom such truths and experiences directly and vitally concern, then must all able and judicious agricultural journals prove a very great benefit to such farmers as can be induced to read them with inquiring and understanding minds.

Every farmer, therefore, who denies the welfare of his fellows and the highest promotion of the art of his choice, will not only be, himself, from such agricultural periodicals as he may find it possible to take (and pay for!) but will also zealously labour to increase their usefulness by inducing his less interested neighbours to follow his example.

We shall resume "our Rambles" in our next number.

AGRICULTURAL WRITINGS.—Probably one of the most important agencies in improving the condition of American Farmers and American Farming, has been our agricultural periodicals.

While the good they have done cannot be estimated, yet unceasingly they cause much mischief, which would be prevented if agricultural writers would be more particular in describing the nature of the soil, whether clay or sand, wet or dry, nearness to market, previous treatment, &c., when they describe the result of any experiment or peculiar system of farming, and if farmers themselves would exercise more judgment in deciding whether such plans and systems were adapted to their soil, situation and circumstances. For instance: If the distinguished lecturer at the last fair, insisted on deep ploughing, let the farmer first find out what his subsoil consists. If it is a cold wet clay or sand, deep ploughing, without drainage or high manuring, might make him a bankrupt. If some enthusiastic agricultural correspondent tells that it will pay to drain all land with tile two rods apart, let him first count the cost and calculate the profit. Let every farmer take one or more agricultural papers, and from them let him glean all the instruction he can, but let him not forget that concerning *his own farm he must judge for himself.*

Whoever reads an agricultural article, should bear in mind that only so much of it as applies directly to his circumstances and situation can be of use to him. If every one would do this, we should have fewer sensible men crying down "book-farming," as though it was intended

that a man should commence on the first day of the year with the first page of his "farm diary," and farm exactly as there set down.

Book-farming or knowledge, can never successfully supersede judgment and experience, but only assist them. Those who use their own thoughts in connection with what they read, derive the most benefit from agricultural works.

We would say to farmers who are accustomed to committing the results of their observations to paper, that our columns are ever open to their contributions, for which we shall always be thankful; to those who are not in the habit of writing for the press, we would urge an attempt. They need not delay for want of literary ability; *fine* writing is not expected or desired; plain facts, such as occur in the experience of all, are wanted, and if they are only dressed in the homely, every-day garb in which farmers usually clothe their ideas in conversation, it is sufficient. A little practice will soon render it easy to write, and by habit it will even become a pleasure. One of the most distinguished contributors to the agricultural papers of the day, learned to write after he was forty years old, and while engaged in the practical labors of husbandry.

We invite inquiries on any subject connected with agriculture, and trust that all will be free in proposing questions, which will be answered editorially or by contributors. The attention of our readers, generally, is particularly called to this, and those who are in possession of any information not shared by the public, are requested to remember the injunction—"Do Good and Communicate."

According to the rules of equity and justice, (and the old maxim to "Do to others as you would be done by,") yearly subscriptions are due at the close of six months, and thus trusting the subscriber for the first half of the year, it then becomes his duty to forward two dollars and trust us the other half. Every person who subscribes should feel that he has entered into a contract, the obligations of which must be as fairly discharged by him as they are by us, and when the time of payment comes if he CANNOT liquidate the debt he has incurred, he should not allow it to pass from mind until he can, which time, if he be disposed to deal fairly with us, will soon arrive. Every good calculator must see the necessity and propriety of promptness in this matter, knowing as he must that the extensive business of publishers, and that their assistants with their families, are entirely depend upon the payment of each subscriber's two dollars, the waiting for which, or loss of which, as much disappoints us as a hundred times that amount does the merchant who deals with larger figures.

As it is within the power of every man, with however limited means, to pay so small a sum as two dollars, within the year, we hope and trust that no one will fail to do so, rather than to let it run beyond that time without making payment. Any person who should offer the Agriculturist at a less sum than one dollar a year, may be considered an impostor, and we wish the subscriber to immediately report such a case to the publication office, and request

their paper discontinued unless they are willing to receive it at one dollar per year, the payment being made yearly.

Our subscribers can, if they will save us much expense by remitting their annual subscription, which we hope hereafter they will be so kind as to do: that we shall then be better able to supply the best paper, is too obvious to need comment. Any subscriber can easily do this, as it is attended with very little labour; it is necessary simply to inscribe plainly the name of the town and post-office in and at which the paper is now received, the subscriber signing his name in full, and placing the money in this letter, which should be tightly enclosed in an envelope and directed to

J. PERRAULT.

Agriculturist Office,

Montreal,

and forwarded by mail, or otherwise if preferred

The following form is perhaps the best in which such a letter can be written:—

Quebec, Dec. 1st. 1861.

Enclosed please find one dollar to pay my subscription.

JOHN WILSON.

My paper now comes to Quebec Post-Office.

CALENDAR OF OPERATIONS for FEB., 1862.

[A glance over a table like the following will generally call to mind some piece of work that would otherwise be forgotten or neglected. The calendar will, of course, be much more full during the season of active field and garden work.]

FARM.—Winter is the Farmer's seed-time for ideas. When the labors of the year press, and the mind is oppressed with the daily and hourly details of farm work, and the management of hands, many an idea occurs to one which he must wait until Winter to develop and inform himself upon. His mind may then be freshly enriched from books and contact with other minds, and is in a fit state for the profitable development of the thought-germs gathered during his season of labor.

Agricultural Reading.—Place at least one good farmer's paper, better three or four, upon your centre table in the sitting room. Encourage every member of the family to read. Keep a pleasant fire, bright light and quiet there, so that every one may read who will. The little it costs will be a most profitable investment. Buy rather those books which treat thoroughly of one subject, than those which profess to contain a little of almost everything in small compass.

Barns.—Protect roots against frost, if you have them stored in the barn cellar. Pack the hydrant in straw horse manure, which is best done by placing a headless barrel around it and then filling that. Look out for slippery spots in the cattle walks, and especially near gates or doorways; cover the ice with earth or ashes, but never put on salt unless you remove it all. Now, if ever, should everything be in its place and the whole barn neat and clean.

Cattle.—Feed no more than you can keep well. Give good bedding to all. Keep milch cows and fatting cattle still; they need little

or no exercise. Young stock and working oxen should spend some hours daily in the air unless it is very stormy, but when stabled, should be warm and comfortable. Never feed on the ground, but in racks. Cattle kept in yards, (a poor practice at best) should have roomy and warm sheds. Provide if you can lumps of rock salt for cattle to lick when they please, otherwise, salt them once a week. If you suspect lice, rub a little unguentum (mercurial ointment) mixed with lard, behind the horns, and tie up for some days. Feed roots finely sliced; turnips first, beets, mangels, and puta bagas by and by. Beef animals need the assiduous care of the owner now more than at any other season.

Cellars—Air well on warm moist days. Keep clean and watch the appearance of fresh rat holes, all of which close with broken bottles and cement mortar.

Dairy—Color winter butter with carrots fed to the cows.

Eaves and Eave-spouts—Clear of leaves, etc. on thawing days, if not done, that the cistern may not lack water.

Fencing stuff—Get out, and haul when you have good sledding, at least a third more than you think you can use.

Fodder—Cut up coarse fodder, wet it, salt it, sprinkle enough oil-meal or ship-stuff on to give it flavor, and let it stand, stirring occasionally till well soaked and mixed. All kinds of stock will eat it. Use no worthless fodder except in the manure heap.

Frost—Sprinkle a handful or two of salt around posts likely to be heaved by the frost, picking out the ice to the ground, in a little groove close to the post. Whatever is frozen and liable to injury by frost, thaw very slowly; put vegetables or apples into *ice cold* water.

Fuel—Cut fuel without stint, and be ready to haul what is cut as soon as there is fair sledding.

Granary—Trash and get all grain into an airy dry, rat proof granary as soon as possible. Many a farmer loses enough grain by rats and mice to winter a horse. Mice and rats multiply rapidly if they have anything to live upon—employ all help to get rid of them. A cat is an excellent thing in the barn, but keep her out of the granary unless she is well behaved. Corn keeps best on the ear; if it is to be fed out this winter *shell* it as soon as you please; if you are to keep it into the summer leave it on the r.

Horses—Keep well shod and sharp. Be very careful to blanket horses when they are warm. Give liberal bedding, and the best of care to the breeding mares, taking special care that they do not fall in slippery weather, if long with foal. Break colts, and subdue fractious colts or other horses by the Rarey method, when there is a foot of soft snow on the ground. Feed carrots in small quantities, 4 quarts a day, to all classes of horses.

Harnesses—After being wet, wipe and oil them thoroughly before they are dry. Have all harnesses overhauled, and put in good order.

Ice—Get out ice in the coldest weather for then it is dry. Set the cakes on their edges

and if possible pack them in the ice house in early morning when the temperature is near or below zero. The first formed ice is the best.

Implements—Think up what new ones you want, and find out which are the best kinds.

Manure—Make it under cover. Do not let it freeze even, if it can be helped. This is the manure harvest and as much should be gathered as possible. Compost with muck or earth. Save *all* the liquid manure, and everything about the house or barn that has the principle of decay in it. Keep the manure heap moist, compact and level. If it touches the outside of any building clear it away at once.

Market produce as soon as there is good sleighing or hard roads; prices are now somewhat remunerative. Look up various kinds of manufacturers' waste leather chips, &c., for return loads. Sell grain by sample, warranted, with the privilege of delivering it at your own time, if you can do so.

Poultry—Give them warm, dry, sunny, well whitewashed quarters, clean straw in the nests, a good feed of grain once a day, and once a day boiled and mashed potatoes and scraps from the table, with occasionally "scraps" from the trying pot too, and *unchilled water*, or a trough of running water to drink and you will not lack eggs. Keep an ash box in one corner always dry and dusty, and throw in fresh ashes or lime now and then.

Roads and Paths—Open the roads after snow storms. Out upon the man who lets his neighbors open his road for him! A snow plough for one or two horses after every snow should draw its furrows 4 feet wide through the whole neighbourhood, and thus neighborly intercourse will be established, the children go to school, and the women can get out to the prayer meeting, which otherwise might not be for several days.

Sheep—If sheep have good shelter they "know enough to come in when it rains." Never expose them, give them the range of a good large yard—not of the open field—fold them nights, let the bucks run with the ewes now for June lambs. Give fattening sheep most careful attention. Watch the first symptoms of disease.

Sink drains, &c., are apt to freeze up—prevent it.

Swine—Fat hogs should have been killed and packed or marketed last month. If that job is still on your hands have it done with at once. Keep growing pigs at work in the manure heap—and encourage activity with an occasional handful of corn. Give breeding sows warm nests, plenty of litter, and good feed, but not of a fattening character. Send sows to the boar for May pigs.

Timber, Wood lots—Do not cut trees so as to leave tall stumps. Cut with reference to young and growing trees. If you have timber or bark to draw out from swampy ground, employ the first opportunity after the ice will bear your team.

Tools if not greased will be likely to rust; attend to this, and repairs they may need. Make up a lot of rake teeth, and other things which you will need next Spring or Summer.

ORCHARD AND NURSERY.—The present month

offers to nurseryman and orchardists an opportunity to put things to rights; to fit up buildings conveniently, and to do many things about their places which they will neglect, or half do in the hurrying season, when the frost is leaving the ground, and customers are clamorous for trees.

Grafting.—Root-graft young trees in-doors, —best in a good cellar, where neither grafts nor roots will dry. Never graft on pieces of root.

Implements are to be renewed; provide a good stock, mending old and purchasing new ones.

Insects.—The eggs of certain insects laid upon the bark are easily discovered now. Let no good orchardist fail to make himself acquainted with them, and destroy as many as he can. Read Fitch's Reports. (In warm weather the wingless millers of the cankerworm come from the earth, and should be destroyed.)

Labels.—Provide an abundance both of wood and zinc. Lead labels are very convenient for the orchard, and may be cut and stamped with numbers or names at this season.

Mice.—Stamp down snow close about trees in young orchards—or otherwise defend them against depredation.

Stakes.—Work out new, to supply the place of those which failed last year. Make them stout and of good stuff, and by all means soak them in a solution of a pound of blue vitriol to 12 quarts of water. They will last five times as long.

Trees too large to be moved in Spring may be transplanted in Winter by digging about them so that the mass of earth in contact with the roots may become a frozen ball, 6, 8, or even 10 feet in diameter, and capable of being moved with the tree. Prune severely before moving, but leave the large limbs so that they may be cut again in Summer to secure well healing scars.

Winds.—Tie up to prevent danger from winds when possible, and when it occurs, remove broken trees and branches at once, smooth over the scars, and apply grafting wax or waxed cloths to keep out the rain from cracks.

KITCHEN AND FRUIT GARDEN.—Cold Frames —In very cold weather give extra cover, but remove on warm, sunny days. A good blanket of light snow is worth more than anything else. See that they do not get damp for want of ventilation, and rot the plants. Give light and air freely in warm weather.

Grape Vines, if not already pruned and laid down, may now be attended to. Protect by covering with hemlock boughs. Never handle them while frozen.

Mushrooms.—Prepare beds in any place free from frost.

Poles and Pea-brush.—Cut and prepare for use, stacking them under cover. It pays well to soak the ends, if not the whole of bean poles in blue vitriol water to preserve them.

Prune fruit trees with the *knife only this month.*

Seeds.—Buy in time to test every doubtful sample; it saves vexation and many dollars. It is best done by counting the seeds and sowing them in good soil in pots kept under hand

glasses, in a warm place, and counting the number that germinate.

Vegetables in the cellar will continue to arrive at perfection, and need care only that they do not freeze or rot. Let them have air on warm days.

FLOWER GARDEN AND LAWN.—The time is invaluable for reading and getting information. There is little to be done. After, or during heavy snow storms, shake the snow from the evergreens and other trees loaded with it. In warm weather, if the frost is coming out, air the rose pits, (cold pits under sashes where half-hardy plants are kept,) without letting in the sun; so long as they remain frozen let them alone. The frost can seldom be entirely excluded. If the earth in the pots becomes *very dry*, give a very little water.

When the frost is out of the ground, deep spading brings insect pupæ to the surface, and they are thus destroyed in great numbers. Give the fowls a chance at them if you can.

GREEN-HOUSE.—Keep the temperature below 60°, and if possible above 35°. Plants which will not bear the least frost, ought not to be kept in a Green-house adapted to oranges, lemons, oleanders, camellias, myrtles, azaleas, roses, &c. Give good ventilation on mild days, and water sparingly, always with reference to the state of the plant, increasing water, warmth, and light, when it begins to grow, or approaches blooming. In the green-house force nothing. Stir the soil in the pots and remove dead leaves. If lice appear, make all tight, smoke thoroughly, and syringe affected plants afterward. When oranges and lemons begin to grow, wash stems with strong soap-suds and crush scale insects. Protect by mats or shutters on cold nights, and more than all else avoid dampness. During severe weather keep the temperature as steady as possible. Never leave the sun heat above 50° without air, and even at that temperature but a few hours without it. Fire heat should never be below 35°, nor above 45°. A collection of Cacti require 40° at all times. Do not keep the house without air at any time more than thirty-six hours; it is even better to use some fire heat, than to omit giving air. Hyacinths should be kept near the top glass.

Bulbs.—Tulips, hyacinths, crocuses, &c., &c. Pot and keep in the dark and away from the heat till well started; water freely. Hyacinths in glasses or moss, should be treated in the same way. Start them slowly. If already growing, remove them to the hot-house conservatory.

HOT-HOUSE AND CONSERVATORY.—In the Hot-house flowering and ornamental plants are propagated and brought to perfection; and in the Conservatory they are placed for show and to minister directly to the enjoyment of the family and the guests. Here maintain an atmosphere of uniform moisture and warmth—never allow a drying heat, a scorching sun or frost. Sprinkle freely those plants whose blossoms are not injured by water. Use, occasionally, liquid manure quite dilute, until plants begin to stop blooming. It gives them vigor, and they feel the change from the hot-house less. Keep growing plants close to the light,

and turn frequently. Remove plants at once when their beauty has gone, when they begin to grow much, or when you discover insects or mildew.

Hot-house—Avoid extremes of temperature; this must be graduated according to the class of plants, the degree of forcing, amount of moisture, &c. Admit air through the upper ventilators to avoid drafts.

Cuttings of various plants may now be profitably started, viz.: roses, verbenas, petunias, fuchsias, geraniums and the like.

All growing plants and those coming into bloom require much moisture, and all the light they can have. Water regularly, sprinkle frequently, but avoid excess.

Pines require the warmest and moistest atmosphere, and should have a separate house or room. Cucumbers force admirably in the same apartment for this season.

Look out for insects; use sulphur for red spider, tobacco smoke for aphides and thrips, tobacco water and soap-suds for scale-bugs, &c.

Keep the soil in pots stirred, and shift growing plants so often that they will receive no check.

GRAPERY AND ORCHARD-HOUSE.—Cold Graperies and Orchard-Houses will need no attention this month except to maintain them at a uniform and moderately low temperature, and guard against dampness and injury from mice. If there is danger from dampness lay lumps of quick-lime about, say a pound lump under each vine or tree. In houses where a moderate heat is employed, it is still early to lift the vines, and prepare the trees for fruiting, except where a succession of crops is desired; in this case for the earliest crop, lift the vines, tie them to the rafters, and give inside borders or tubs a good watering with liquid manure; increase the heat and keep it at 45° to 50°—seldom higher—never let it fall to freezing; dampen the floor and wall by sprinkling.

Peaches and Apricots—Treat much the same as above. They will bloom in 15 to 20 days.

In forcing houses, the vines and fruit trees may be in any or all stages of development, and it is impossible to give particular rules; they demand the constant thought and care of the gardener.

Mildew—Whenever mildew appears syringe with water containing sulphur, or lay sulphur on the brick flues.

PLANTS IN ROOMS.—On very cold nights the plants should be withdrawn from the windows, and placed in the centre of the room.

While the thermometer is below 35° in the shade out of doors, the air should not be admitted, except for a few minutes at a time.

Foliage should be carefully cleaned with a sponge, or gently syringed. Do not either parch or drown the plants, but water judiciously, according to the nature of the various kinds. The water used, should, if possible, be about 60°, and never as high as 80°.

Watch for insects, and destroy them as soon as they appear.

Turn pots around frequently to prevent the plants from growing to one side.

Roses should be kept in a south window;

as soon as the plants are well started, water freely, and admit air in mild weather once a day.

Camelias will bear 3° of frost without the smallest injury, so that they are easier kept than *geraniums*, except when they are in bloom. In that state, frost will destroy their flowers. The air of a close cellar is also destructive to the buds. Copeland says:

“As soon as growth recommences the flower-buds swell; two, or at the most three, are all that should be allowed in each cluster; if more appear, thin them out with sharp-pointed scissors, if this be not carefully done, they will crowd each other off.

“By no means bring them at this season into a very warm room, for much heat will cause the buds to fall off; keep them as cool and well aired as possible. If they get dusty, sponge the leaves or syringe very thoroughly. The general health and good treatment of the *Camelia* are proved by its breaking all its buds at once, as it starts afresh. It is very apt to lose its lower buds and grow from the top only, thus spindling up and becoming naked below. Take every possible means to prevent this. Be sure that the supply of water is regular and abundant when the buds are developing, or they will drop.

There are several *camelias* not proper for room culture; those which have dry, brown, scaly buds, are to be avoided, such as *anemone*, *flora*, *eager tonia clevisina*, *fulgens*, *atro rubens*; also avoid *woodsii*, *chaudelerii*, and *dorsetia*, as being difficult of expanding—they are so very full of petals. Those most proper for room culture are *double white*, *conchi-flora*, *eclipse*, *fimbriata*, *florida*, *imbricata*, *maliflora*, *peniflora*, *punctula*, *coltrilli*, *rosii*, *speciosa*, *variegata* and *incarnata*; many others might be added, but these agree best with warm culture.

In growing *Hyacinths* in water-glasses, care should be taken that the water just escapes coming in contact with the bulb, as too much moisture before the roots put forth, is apt to cause the bulb to decay. The glasses should be kept in a light, cool place, until the roots reach half way down in the glass. The longer the roots are, before being forced into flower, the better. When fairly started, the water should be changed at least once a week. The flowering can generally be regulated by putting the glasses in a warm or cold place, as in the latter case the flowers will not put forth, even though the glass be filled with roots. The liability of the bulbs to decay, renders their cultivation in water often uncertain. Even when successful, the fact that the bulbs are good for nothing after they have once flowered in this way, is a strong argument for planting them in pots, when they may be set out in the spring, and will make pretty border flowers for several seasons.

A “Window-Case” can be erected in any warm room that has a bay-window with good exposure. The window should be inclosed from the apartment, with a frame fitted with moveable sashes, and supplied with shelves and hooks on which to set or hang the plants. It should be well supplied with water so that the air may be constantly moist. The window

case can be rendered extremely ornamental and is, in fact, a miniature green-house, in which a variety of plants may be grown with perfect success. Vines, such as the Wax plant, *Solanum Tropeolum*, *Maurandia*, Parlor Ivy, *Smilax*, running Roses, &c., may be set on slender posts. Drooping *Heliotrope Nierembergia*, *Gilia*, &c., may be hung from above, and *Camelias*, *Geraniums*, *Fuchsias*, *Verbenas*, and others of the choicest house plants may be grouped upon the shelves.

APIARY IN FEBRUARY.—Bees properly housed, need but little attention; an occasional examination to see that all is right may be made, going among them quietly that they be not unnecessarily disturbed. If mice or rats have found their way into the room, it may be known by the combs having been nibbled. Traps temptingly baited, seem to be the best remedy. It would be dangerous to use poison to destroy them, as it might be communicated to the honey. Stocks standing in the open air, when secure from the mice, may be covered with snow through all the severe weather. It will effectually protect the bees from frost. If the hive is only partially covered, or a little around the bottom, it should be removed, keeping the air passages free. Ice, snow, or dead bees often accumulate about the entrance and smother the bees. In severe weather, allow the sun to strike the hive. When just moderate enough to tempt the bees out, and cool enough to chill them before they return, shade the hive by setting a wide board before it. When the day is very fine, allow them to fly, except in case of new fallen snow. If the frost at any time leaves the hive, it may be raised and all dead bees and filth brushed out. When all is right, do not disturb them in severe weather.

TILE MAKING AND DRAINING IN THE EASTERN TOWNSHIPS.

The most important of all the permanent improvements of modern agriculture is, beyond question, draining land, by means of TILES. It has not yet found general acceptance in Lower Canada, but it yet has been tried with eminent success. The leaders in introducing this great improvement in the vicinity of Montreal, on anything like an extensive scale, are Messrs. James Logan and John Dodds. These gentlemen went to the expense of importing their tiles from Britain; yet their testimony is that they have been richly paid for their trouble. The experiment I believe has also been tried by Major Rhodes and some advanced farmers near Quebec; also by Major Campbell at St. Hilaire; as well as by some other farmers in Lower Canada, with eminent success. Upper Canada has been in advance of Lower Canada in this particular, apparently having borrowed wisdom from the experience which has been afforded by Western New York, and has

gone more largely into tile-draining than we have, with the most decided success. I make this statement from information from Upper Canadians who have tried it; and from facts which I have gathered at Upper Canadian Agricultural Exhibitions.

It seems to one sometimes strange to have to argue with generally well-informed farmers that the advantages flowing from draining by tiles over all other kinds of draining, where draining of any kind is required, are no longer matter of theory, but an established fact, in Britain, the United States, and Canada: That could scarcely be a matter of theory, or an agricultural improvement of every-day importance, which could induce the British Government to go out of its usual way to lend \$100,000,000 to private individuals for improving their land by tile-draining—lending it even to encumbered estates, depending upon the improvement effected for payment of interest and capital by a sinking fund in fifty years. I say if it had not been well established that this improvement was of vital, national importance, and permanent in its character, the British Government would never have lent the public money in such vast sums, or in any sums, to individuals to promote it. Besides the sums lent by the Government under special Acts, public loan companies have also very largely lent for the same purpose with equal advantage to themselves and the country. In these particulars, says an American writer (Judge French) in his work on tile-draining in America, Great Britain is many years in advance of the United States, and has set them an example which they would do well, even now to follow; for argues the writer with a clearness and weight of facts which must be conclusive to any man of intelligence, the need of tile-draining is not less great in America than Britain. In truth, in some respects in many cases it is even more required.

As the manufacture of drain tiles in the Eastern Townships is quite a new branch of industry, which some of the promoters confidently believe will yet end, and that before many years elapse, in making many men the richer and the whole face of the country more smiling and valuable, I will give some account of its inception in the county of Missisquoi. I shall state particulars and the names of the persons engaged in it, not with the view to promote their interests, but to afford practical hints to distant localities of which they may avail

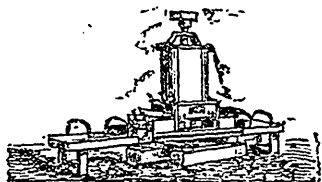
themselves, if they see reason in them. Messrs. Daniel and Asa Westover, of the township of Dunham, had both sometime before tried the experiment of tile draining with a success that had whetted the appetite to pursue it. They had also tried the common mode of stone draining, which answers admirably for a time, but which, in most lands, fills up in a few years and become useless. They were using two inch-tiles which they had to draw some fifteen or twenty miles, which were barely a foot long, and not of very good quality, for which they had to pay \$10 a thousand without carriage, making the cost at their farms at least \$12 or \$14 per thousand. This price was high, but yet it was better to give it than want the tiles. It started the question whether or not it would be possible to make them in the locality. A clay bank was found on the farm of Mr. Daniel Westover. Was it of a quality suitable for the manufacture of tiles? This was, of course, a point important to determine, before going into expense. A specimen of the clay was taken to Montreal, and there submitted to scientific analysis, the result of which proved that it was free of lime, and might be worked into pottery with ease. Here were the exact conditions required, and it was at once resolved to form a company of neighbours to make tiles, the expense being greater than one person, not making a business of tile-making, would be willing to undertake. Perhaps it is as well to say a word more on the importance of having clay free from lime. Clay in which lime is found, may be made into tiles; but they will not stand water; and if the proportion of lime is large, it will slack and crumble the tiles. One test of clay is, to burn a piece and put it in water. The company was formed of five partners, proprietors of neighboring farms, namely, of Messrs. Lowe & Chamberlin, Mr. Asa Westover, Dr. Chamberlin, Mr. Daniel Westover, and Mr. A. L. Baker. It was thought, at first, that a subscription of fifty pounds each would be sufficient to establish the necessary works, but it was soon found that it would be necessary to increase this to \$300 each, and when I look to the extent of the work that has been done for \$1,500, I must say I am rather surprised that so much could be done for the money. The next step was to produce a machine for making tiles, of A. Latourrette, Seneca Co., New York. It is an invention and patent (dated 1860)

of Messrs. Smith and Winegar, of Western New York. It was recommended as the best of its kind; and one naturally looked to Western New York, the birth place of tile-draining on this continent, and the locality where it has been the most practised, for the best machines. Besides, we must give the Americans credit for unrivalled ingenuity in making agricultural machines. How we have found the one we obtained to answer our expectations, the reader who follows my narrative shall see.

The machine being put in its place, the next thing to do was to erect sheds around it; erect a kiln, &c. The main shed is 32 feet square, and 2 stories high; and this is surrounded by sub-shed, 12 feet wide, giving a total shed room of 52 feet square. The kiln is built of stone, lined with brick. Inside it measures 28 by 15½ feet; and it is 8 feet 3 inches high, above the furnaces or arches under which the fire is put. It is calculated to hold from 35,000 to 40,000 two-inch tiles, and about 15,000 bricks, the tiles requiring a layer of bricks between each course, and they burn with great advantage at the same time. The kiln is connected with the shed in which the machine is placed by a tram railroad, the distance between the two being about 100 feet. On the other side, distant say 150 feet, is the clay bank. This is also connected with the shed by another tram railroad, the rails taking a clay car alongside the machine. There are two cars for bringing the clay from the bank to the machine; and five fitted up with crib work or shelves, to run out in the air, for drying the tiles when moulded, to prepare them for burning. These run alongside the machine, on the side opposite the clay car. We had light railway wheels cast for the purpose of these cars; and my own belief is, it would be economy to multiply them for drying, rather than use sheds for this purpose at all. The object is of course to save handling, which is expensive. The car can go alongside the machine where the tiles are moulded; be run out in the air, where the drying will be quicker; and then they can be run directly to the kiln without more handling. But to dry them in sheds they must, in the first place, be carried some distance by hand with the fork; and from the sheds they must be again put into some kind of car or wheelbarrow to take them to the kiln; thus making at least two handlings for one, besides necessitating an extra hand to wait on the

machine to carry the newly moulded tiles to the shelves; and carrying them a distance in a green state is always accompanied with risk, often with damage.

The following little cut will give the reader an idea of



Horse Tile Draining Machine.

This machine is made principally of cast iron, and weighs nearly or quite 3000 lbs. It rests on two heavy logs for sleepers. The shaft just goes above the floor of the second story, to receive a lever or beam to be worked by two horses. The floor of this second story is of course made sufficiently strong for the weight of the horses, and they easily walk up to it by an inclined road-way from the outside. By this means any inconvenience from the presence of horses or any motive power that might be employed is avoided in the apartment where the tiles are moulded. The upright mill or cylinder into which the clay is thrown is made of thick cast iron. Within a series of cast iron blades revolve, not unlike the screws of steamships in shape or principle of construction. These at once grind the clay and force it down through screens at the sides; from which it drops into what are called the finishing boxes at each side of the bottom of the cylinder.

It is now sufficiently worked or ground for moulding into tiles; and from these boxes it is forced through the dies, by a reciprocating plunger, in the form of tiles of any shape or size required. The tiles run out in an unbroken string, upon an endless apron running over rollers, and are cut in the lengths required. The lengths on this machine are 15 inches, and the tiles shrink not quite one inch in the burning. The tiles are moulded in this way with very great rapidity. Four strings of them are constantly forced out of each of the furnishing boxes, and it is as much as one man can do to remove them with a fork, four at once, out of the way of the machine. As many as 1200 two-inch tiles may thus be moulded in one hour. But moulding is by

no means all the work; it is in fact but an inconsiderable portion of it. If, however, one could have sufficient kiln room and drying room and labour to keep the machine going all the time, a very respectable mountain of tiles might be made in one season; and, if a very large demand for tiles were to arise, necessitating economical division of labour, in this will hereafter be found the secret of cheap manufacture.

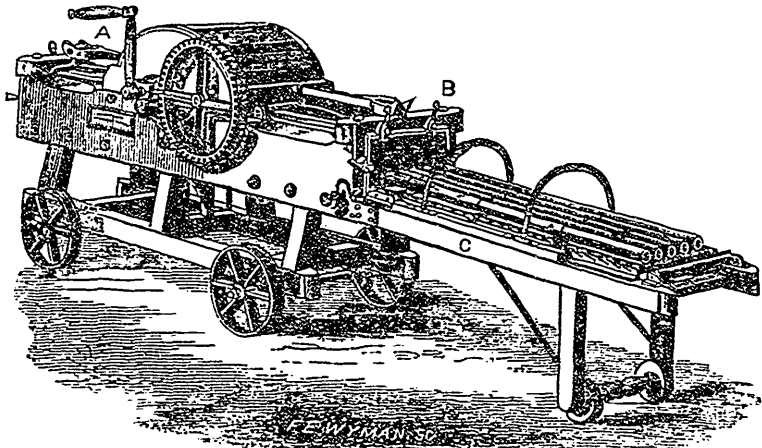
During the first season the Company worked at considerable disadvantage, although they have arrived at a result which is eminently satisfactory to them. They got a skilled man from Western New York to take charge of their works for the first year, and they have made as good tiles as they have yet seen—tiles as good, in fine, as can be made; the clay being of the excellent quality, and the moulding and burning all that can be desired. These tiles properly laid will remain without any injury for many generations of men, doing their valuable work as well the last year as the first.

In saying the Company worked at disadvantage the first season, I meant that the tile makers were working among and were mixed up with bricklayers, carpenters, &c., and as it generally falls out in such an arrangement, neither party aided the other. The clay, too, to work with advantage, ought to have been dug up the previous winter and subjected to the action of the frost. As it was in some cases the clay was thrown directly from the bank into the mill, and without any further preparation ground, screened, and moulded into tiles at one operation. The grinding, I must say, was effectively done, but the strain from using the clay in this way, both on the machine and the horses, was severe,—so severe as to test the couplings connecting the beams or lever with the shaft, causing a little fracture and necessitating the binding of them with strong bands of wrought iron: and once, as I stood by, it almost broke the beam to which the horses were attached. But one secret of making good tiles is to work the clay stiff, and for this reason power machines have great advantage over those worked by hand. The clay is forced out of the finishing boxes through the dies by means of an eccentric wheel connected with the main shaft working on the plungers at either side. The pressure on the eccentric is severe. The shaft is of strong wrought iron, and the

face of the eccentric is chilled, but notwithstanding, it requires to be occasionally removed. With this precaution and the iron bands the machine works admirably. I have seen statements from Western tile makers to the effect that it is the best in use. Its great advantage in economy of labour over the hand machines, besides the important consideration of working with stiffer clay, is that it grinds and screens and moulds at a single operation. By the hand machines the grinding is one operation, the screening another, and the moulding another. These three operations represent increased labour, which is money. To burn tiles well a great deal of wood is required, 15 or 20 cords a kiln; but fortunately wood is cheap in Missisquoi, and by drawing it in the winter time, does not

cost over a dollar a cord laid down at the most; sometimes it may be got for considerably less.

If I add that effective French labour can be had on reasonable terms I think I have said enough to shew that the Missisquoi Drain Tile Company are in a position to give the question of economical tile making a fair test in Lower Canada—a fairer than any that it has hitherto had in this section of the Province; and I am not aware if any of the establishments of Upper Canada combine so many favourable conditions. I believe that after the machine which I have described had been brought to Missisquoi, another of the same kind was taken to the neighbourhood of Lennoxville, but I have not heard any particulars respecting it. I know, also, that



Hand Tile Draining Machine.

Mr. Sheriff Treadwell has this season manufactured tiles near L'Original on the Ottawa, and some of the specimens which I have seen are very good.

There has already a local demand for tiles sprung up, far greater than the Company expected, and from present appearances all that have been made this season will be sold during the winter. So much is this the case that some of the members of the Company are now drawing away what they will require for their spring's work, for fear that it might fall out that there might be none to draw from when they were wanted. This is a fact which is in many ways satisfactory. The object of the Company was not to make tiles for a business, but for their own use. They, however will be glad to furnish them to

the surrounding country, on such terms as will not make it necessary or profitable for others to manufacture them within the distance of at least a day's teaming, or a little more; and they will manufacture to an extent to supply any possible demand, in the event of its arising. People who live at a distance too great for teaming with advantage will find it profitable to go manufacturing for themselves. I have written this detailed description for affording hints for that purpose, to show how a club of farmers may with advantage and economy manufacture for themselves and their neighbours,—and because I earnestly believe that the advantage to be derived is a Provincial one, which will make the whole country richer.

I now come to deal with the question of

price. According to the quotations in Judge French's book, the price of tiles at the Albany Works are as follow:—

Horse-shoe Tile.—Pieces.

2½ inches rise	.....	\$12	per 1000
3½ " "	.....	15	" "
4½ " "	.....	18	" "
5½ " "	.....	40	" "
6½ " "	.....	60	" "
7½ " "	.....	75	" "

Sole-Tile.—Pieces.

2 inches rise	.....	\$12	per 1000
3 " "	.....	18	" "
4 " "	.....	40	" "
5 " "	.....	60	" "
6 " "	.....	80	" "
8 " "	.....	125	" "

The author also states the same prices, as far as known, prevail throughout New England.

From a Chicago paper (the *Prairie Farmer*) I take the following scale of prices of tiles manufactured in or near that city, which took place at a State fair:—

2 inch.....	\$8.00	per 1000
2½ ".....	12.00	" "
3 ".....	20.00	" "
4 ".....	30.00	" "
5 ".....	40.00	" "
6 ".....	50.00	" "

And from another manufacturer at Joliet, Will. Co., Ill." as follows:—

2 inch.....	\$8.00	per 1000
2½ ".....	14.00	" "
3 ".....	18.00	" "
4 ".....	22.50	" "
6 ".....	45.00	" "

I have not at hand any Upper Canada quotations. The last of the above tariffs mentions per 1000 feet; and in the others



Patent Moss Baskets.

I believe, the tiles are barely a foot long. The Missisquoi Company sell at the following prices. The tiles being *fourteen inches* long they are much cheaper than any of the above quotations:—

1½ inch Pipe Tiles,	\$5.00	per 1000,	14 in. long
2 " "	8.00	" "	" "
2½ " "	12.50	" "	" "
3 " "	18.00	" "	" "
3½ " "	24.00	" "	" "
4 " "	30.00	" "	" "
2 " Horse Shoe,	8.00	" "	" "
3 " "	10.00	" "	" "
4 " "	15.00	" "	" "
6 " "	25.00	" "	" "

A tile of 14 inches is *one-sixth* longer than one of 12 inches, and if we deduct a sixth from the above prices, it will make

the Missisquoi Company's scale as follows, per 1000 feet, which, I believe, is very much lower than the common prices of tiles:—

1½ inch Pipe Tiles..	.....	\$4.17
2 " "	.....	6.66
2½ " "	.....	8.42
3 " "	.....	15.00
3½ " "	.....	20.00
4 " "	.....	25.00
2 " Horse Shoe.....	.....	6.66
3 " "	.....	8.33
4 " "	.....	12.50
6 " "	.....	20.83

The scale of prices is really the true comparison with those which I have given of other distant manufacturers. The reader will see that is very greatly lower; and

taking into account the quality of those which had been previously brought into Missisquoi, comparison almost altogether ceases.

I may further say, that the Missisquoi Tile Company's Works are just one day's teaming distant from the West Farnham Railway Station, and still nearer to navigable water connecting with Montreal. If the demand were respectable, and the teaming done in the winter time, the Montreal market might be supplied from these works on moderate terms.

Some persons have found the scale of prices for the larger sized tiles to ascend somewhat rapidly; but it is in proportion to the increased cost of manufacture, and the room they take in drying in the kiln, &c.

In future numbers of the journal in which this letter appears it is proposed to give some information from the book of Judge French and some other writers on this subject. And with respect to the manufacturing, Mr. Asa Westover in Dunham, and Mr. John Lowe, Montreal (at the office of the *Montreal Gazette*), who are the directors of the Company, will be happy to give any further information.

PATENT MOSS BASKETS.

These have been the cause of considerable excitement among many of our gardeners through the country, many believing firmly that they were the greatest humbug of the day.

A plain statement of facts will be the best proof of what they are designed to accomplish, and the great advantages they possess over the ordinary pot culture.

These baskets are from six inches to two feet in diameter, and of a proportionate height, made of wire in the usual way. In the centre of this basket is a pan containing the compound in which the various things are planted. The space between the pan and the basket and top is filled with moss, so that when complete they have the appearance of the ordinary moss basket.

When the plants are grown in soil in the usual way, they soon exhaust it, and require repotting or renewing in some shape, while by this plan the various plants are placed in just such nutriment as they require; instead of being compelled to go through the soil in search of it, they absorb it as required. This compound will last for years without any change, before it can become exhausted. The only care necessary is the watering, as is usual in the case of pot plants, but not so frequently, as the moss will retain the moisture for a long time.

As soon as the Basket of Grapes, (of which a cut is given above,) was shown to the Commissioner of the Patent Office, and a statement of the principles made a patent was at once granted.

I have a Pine apple growing in one of these baskets, which was shown at a meeting of the Brooklyn Horticultural Society, and pronounced superior to any that had been seen either in England or the West Indies; this is larger and better than any I have which are growing in pits and pots, grown according to the most approved methods. If this, the "King of Fruits," can be grown in this way soluxuriantly, surely all other kinds will succeed equally well.

I have also grown the Black Hamburg grape in the same way, with a larger yield and finer flavor than in a graperly or in pots, one of which I presented to Mrs. Lincoln. I have also a peach tree grown in a nine-inch basket, which produced 10 large beautiful peaches of fine color and size; it is now fully set with buds for next year's crop. Strawberries now growing in a six-inch basket, in flower, partially ripe, and fully of as large size and fine color and taste, as any that can be grown during their regular season. All kinds of plants, fruits and flowers, can be grown in this way, in greater perfection, and with less care and attention than by any other method.

The prices will be made as low as possible, so as to place them within the reach of all. As soon as they are ready for sale, notice will be given through this paper.

Any further information can be obtained by calling on or writing to my agent, C. B. MILLER, No. 29 Broadway, New-York.

ALFRED CHAMBERLIN.

THE POTATO.

ITS ORIGIN, HISTORY AND CULTIVATION.

The common potato (*solanum tuberosum*) was found growing wild in Virginia at the time of its first settlement, and was introduced into Europe in the year 1645, by Sir John Hawkins.

Gerarde, an old English botanist, mentions in his Herbal, published in the year 1597, the fact of his having planted in his garden a potato, which did as well there as in its native soil.

Queen Ann, wife of James I, in a manuscript account of family expenses, mentions the purchase of a "few pounds of potato, at two shillings a pound."

In 1663, the Royal Society recommended their cultivation as a means of preventing famine.

Previous to the year 1684 they were only planted in the gardens of the nobility; during this year a small portion was planted in an open field in Lancashire.

The potato will not thrive within the tropics, except at an elevation of from three to four thousand feet above the level of the sea; their natural climate is the temperate zone.

So much for its origin and history: now for its cultivation:

The soil best suited to potatoes is a deep loam, but a large crop has been taken from land sand well manured. It is of great importance that the soil should be deep and loose.

A good plan is to select a patch from the cornfield, and plow it up deep and well before it freezes and let it lay all winter. If you wish

early potatoes the next summer, plant, by turning a furrow on to them, two or three rows where you plow in the fall; by this plan the potatoes will do to dig for table use some two and a half to three weeks earlier than the others planted at the usual time. The only disadvantage is that they must be placed nearer together, for they are more liable to miss than when planted in the spring.

The next spring give the patch a good coat of manure, spread all over the surface, as is usually done for wheat. As soon as the ground will admit of it, commence planting by putting the potatoes in every third furrow. Some are very particular to lay the potatoe set with the cut side down. From actual experiments, both myself and others, I am convinced that there is no use in this; my plan is to *drop* them from a basket or bucket; if the ground is in proper order the set will remain where it is dropped. Care should be taken to drop the sets on the side of the furrow next the plowed ground, and not more than fifteen nor less than ten inches apart. After the sets are all in the ground, the patch should be well harrowed. As soon as the most forward shoots begin to show, it should be again harrowed well.

After this I use nothing but the hoe-harrow. As the ground was made in good order, there is not much trouble with weeds. They should be hoe-harrowed four or five times before they come out in flower; after this they should not be disturbed, except to pull up any weeds which may show themselves in the rows, and that only to preserve them from going to seed.

Some prefer planting on the sod; a very good crop may be obtained in this way, and potatoes thus planted are less liable to be injured by dry weather, and some think are less liable to rot. If planted in this manner, I prefer to spread the manure on the sod, and put the potatoes in every third furrow. When this plan is adopted, more hoe-harrowing and weeding will be required. I am opposed to hilling or plowing potatoes; plant them deep, and there is no necessity.

Some think that by ridging they place more of the stalk under ground, and thereby increase the yield. I have tried both plans in the same patch, and prefer the level system.

I prefer good sized potatoes for planting. From experiments and observations I have come to the following conclusions: That large potatoes produced larger potatoes, in larger quantities and of a much better quality; that the degeneracy often observed in potatoes, results from using small seed; that when potatoes of a medium size are used it is better to plant them whole, and where large ones are used, to cut them in half only.

I arrive at this conclusion both by experiment and by the following reasoning:

The set, when it first sprouts, obtains its nourishment from the body of the cutting until this is all exhausted; but as soon as it sprouts it also throws out roots into the soil. Until the starch and sugar in the set is all exhausted, these roots do little but increase in size. As soon as the substance of the original set is ex-

hausted, the plant must obtain nourishment from the soil by means of its roots.

Now, by planting large sets, we give to each sprout a larger proportion of nourishment, and this enables the plant to extend its roots before they are called upon for actual service.

I know that potatoes can be raised from parings. This may do in ground which is strong and in good condition, but in poor or hard ground it will not do.

I have found by experiment that more potatoes can be raised from the same amount of seed by cutting the potatoes in two instead of four pieces; and this, too, in rows side by side, one row having the seed cut in two, and the next in four, and so on throughout; that is, where they are placed the same distance apart in the row, about one foot. Where those cut in two were planted one foot apart, and those cut in four eight inches, the former produced the best and largest amount of potatoes.

When potatoes are planted in cornstalk ground they should be planted early, both to avoid danger from rot, and to be out of the way of the ensuing wheat crop.

I have found that on the same land three hundred weight of guano will produce a better crop than a good coat of barnyard manure. Also that three hundred weight of super-phosphate mixed with five bushels of plaster will produce about the same quantity of much better potatoes than a good coat of manure. These remarks apply to one acre. The manure (barnyard) was spread all over the ground, and the others scattered in the furrow on top of the sets. But the succeeding crop of wheat and grass, without any additional manure, were much better where the barnyard manure was applied than where the others were used. That part to which guano was applied came next.

It will materially increase the crop to roll the sets in plaster just after cutting, and allowing them to lay spread out and occasionally dust them with plaster for two or three days previous to planting.

I always dig as soon as the tops die; if this is inconvenient, mow the tops as soon as dead and dig soon.

Now, a word about keeping potatoes. We find great care used to prevent potatoes and other roots from freezing. Freezing does not hurt them; it is the thawing that does the mischief. Potatoes may be frozen and thawed three or four times during the winter, provided the thawing be properly conducted, and not be injured thereby in the least.

If a member of the body, such as a hand or foot be frozen, and be suddenly thawed by fire or warm water, the flesh will mortify and drop off; but let the frozen member be rubbed with snow, which is a little lower in temperature than the frozen foot, and thus be gradually thawed, and no inconvenience will ensue.

Only a few days since I tasted potatoes which were kept in a heap in the open air, and covered with three inches of earth all winter. They were twice (at least) frozen solid, and twice thawed, but were unharmed.

In the spring, if early vegetables, such as beans, peas or tomatoes, should be frosted or completely covered with white frost, they may

be saved by being sprinkled with cold water, if administered before the sun shines on them. The water reduces the temperature gradually, without any bad effect.

If potatoes, apples, or other vegetables when frozen solid are placed in cold water, they will be thawed gradually, and no harm will be done them. Vegetables may be kept all winter by making them into conical heaps, and covered with three inches of earth, and a sod on top, to shed rain. A thin layer of clean straw may be placed over the vegetables to keep them from the dirt. When put up in this manner, apples or potatoes may be taken out at any time during the winter, and if thawed in cold water are as good as ever.

If your potatoes freeze in the cellar, don't wait for them to thaw, but throw them into a conical heap, either where they are, or in the open air, and cover them with dirt, straw, shavings, old clothes, or chaff, packed tight around them, and they are safe. The covering will prevent sudden changes, which do all the mischief. I have saved frozen potatoes in this way; it may be new to some of your readers, and be of use.—*Germantown Telegraph.*

FLAX.

It may be advantageous to make a few remarks upon the most judicious mode of entering upon, or of improving the cultivation of flax in Canada.

The attention of our farmers should be drawn to those agricultural products which our climate and soil are best calculated to furnish with profit to the occupier of land. All the elements of success in the production of flax are present, and it is only necessary to provide that proper instruction in the details of culture shall be given to the grower, and that the mechanical appliance for preparing the fibre for sale shall be provided.

Owing to the high price of labor here, flax cannot be profitably scutched by hand. Hence in a district where it is about to be introduced, a scutch-mill is absolutely necessary.

As a rotation crop flax is very valuable: it is the best nurse of grass and clover, since the pulling of the flax moulds the young plants, which thrive much more vigorously afterwards than when sown with barley or oats.

It has now been ascertained by direct chemical analysis, as well as by experience, that flax is not, as is commonly supposed, a peculiarly exhausting crop, but that, in point of fact, it draws less organic matter from the soil than most of the plants commonly cultivated.

It is, therefore, at the present time, very deserving of the attention of the Canadian farmer, who with a little exertion, might draw some portion of the money now paid by Great Britain to other countries, amounting to upwards of £7,000,000 sterling per annum.

It is doubtful whether we can sustain a society here similar to the Royal Society for the promotion and improvement of the growth of flax in Ireland, not having the support of a great manufacturing or landed interest. But we have two methods open for us; the system of *flax factorage* in Belgium, where the growers find a

market for their straw with persons called *factories*, whose business it is to steep and prepare the fibre for their own profit, or the system of *retteries*, on the patent method of Mr. Schenck.

Who among our capitalists will import a Belgian instructor for Lower Canada, as his manager in any particular district, to carry out the Belgian system? There is no risk, and there will be a sure return.

The plan of Mr. Schenck requires more capital. It has been extensively carried out in Great Britain and Ireland, and consists in maintaining the steeping water at a uniform high temperature by means of steam. For this purpose wooden vats are employed, having a false bottom, under which coils of metal pipes are introduced, and the flax straw being packed in, the vats are filled with water, and the steam introduced into the pipes, so that the temperature of the water rises to 80° or 90°. In this way the fermentation proceeds rapidly and uniformly, and in about sixty hours the fibre has become completely purified. The water is then drawn off, and the straw taken out of the vats, the sheaves untied, rolled, and the stems placed between flat wooden sticks fastened at the ends, and hung up to dry in open sheds constructed for the purpose, after which it is scutched and sold to the spinners.

As a guide to any of our capitalists wishing to introduce the Belgian system, we give a few figures showing what has been done over and again by the farmer when he is his own manufacturer.

One acre of land, statute measure, produces forty-two stones, of sixteen pounds each, say 6s. 6d. per stone, which is 45s. 6d. per hundred weight, or £45 10s. per ton, the average price for coarse flax. This gives £18 13s. per acre; seed estimated at 110 bushels of bolls at 8d. is £3 13s. 4d., making a total of produce £22 6s. 4d.

The expenses are: rent and taxes £1 10s.; seed, 2½ bushels, at 15s., £1 17s. 6d.; ploughing, harrowing, weeding, pulling, rippling, steeping, grassing, lifting and cartage, £2 2s. 6d. scutching 42 stones, at 10d. per stone, £1 15s., making the total expenses £7 5s., which, being deducted from £22 6s. 4d., leaves £15 1s. 4d. *profit* upon a good average crop of flax.

We will now give the result of a crop of fine flax. One acre of land will produce 30 stones or 42-7cwt. We are obliged to sow thicker, and as the scutchers tell us the proportion of fibre on the stem is smaller. This, at £9 per cwt., is £38 11s. 4d. Then of seed we have only 60 bushels of bolls, at 6d., £1 10s. They are worth less in this than in the other case, for they are not so well filled. This makes £41 1s. 4d. produce. The expenses are: rent and taxes, £1 10s.; seed, 3 bushels, at 15s., £2 5s.; labour of all kinds, £3 10s., allowing £1 7s. 6d. more than the former statement for increased attention and care; scutching 30 stones at 1s. (which is a higher price than the last, because it is usual when the flax is very fine), £1 10s., making the total expenses £3 15s., which, being deducted from £41 1s. 4d., leaves a profit of £32 6s. 4d. per acre.

A MAINE CORN CROP.—We raised this year 1861, from one acre of land 198 bushels of ears

of sound corn and 23 bushels of soft corn. This acre was planted June 3d. It was a piece of old pasture land which we broke up in May, 1860, and planted it to potatoes—raised a good crop. In the fall we spread about 15 loads to the acre of old barn yard manure and plowed it in. We harrowed and plowed it last spring, and then harrowed again well; furrowed it and dressed in hill with hog manure; covered the manure with soil with the foot and dropped the corn. Put about a teaspoonful of plaster on the corn in the hill, also about a large spoonful of Coe's Superphosphate of Lime on the corn in the hill, then covered. After hoeing the first time I put about as much more plaster on the corn. Before hoeing the second time I put about one handful of ashes to a hill, hoed but twice. We were very particular to have it hoed well, as we were in hoeing all our corn and potatoes. I believe, one quarter at least, of the corn and potato crop is generally lost by poor hoeing. Our average yield of corn this year, was 120 bushels ears of sound corn per acre, besides some soft. Our seed is the early Dutton, 12 to 18 rowed. We think this the best seed for the climate. It is about two weeks earlier, and will yield from 10 to 15 bushels more to the acre, than the common 8 rowed usually planted. Farmers should plant the seed of all kinds that will yield them the most for their toil, and pay the best.

We consider the Orono potato the best we can plant to raise for market or stock. We raised this year from one acre 406 bushels of large handsome Oronos, with no manure, except plaster and Coe's Superphosphate of Lime. We raised in all 3800 bushels of Oronos. Potatoes for seed should be raised without manure we think. STETSON FARM.

Stetson, Dec. 31st, 1861.

UNDERDRAINING :—In the last number of your valuable paper, I see an inquiry made by a "Constant Reader," "What is the best manner of underdraining swamp land?" That is a very important question, for I consider land that is well underdrained the best land we have.

I will state, briefly, some of our experience in underdraining. For the last six or seven years we have been improving our wet lands, whether swamp meadow, or wet upland, by underdraining. We dig a ditch around the low, wet land, next to the upland, wide and deep enough to drain the land well; then fill the ditch with stones carted from our fields that we are glad to get rid of; then scatter over the stones in the ditch, some poor meadow hay or straw, and drains, cover over with the material taken from the drain.

This kind of a ditch, with a few small side drains extending to the main one, (if they are needed) drains our land effectually.

Four years since we underdrained about 4½ acres of low meadow and wet upland, where we used to get from one to three tons of poor meadow hay. Last year we took eight tons, this season thirteen tons of the best English hay. The water flows freely through all of our drain and I have no doubt but it will continue to do so.

Perhaps you may inquire, "How did you pre-

pare the land after draining?" We plowed when we could; and when we could plow we dug round the rocks and settled them about a foot below the surface of the ground; thus raising, instead of settling the ground, as we should have done by removing the rocks. We carted on gravel, loam and compost enough to cover the ground well, and fill among the hassocks. What we plowed was planted with corn, potatoes and garden sauce the first two years, 1858 and 1859. The first year we manured in the hill; the second year we spread on about twenty loads of compost to the acre; had very good crops both years. As soon as the crops were removed from the land the second year, (early in the fall,) we seeded down to grass with timothy, redtop and clover; harrowed, bushed and rolled well with a heavy roller, so as to make the ground quite smooth and even.

When we had finished preparing the land for grass, and seeded it as above stated, we calculated the expense we had been at and the value of the crops taken from the large field, up to that time, and found that we were well paid for all that we had done to the land.

The next season after seeding down to grass we took, (as before stated,) eight tons, and this year thirteen tons of the best of hay. We mowed about half of the lot twice, and could probably have taken two tons more where we did not mow the second time. In estimating the expense, we did not include the manure we put on the land, but everything else was included. I think well of this kind of drain, especially where we have rocks and stones we want to clear from our land; for by this way, as the saying is, we "kill two birds with one stone," clear our field of rocks and drain our land at the same time.

DIFFERENCES IN PRACTICE.—Who is Right?—Why is it that agriculturists, unlike other utilitarians, leave so many points of practice unsettled? In many parts of Europe, there are no fences; and, the inhabitants claim, with apparent propriety, that, where cattle are soiled, or even pastured and properly tethered, fences are not only useless but hurtful and wasteful. Still, in this country, the fences cost every fifteen years a sum that in the aggregate would much more than pay the probable amount of our national debt at the end of the present war. Who is at fault? Both cannot be right. We follow John Bull, and he has substituted hedges for fences, and has become so fond of their appearance that he is unwilling to part with these useless divisions, and thus much of the very best land in Europe and America is wasted. Think of the millions of acres rendered more than useless by unnecessary fences, while no good argument has yet been presented in their favor? Those who would urge the necessity of exercise for cattle, must admit that long tethers will give all the necessary range for that purpose; and slight monuments would mark boundaries equally well. Many years since, Nicholas Biddle, Esq., published statistics to show that more money had been spent in our country for fences, than would have paid the national debt of Great Britain.

We are compelled, by the common law, only

to prevent our cattle from wandering on to our neighbor's fields, and not to hinder their cattle from trespassing on us. If we do not trespass, why fence even our outside boundaries? Any law to the contrary is statute law, and may be repealed. In many localities the common law prevails, and still fences are in vogue; either soiling and tethering are wrong, or fences are useless; they certainly are not picturesque.—Hurdles and other movable fences might be used by those who insist on pasturing and do not approve of tofers.

In Germany, cattle and horses are fed five times each day, and of course a smaller quantity at each meal. Here we feed three times per day. Which plan is right? Do cattle in the wild state feed but three times a day, or do even our domestic cattle, educated to three meals per day, adhere to the custom when permitted to range in rich pastures? Or do they eat smaller quantities and more frequently? Are either the habits of the wild cattle or the domesticated, to be taken as pertinent examples of the more judicious course to be pursued? Cases may occur where the present custom is most convenient, such as the feeding of working cattle while their drivers are at their meals; but should this apply to fattening cattle, milch cows, or cattle not in use? Will our practical friends assist us in solving these questions?

EXPERIMENTS WITH SPECIAL MANURES. — 1st. Every description of crop requires an ingredient essential to its production, and without it such crop cannot be raised in perfection.

2d. If a soil does not contain in itself what is essential to the growth of the plant upon it, it must be supplied through the medium of one or other of the specific manures.

3d. The essential substance necessary to be added to the soil may be discovered by consulting the nature and property of the plant to be raised.

4th. Nitrate and ammoniacal substances, except in the production of straw, grass, or potatoes, and turnip-tops, without an equivalent production of grain or bulbs; so these substances should not be applied alone, but in combination with others containing phosphates. This is illustrated by the fact that saltpetre refuse and nitrate of soda, applied with guano or prepared night soil and animal charcoal, improve their individual production, either in quality or weight, or in both.

5th. Salts which are sulphates produce grain in larger proportions to their straw than other salts which are nitrate or ammonical.

6th. Bone manure, though dissolved in sulphuric acid, may be generally enhanced in value by the addition of ammonical substances; hence it is inferred that substances capable of imparting additional luxuriance to the foliage of plants largely administer to their necessities, and, combined with phosphates, are highly advantageous.

7th. Sulphuric acid is eminently beneficial to the potato crop, and in recorded experiments on that crop it has proved itself a preventive of the disease called "cure," having produced a healthy crop, when from the same seed, and otherwise treated in the same manner, the other plants of the field were much infected.

I am aware that some of these conclusions are mere repetitions of ascertained facts, but truth is never injured by repetition. Perhaps I should have added to the list of my conclusions, this one, that farm manure and guano, combined in the proportion of 15 tons of the former to 3 cwt. of the latter, is the proportion in which I have found these substances to succeed best; and as regards night-soil, the best proportion is 25 tons of the former to 1½ cwt. of the latter. This last result, however, may be greatly improved upon, and therefore should not be taken as a just criterion, either for the purpose of estimating the value of the night-soil or determining the best mode of applying it.

Bone dust was applied nine years ago as manure for a turnip crop, in a field of medium soil, and this field was plowed this year and sown with oats. The land where the bones had been put gave 7 bushels oats and 50 stones more of straw, than the land to which farm-yard manure had been applied at the same time to the turnip crop, besides, the grain having been 2 lbs. per bushel heavier; and, during the time this field lay in grass, the portion manured with bones could be pointed out from the rest by a darker color and greater luxuriance of pasture.

TWO HEAPS OF MANURE.—The lesson inculcated by the following, from the pen of Hon. F. H. Holbrook, in the *New England Farmer*, is one of great value to the thinking farmer:—"How true is the remark of Mr. Coke, late Earl of Leicester, that the value of farm-yard manure is in proportion to what it is made of. If cattle eat straw alone, the dung is straw alone; the cattle are straw, the farm is straw, and the farmer is straw—they are all straw together. Not long ago I had four cows come to the stable in the fall, which I thought might yield a good supply of milk through the winter, if well fed. I also had four other animals, cows and heifers, which were not expected to give much milk till the following grass season. The first four were tied in the stable side by side, and received each, in addition to hay and stalks, four quarts of small potatoes each morning, and two quarts of corn and oatmeal each evening, through the winter. As we expected, they gave a good mess of milk, and came out well in the spring. The manure of those four cows was thrown out a stable window under the cattle-shed by itself. The other four animals were tied in the same stable, next to the first four, and receive only hay and corn fodder. Their manure was thrown out by itself at the next stable window, and under the same shed, so that the two heaps lay side by side. The heap that was made by the four cows that were daily messed with potatoes and meal, kept hot and smoking all winter, and was wholly free from frost. The heap made by the other animals that had only hay and stalks, shewed no signs of fermentation and was somewhat frozen. Observing this difference from time to time, curiosity prompted me in the spring to apply those two heaps of manure separately, but in equal quantities, side by side, on a piece of corn ground. The superiority of the corn crop where the manure from the messed cattle was applied, over that where the

other heap was spread, was quite apparent and striking, and called my attention more particularly than it was ever before directed, to the importance of feeding out our best, or richest products, if we would have the best kind of manure for our lands, and large crops from them."

GYPSUM—PLASTER OF PARIS.—Mr. Simard, M. P. P. for the City of Quebec, has established in St. Paul Street in that city, a manufactory for Gypsum or Plaster of Paris. We need scarcely tell our Agricultural readers the many uses to which it is now brought out and would strongly recommend them to encourage home manufacture, and we feel sure that Mr. Simard will meet with that success his enterprise merits. We hope our Agricultural friends will not forget Mr. Simard's address.

COUNTY OF OTTAWA AGRICULTURAL SOCIETY, No. 2.

The Annual Exhibition of this Society was held on Wednesday, 2nd October last, on the grounds of John A. Cameron, Esq., Thurso. The number of animals and quantity of manufactures, dairy produce, &c., shown, was not so great as on some former occasions, but the descriptions and qualities were very good. Considering the backward state of Agricultural enterprise in this part of the county which has hitherto been almost exclusively a lumbering district. Now, however, it is hoped a new era will open, aided by the instrumentality of our new official journal, and the farmer, his soil and stock, with their important interests, will hereafter predominate. Owing to the above fact the superior brood-animals exhibited represented the enterprise of the lumber-merchant rather than that of the farmer. The latter has not been awake to his true position. During the day a substantial dinner was laid in Mr. Ewen Cameron's hotel, at which presided G. W. Cameron, Esq., Mayor of Lochaber, and President of the Society, assisted by A. McNaughton, Esq. of Buckingham, which served to make "all go merry as a marriage bell." The general feeling of satisfaction was sadly marred at the close of the proceedings by the death of a promising youth, son of Mr. Robert Sutherland, one of the Society's old and valued judges, which cast a gloom over every one present. The lad was instantly killed, having been run over by horses engaged in racing. This will probably prove a barrier to such reckless sport on like occasions here and elsewhere. The writer trusts this calamity will prove

a solemn warning. The Annual Ploughing Match came off on the 9th October inst. on the farm of William Carson, Esq., Gore of Lochaber, late Vice-President of the Society. A good repast and a fair field sufficed to make the jolly ploughmen contented with themselves and their success, and with all the world.

The British American Land Company, acting on the advice of their Commissioner, Mr. Hennecker, have lately erected a cattle market at Sherbrooke. The cost was over \$4,000. A dinner was given to celebrate its opening, at which, in connection with the market, the name of Mr. Kellan of Compton was proposed as a toast. This gentleman in acknowledging the compliment, elaborated one idea which seems to us most important. He showed that while farmers cultivated indifferent or bad stock, they never could realize a profit, that the market served all the purposes of an Agricultural Exhibition, since farmers could compare their stock, ascertain what was profitless, examine what was good and paying, relinquish their old bad stock, and purchase better animals. That the Sherbrooke Market, if in no other way, was worthy of support, as it created emulation, and by contrast of the animals on the ground, proved from the prices obtained, that the interest of the farmer lay in securing the best class of animals; and as these results were brought under his eye at the Market, he could readily make the comparison, and satisfy himself as to the benefit of possessing superior stock. Mr. Dinning of Quebec paid a high compliment to the Commissioner to whom he ascribed much of the success of the market, and he said he had found its advantage, for he could afford to give two dollars per head more for cattle bought in Sherbrooke Market, than purchasing them by twos and threes at Quebec. Before the winter was over he wanted seven hundred head of cattle to supply his contracts.

HORSE BREAKING.

Mr. John M. Rupert, of Maple, Richmond Hill, is the inventor of a new system of horse breaking, identical in principle with that of the celebrated Rarey; but differing very considerably in detail. Mr. Rupert yesterday, at Bond's Livery Stables, gave an exhibition to a number of gentlemen in this city, which was attended with the most convincing and satisfactory results. Among the company were Mr. W. P. Howland, M. P. P., and Col. Richard L. Denison. As Mr. Rupert wishes the details of his

system kept secret, so that he may reap the just reward of his ingenuity and perseverance, we can do no more than give a mere outline of the proceedings. The first "subject" introduced was a two-year old colt, with few pretensions to beauty but well built for strength. The colt was unbroke, had never been handled, and though quiet, manifested great timidity. He was a stupid, stubborn horse, with the bumps of "cautiousness" and "contumacy" largely developed. The consequence was, that while he neither kicked nor bit it required the exercise of a large amount of patience, and almost infinitesimal flattery to gain his confidence. Had he been a more sprightly animal, though his primary objections to an intimate acquaintance with the human species might have made him more demonstrative, Mr. Rupert thinks they would have been more speedily overcome. The process through which he was first put made him perspire considerably, but at length he caught the idea that his trainer wanted to be obeyed, and soon after became convinced that he must obey. The result was that he followed Mr. Rupert quietly about and did as he was told. This attained, he was so placed that any demonstrations on his part brought with them their own punishment, in which state he was well frightened. He found by experience that when he bounced about he hurt himself, but that immediately he stood still he got relief, and moreover, the paper, straw, and divers other things with which he was frightened, being "subjected to his examination" and found harmless, he made up his mind not to regard them. A little more flattering, combined with compulsion, and Mr. Rupert mounted him and rode him round the ring.

Some of the company repeated the experiment, which the colt suffered without any signs of timidity or of a refractory spirit. Subsequently a mare belonging to Mr. Snyder was brought in for experiment. This mare was celebrated for kicking. Some gentleman present doubted the fact, but a string being put under her tail she gave practical demonstration of her skill by bringing heels into close proximity with the ceiling. She was subjected first to the quieting process, and Mr. Rupert having gained her confidence, proceeded to abuse it. By attaching a very simple contrivance to her mouth he took all the kick out of her. She made one or two abortive attempts, but gave it up. Harness was placed upon her, and the straps were allowed to "dangle" against her hind legs; a cord was passed under her tail, and various other indignities heaped upon her—but she appeared rather to like them. Having reduced her to this happy state of mind Mr. Rupert exhibited to the company his contrivance for curbing horses given to various tricks. A "balky" horse can be made by the driver, if necessary, to move forward. He must do it. The compulsion, though not such as to injure him at all, is irresistible. Another contrivance for stopping a run-away horse is equally effective, and very ingenious. Mr. Rupert does not "throw" horses in order to tame them, but merely for surgical purposes. His method differs from that of Mr. Rarcy, but cannot fail. The greatest difficulty he had to contend with yesterday was

the want of a very vicious horse. He has searched the city through for five days, but could not find one. The dealers, it appears, have sold them all to the Americans. Mr. Rupert will be heard of again shortly.—

DISEASES OF HORSES.—Edward Mayhew, an eminent veterinarian, and the author of the *Illustrated Horse Doctor*, recently published in London, briefly sums up the principal diseases to which horses are subject:

Crib Biting.—*Cause*—Sameness of food, and unhealthy stables, or indigestion.

Symptoms—Placing their upper incisors against some support, and with some effort, emitting a small portion of gas.

Treatment—Place a lump of rock salt in the manger; if that is not successful, add a lump of chalk. Then damp the food and sprinkle magnesia upon it, and mingle a handful of ground oak bark with each feed of corn. Purify the ventilation of the stables before these remedies are applied.

Farcy.—*Cause*—Excessive labor, poor feed, and bad lodging, operating upon old age.

Symptoms—It is, at first, inflammation of the superficial absorbents. Lumps appear on various parts. If these lumps are opened, healthy matter is released; but the place soon becomes a foul ulcer, from which bunches of fungoid granulations sprout. From the lumps may be traced little cords leading to other swelling. The appetite fails, or else it is voracious. Matter may be squeezed through the skin. Thirst is torturing. At length glanders break forth, and the animal dies.

There is a smaller kind of farcy called but-ton farcy—the smaller sort is the more virulent of the two.

There is no known cure for the disease.

Hide Bound.—*Cause*—Neglect, or turning into a straw or stable-yard for the winter.

Treatment—Liberal food, clean lodgings, soft bed, healthy exercise and good grooming. Administer daily two drinks composed of—liquor arsenicalis, half an ounce; tincture of muriate of iron, one ounce; water one pint. Mix, and give as one dose.

Roaring.—*Cause*—The bearing rein; the folly of fashion.

Symptoms—A noise made at each inspiration.

Treatment—No remedy. The cabman's pad is the only alleviation; that conceals, but does not cure the disease.

Ring Bone.—*Cause*—Dragging heavy loads up steep hills.

Symptoms—A roughness of hair on the pastern and a bulging forth of the hoof; a want of power to flex the pastern; an inability to bring the sole to the ground, only upon an even surface; loss of power, and injury to utility.

Treatment—In the first stages apply poultices, with one dram of camphor and opium. Afterwards rub with iodine of lead, one ounce; simple ointment, eight ounces. Continue treatment for a fortnight, and after all active symptoms have subsided, allow liberal food and rest; work gently when labor is resumed.

Surgical means are sometimes successfully resorted to in the treatment of this disease.

Dr. R. Thompson writes to the *Ohio Farmer*, that to cure the semi-osseous deposit, called ring bone, the animal must be thrown and well secured; with a strong scalpel make a crucial incision over the highest part of the tumor. Having dissected the four angles of the skin, back to a line corresponding with the base of the tumor, expose the entire surface of the morbid mass to view. The next step in the operation is the removal of the unnatural growth by the appropriate use of a carpenter's three-fourths or inch gouge; either manipulated with the hand alone, or assisted by the gentle use of a light mallet. With a proper knowledge of the parts involved in the operation and due care, there need be no fears of opening the articular capsule. Leaving the surface of the bone as smooth as possible, the angles of the skin are brought firmly together by means of a strong needle and cord the size of a slender fishing-line. A few slips of adhesive plaster will add much to the security of the dressing, and consequently to the more speedy healing of the wound. To these ends, also, the quietude of the horse will contribute greatly. Over this a few turns of bandage may be thrown and firmly secured. Should the parts become swollen, tepid water and whiskey may be freely applied by pouring every eight or ten hours, until the swelling subsides. Whether there is anything new in this I do not pretend to say; but this I do know, that by this safe and simple operation I saw a horse cured of the "ring bone" within the space of two weeks, where previous to the operation he could scarcely mark the ground with of the hoof, so great was his suffering.

CARROTS — FEEDING TO HORSES. — Carrots should never be used in place of grain, but only as a substitute for a portion of grain. The value of the carrot does not consist altogether in its nutritive properties, but rather in its ability to gelatinize all fluids with which it is mixed. Thus, a horse fed with three quarts of oats and three quarts of carrots, will do as well as if fed on six quarts of oats without carrots; when fed on oats alone he voids them in part in an undigested state; his dung will be found to contain the shells of oats, whole oats and when these are not discernible the quantity of starch unappropriated by the horse is so great, that his dung will fire fang in the compost heap.—When carrots form part of his food, then the oats, instead of passing the stomach mixed with a quantity of water and in a condition that the peristaltic motion of the intestines cannot operate upon them, will be gelatinized by the pectic acid of the carrot causing their entire digestion and more perfect appropriation; and thus three quarts of oats with carrots, will make more horse than six quarts without carrots, in addition to which the small amount of nutritive matter in the carrot itself, goes to the credit of the account. Horses while being fed on carrots have always a silky coat and a soft skin. They are never troubled with heaves; indeed, their general health is materially improved by the use of carrots. When fed to milk cows as part of their food, they increase the flow of milk and give to the butter a superior flavor.

Animals not accustomed to the use of carrots, sometimes refuse them if washed or cut. In such cases they may be fed to them a few times unwashed, then partially washed, and then thoroughly washed, and afterwards cut up and mixed with their food. We are in favor of pulping carrots and all other roots, before feeding them; with such practice there is no danger of colic, which, by the bye, seldom occurs with carrots, although frequently caused by the use of other roots, particularly when not pulped.

THE CHECK REIN.—Who beside the British use the check rein, saving their general imitators, the Americans? The French do not use it, the Germans do not, the Indians and Spaniards of South America, who literally live on horseback, and are perfect horsemen, do not, the Spaniards of Europe do not, nor do the Turks. The most observant and most natural people in the world are free from this error. It is strange to us, that the English and ourselves did not, years and years ago, reason upon the constantly witnessed fact that when a check rein was loosed at a tavern-stoop or in a stable, the poor horse always stretched out his neck and hung down his head. That was his language for saying that the strap hurt and wearied him, and that he was heartily glad to be relieved from it.

The genius that first proposed the mechanical feat of lifting himself up by the breeches, must have been the author of the theory that the check rein held the horse up and kept him from falling. The mechanical action in the two cases must be precisely the same. If the reader will reflect for a moment, he will see that no suspending power can be derived, except from without the animal.

The check rein should be abolished. It wastes motive power. Its use is unhealthy, for it disturbs the otherwise naturally and equally distributed vital forces. It shortens the life of the horse. It diminishes his speed, and lessens the free and quick action so essential to the animal's safety and that of his driver.

Brethren of the press, let us emancipate the horse from the British check rein.—*Buffalo Democrat.*

HORTICULTURAL.

To those who know the value of a garden it may seem idle to waste words on what is to them so self-evident, but they must recollect that for every one of their class there are scores of others who appear to be about as ignorant of the enjoyments they are losing as the wild-est savage of the woods.

A writer has said "Gardening is the most rational of all recreations. It teaches forethought, industry and economy of time. It exalts the mind, invigorates the frame, and constantly reminds us of the great God, whose hand is imprinted on every leaf, and who, in his bountiful goodness, rewards us with the fruits of the earth. To teach the cottager to manage his garden is to lead him to happiness; to induce the higher classes to love flowers, is to find them innocent gratification and provide employment for thousands."

Here in a country where it is the rule, and not the exception, to own the land we live on, we ought to look for something being done, above all things to embellish our homes. Shade trees to shelter us from the blast, and harbor the sweet throated songsters that warble us a welcome to every spring; shady woods and groves and pleasant rambles for our little ones to sport in—gorgeous and fragrant flowers to strewn our pathway, and last, although first in importance delicious fruits hanging from trees and vines, with the less pretentious list of vegetables combined, constitute some of the enjoyments of those who are not ashamed to go "making garden." Every tree planted "and cared for" is a living monument to our regard for our children's welfare. When planted the operation seemed simple enough, and the importance of it less. But when its giant arms are spread abroad, its value will be looked upon in its true light, and the thoughtful planter will be regarded a benefactor to his family and his race.

In beautifying our homes we are not alone obtaining passing enjoyment for the hour, but are laying up a store for the future. Every year adds to the beauty of a rightly cared for garden. For it is one of those arts that the touches of time enhance in value, to be for all wayfarers an example; to help on the good time when the occupation of gardening shall be viewed in its true light of a humanizing pursuit.

APPLES—KEEPING DURING WINTER.—In picking, great care should be taken not to bruise the fruit, for each dent will prove the cause of decay; nor, should apples ever be poured from one basket to another, or from basket to barrel. It will always pay to handle them separately and carefully. Barrels containing apples should never be rolled over, but carried.

Those who have the proper convenience, viz., a building so arranged that a draft of air may be secured by the opening of windows and doors, should place apples, as soon as gathered, in heaps of from five to ten bushels, and these should be covered with a cloth so as to exclude the light. The temperature should be as low as possible, above a freezing point, but not moist; a slight sweating will soon occur, and, when this ceases, the cloth should be removed, and the windows opened so as to dry the apples; they may then be covered, and a second sweating will not occur until about six weeks.

Those who export apples to Europe, endeavor to ship immediately after the first sweating, as they will not decay, unless bruised, until the second sweating occurs; and, if the voyage intervene, they are found to arrive in perfect order.

Apples should not be barreled for winter use until after the first sweating, and many prefer to let the second occur before the barreling. There is some loss of weight by the moisture parted with, but apples, unless gathered before ripeness, maintain their figure, and are better flavored when deprived of the redundant amount of moisture. A cool, dry cellar, is the best place to keep them, indeed, anything above freezing point is better than a higher temperature. The great object is to

exclude light as perfectly as possible; for, as the ripening of the apples is retarded, and as it is desirable that they should take on color, the light must be shut out, for, in its presence, changes of color are much interfered with.

STRAWBERRY HINTS.—A subscriber makes some inquiries of us in regard to which is the best method of growing strawberries, in hills or in beds, and he closes his queries by an apology for asking such questions in what he calls "the dead of winter," and when there "is snow to walk on instead of grass and flowers."

In regard to the apology we consider it superfluous. The discussion of agricultural and horticultural topics is as useful and valuable in winter as in summer; for a good idea acquired in winter is as valuable as if acquired in summer, provided it only "sticks by us."

As to the strawberry question, though not very much experienced in the business, we have seen enough of it to know that the different varieties have some peculiarities of their own in the mode of growing. Some of them do better in hills and some of them do better in beds. As proof of this position, we are glad to avail ourselves of the experience of the editor of the Magazine of Horticulture, G. Mt Hovey, of Cambridgeport, who has had great and long practice in this business, and to whom we are indebted for that valuable variety the "Hovey's Seedling." In a very excellent article on strawberries, in the last November number, he says, "The Brighton Pine and Boston Pine have a dwarf, compact, vigorous habit, and the capacity of producing an immense number of flower stems. Hence, if the plants are allowed to run together, the crop proves a partial failure for want of nourishment." * * * "But grown in hills, or single rows, and the runners partially clipped, and the spaces between the rows kept broad and clear of plants, the crop is immense, each plant producing and perfecting from 100 to 200 berries."

He considers that the Wilson has very much the same habit, although the flower stems are less numerous, and it will produce "a good crop in thick beds, but a better one when kept thin."

The Jenny Lind and Scott's Seedlings do best, as he thinks, in beds. On the other hand the Hovey's Seedling does best in beds. All attempts, he says, to grow it in hills that he has seen have failed. But he advises that the late, weak runners should be removed and none but the early and strong ones allowed to remain. The Austin Seedling, according to him appears to partake of the same character.

It is well known that in order to produce a full crop of Hovey's Seedling, some other variety, or as they are called a "staminate variety," should be planted or grown among them. Mr. Hovey thinks the Jenny Lind among the best variety for this purpose, or the Boston Pine. Of the two, the Boston Pine continues its blossoms later than the Jenny Lind, and thus fertilizes the later flowers of the Hovey Seedling.

WINTERING BEES.—I had the pleasure of listening to the discussion of this interesting subject at the American Bee Association, recently held in your City.

What Dr. Kirtland said.—The debate was opened by Prof. J. P. Kirtland, President of the Association, (who is, no doubt, the most scientific and practical Apian in America,) who gave the result of different modes, as tested by him. He said: "By the old method of insufficient ventilation, many bees perished by the accumulation of frost and ice in the hive; but hives which I suspended in apple-trees, entirely open at the bottom, (receiving Lake Erie air which often comes with great force in winter at East Rockport,) wintered well; I never had bees winter better, and they sent forth the best swarms I had, the following season. Several swarms froze that winter, by frost and ice accumulating in the hives, on their summer stands, where they had but slight ventilation. I came very near losing some swarms which I wintered in my cellar, in Langstroth hives, because the ventilation at the bottom of the hives was insufficient; although the top, or honeyboard, was removed, giving all possible ventilation upward, yet poisonous gases accumulated at the bottom, which would have killed the bees, had I not discovered their suffering, and given the poisonous gas opportunity to escape, by ventilating at the bottom. Though the bees ate but little honey, wintered in the cellar, they did not do so well the following spring and summer, as those wintered in the open bee-house, where they received pure air at the bottom and top of the hives. Immuring bees under ground in winter, makes them too tender to prosper in cool spring air, therefore I do not recommend burying bees."

What S. C. Brown said.—"I do not agree with Dr. Kirtland. I intend to bury my bees this winter, although I lost 19 out of 35 hives that I buried last winter."

What E. T. Sturtevant said.—"Many of my bees got the dysentery, that were wintered in the cellar, and nearly all died that went out in May, in search of blossoms."

What L. Twining said.—L. Twining (who by the way, is the Hoosier Bee-tamer,) said: "I have had some experience in wintering bees in Central Indiana, and can say, from sad experience, it will not do to bury bees in that soil and climate, for the best will become diseased, and perish before spring; and honey in hives will sour and mold. In dry gravelly soil, and in extreme northern latitudes, it may not be so very destructive to bees and honey, yet I am convinced, by many experiments, that no place is fit to winter bees, that is not dry, cool and thoroughly ventilated with pure air. I winter my bees on the north side of some building, that they may be well screened from the warm rays of the sun, having the door of the hive closed, that the bees may not go out and perish on the snow, and in chilling winds. I lost twenty swarms of bees last winter by burying in Central Indiana. They were buried on the Langstroth system, but the bees and honey were ruined by the damp moldy nature of the air in which they were placed. Many of my neighbours have buried bees and placed them in cellars, with similar results. From my experience in wintering bees, I can say, without fear of successful contradiction, that, if you

have your bees in a well ventilated hive, and place them on the north side of a building, and do not allow them to fly out until there are blossoms in the spring, you will then be able to send out strong, healthy bees, and many of them; as none have perished on the snow, nor in cold winds, neither have you lost any by the collection of frost or ice in hives, for good ventilation keeps hives dry inside."

EXPERIENCE WITH AN ICE HOUSE.—It may be interesting to some of our readers to hear my experience in packing ice to keep through the summer. Before building, I made inquiries of architects and others, as to how an ice house should be built. Some said, "have it underground;" others "have it above ground;" so I concluded I would try both. I built my ice house six feet under ground, and six feet above, eleven feet long and seven feet wide, with a window and blind at each end, about 18x24 inches, giving good ventilation. I used four-inch studs, filling it to the peak with saw dust. An experienced hand filled the house, which will hold about twenty tons. He put joists across the bottom, and packed the ice on straw, using it freely at the sides and top.

As soon as warm weather commenced, the ice began to melt, and by the first of July, all that was above ground had been used up, or had disappeared by melting. The underground ice kept better, but all was gone by the middle of August. Some people said it was because it was a new house, and that it would keep better the second year; I believed it and tried again, but the result was the same—the ice was gone by the middle of August, and the straw rotted.

Some one then suggested that the thickness of sawdust was not sufficient, and that the heat from the bottom caused it to melt. So I put in another set of studs, and filled in again with sawdust, put down a double floor, and inclined that also. I then felt sure it would keep; although by reducing the size, I could only put in eighteen tons. That year it kept till the first of September. I was induced to fill it in the same way again, because they said the ice was not solid the year before, and did not keep in any of the houses. The result was the same: the ice was gone by the first of September.

By that time, I had become convinced that straw was not the right thing to put round it, and that unless I could do better hereafter, I would buy ice during the summer.

I concluded to try once more, and use sawdust. Last winter, I put about six inches of sawdust on the floor, and then packed in the ice, leaving a space of four inches between the ice and the sides, which was filled in with sawdust and the top covered with about six inches also. On the first of September, this year, we had not used it down to the level of the ground even, and could perceive but very little moisture on that which was taken out daily. At this time we are using it freely, and it comes out in cakes. I am not certain but it might keep well, if packed in an empty stall, with plenty of sawdust round it, or even in a pen out of doors, if well covered with the sawdust, and protected from rain.

MANUFACTURING REVIEW.

FEBRUARY.

CONTENTS:—English Industrial Exhibition for 1862.—How straw paper is made.—New Windmill power for grinding.—Patented by R. H. Oates, Toronto, 9th August, 1861.

ENGLISH INDUSTRIAL EXHIBITION FOR 1862.—The building now in course of erection at South Kensington, and intended for the great World's Fair of 1862, will be completed by the middle of February next, and opened to the public by the 1st of May. It will be the largest building in the world. It is said that more than 18,000,000 bricks will be used in constructing the enormous walls, and that the 800 girders and 1200 columns required for the support of the dome and building, will contain about 4000 tons of iron.

Great enthusiasm has everywhere been manifested in the project. Already many of the departments are closed to exhibitors, as the space has been taken up by earlier applicants.

There are 4,425 applications for places from French manufacturers alone—although in the great London Exhibition of 1851, their number did not exceed 1,700.

Our national industry will, no doubt, be fully represented there, as every facility is open to all exhibitors. The Commissioners appointed by the President to represent American interests on the occasion, have already taken measures to secure, from our government, the grant of a means of transport, by which articles for Exhibition are to be conveyed from the United States to London and back, free of charge to the exhibitor. Persons desiring to forward goods, &c., can make all necessary arrangements by communicating with Robert Partridge, Esq., the Secretary of the Commission, Patent Office Building, Washington.

Each foreign Commission is expected to nominate a jurymen for every class and sub-class in which staple industries of their country are represented, the whole to constitute an international jury, by whom the medals and prizes are to be awarded.

The many whose occupations or limited means will, on the coming occasion, prevent their going to the Great Exhibition, will, doubtless, enjoy the satisfaction of having "the mountain come to them," in the shape of innumerable photographs and stereoscopic views, the exclusive right of taking which, has been purchased by an enterprising photographer for the modest sum of £7,000.

HOW STRAW PAPER IS MADE.

The art of manufacturing paper of straw has made rapid progress since its discovery. The paper was first made in this city in 1854. Although of a dingy yellow hue, harsh and brittle to the touch, and scarcely to be handled without tearing, its production was deemed the marvel of the age, (as, indeed it was), and

the very least of the many glorious auguries of it was, that it should entirely revolutionize the newspaper business in time. In those days the straw was most unscientifically boiled in open tubs, and consequently it was never perfectly freed of its silica; and being silicated it was found almost impossible to wet it down for presswork, so that the paper was either too much printed, or not printed at all, and a growl went up from the reading public of alarm and indignation.

Under various mitigated forms, the evil, nevertheless, continued for years, and the growls grew fainter and fainter as the people's eyes and perverted tastes became accustomed to it.

About eighteen months ago letters patent were secured for various important modifications of the original process. The method of making straw paper is as follows:—

The straw is first passed into a cutter, where by it is reduced to lengths of from three to four inches. It is then thrown into large vats, and thoroughly saturated with weak alkali. A most unpleasant odor hence arises, somewhat similar to that perceptible in large breweries, but we are informed it is not prejudicial to the health of the workmen. This operation of mixing is termed "breaking down," and changes the straw in colour to a dark biske. It is next filled into large air-tight boilers, fourteen feet in diameter, subjected to a pressure of steam ninety pounds to the square inch, and another alkali. Each of these boilers will contain eleven thousand pounds of broken straw. It is then ground into pulp, in the same method and by the same machinery that have hitherto been employed in the manufacture of rag paper. It has now been changed to a very dark slate colour, and it would be difficult for us to recognize in it any element of the bright yellow straw of an hour since, if we were not previously acquainted with the marvellous nature of the transformation. After this it passes into a series of vats, where, by means of certain bleaching powders, it is brought to a hue of snowy whiteness, and reduced to a proper consistency by water. The mass now bears much resemblance to plaster-of-paris in solution, and is ready to be worked up into paper.

The most interesting process yet remains to be described, but we must pass into another apartment to witness it. At the eastern extremity of the room is a sort of trough, into which the pulpy liquor is pumped by steam power, and from which it flows upon a horizontal sieve of very fine copper wire. The fibres of the pulp at once arrange themselves on this

sieve. A species of film is formed, which though not a hundredth of an inch in thickness and largely saturated with water, has sufficient body to answer every purpose. It is next made to pass between a series of wooden rollers, which gradually consolidate and compress its fibres and free it of all the surplus water. By means of heated rollers, through which it is caused to pass, every particle of moisture is at length removed, and it is calendered by being pressed between heavy polished iron rollers. The positions of two small revolving wheels, with cutting services, between which it is caused to move, regulate its width as required, and it is finally wound upon reels, from which it may be cut off into sheets of any length.

The entire operation is so simple that the visitor who has an opportunity of inspecting it cannot fail to comprehend it almost instantly. The machinery, nevertheless, requires to be of exceeding accuracy, and is accordingly rather expensive. Its capacity admits of the production of 9,000 pounds of paper per day, but only about three-fourths of that amount is at present manufactured, or between 180,000 and 190,000 pounds per month. Two thousand tons of straw are yearly consumed here in the manufacture of paper. But forty per cent. of this, however, is available as fibre. The balance passes off into glutinous matter and silica, neither of which being convertible into dollars and cents represents an appreciable value. This immense waste in the raw material is, however, fully compensated for in the advantages of the product. Compared with paper made from rags, straw paper has more body for the same weight, is better adapted for fast presses, and it will not readily tear, and calenders much more smoothly. As to whether it can be produced at a cheaper rate, we shall not take it upon ourselves to state. There are probably not over half a dozen factories in the United States engaged in making it. Two or three of them are situated in New York, and another in Cincinnati. There is but one newspaper establishment in Philadelphia which uses straw paper for printing purposes.

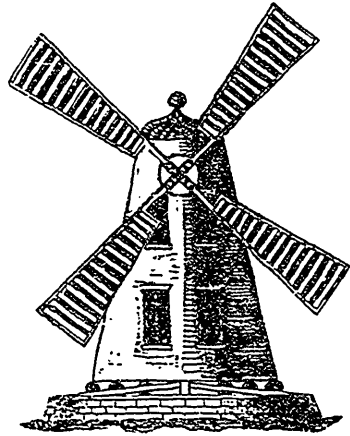
NEW WINDMILL POWER FOR GRINDING, &c.

Patented by R. H. Oates, Toronto, 9th August, 1861.

The principal of this invention is, that the Mill House revolves on a Circular Foundation, so as to keep the sails toward the wind; the sails being self-adjusting will cause the Machinery to run as steady in Squalls or a Storm, as in moderate wind. It is estimated that a Grist Mill on this plan can be built and completed for about \$2,000, with two run of Burr Stones, two Bolts, &c.

DESCRIPTION OF BUILDING.—"Build a circular stone foundation, say 32 feet diameter, two feet thick, two feet above, and as much below the ground as will keep it from being affected by frost. On the top of this, place a circular piece of timber 12 inches square, frame into this two cross braces same size, crossing each other exactly in the centre of the circle. Bolt this wooden circular plate secure by wrought

iron bolts coming up through the stone foundation. On the top of this timber circle, bolt or spike on a circular cast iron plate, half an inch thick and four inches broad; on the centre of the cross formed by the two braces, place a cast iron centre post 10 or 12 inches in diameter three feet high with a flange at the bottom two inches thick and 18 inches diameter, with 8 bolt holes, 1½ inch diameter. This flange is sunk flush into the timber and bolted fast by 8 wrought iron bolts 1½ inch diameter. Twelve inches above the flange a collar is cast on, and 15 inches above the collar is a key hole with key and washer. The Mill House is 18 feet square at the base and 9 feet square at the top; the posts are from 25 to 30 feet high.



One corner of the Mill House is the weather corner, out through this corner and as near the top as possible comes the wind shaft to carry the sails. This weather corner rests on the collar of the iron centre post. The main body of the Mill House from side corner to side corner with 9 cast iron wheels 12 inches diameter and 4 inches thick underneath, rest on the circular iron plate track. The lee corner over-hanging the circular foundation about 9 feet. The iron centre post will come up through an iron ring in the lower floor just inside of the weather corner with washer and key above said floor.

ADVANTAGES OF THIS PLAN.—The Mill House swings on the circular base round the iron centre post as the wind changes, like a ship at anchor. This is an advantage over the old Post Mill which has to be shifted by hand. The Mill with a revolving top is self-acting in part by the help of a small fantail wheel to bring the sails to the wind when wrong, but at times, in sudden squalls, this fantail wheel does not operate quickly enough, and the sails are blown off; in consequence the Miller has to be very watchful of the weather, or his Mill will meet with serious accidents. While a Miller in a Mill on my plan, need not trouble himself about the weather, let it come as it may, the Mill takes care of itself. Its advantage over Water Mills is, that you can build this Mill where you please, and its advantages over Steam being that the driving power costs nothing.

PRICES CURRENT.

GRAIN PER BUSHEL.

FOREIGN.	Wheat	Barley	Oats	Corn	Rye	Peas
	60lbs	48lbs	34lbs	56lbs	56lbs	60lbs
N. York	1.25	0.75	0.44	0.70	0.85	0.00
Chicago	0.75	0.00	0.16	0.23	0.25	0.00
Toronto	0.90	0.45	0.39	0.40	0.00	0.42
London	1.65	0.96	0.39	1.00	0.00	1.00
Paris	1.90	0.70	0.69	1.00	0.88	1.40

LOWER CANADA						
Montreal	1.00	0.45	0.27	0.46	0.60	0.61
Quebec	0.00	0.00	0.30	0.00	0.00	0.86
Three Rivers	1.10	0.45	0.26	0.90	0.75	0.75
Sorel	1.10	0.50	0.26	0.75	0.00	0.70
Ottawa	1.05	0.60	0.29	0.45	0.55	0.45
St. Hyacinthe	1.20	0.46	0.27	0.76	0.00	0.77
Sherbrooke	0.00	0.00	0.00	0.00	0.00	0.00
St. Jean	1.10	0.46	0.25	0.70	0.00	0.62

FLOUR.—Montreal Market.

Double extra	5.75	Superfine No. 2	4.45
Extra	5.40	Fine	3.75
Fancy	5.12	In bags	112 lbs. 2.50
Superfine No. 1	4.75		

BRAN.—Different Markets.

	qtls.		qtls.
Montreal	0.70	Three Rivers	0.00
Quebec	0.60	Sorel	0.00
Ottawa	0.00	Sherbrooke	0.00
St. Hyacinthe	0.00	Iberville	0.00

BUCKWHEAT.—Different Markets.

	qtls.		qtls.
Montreal	0.55	Sorel	0.55
Quebec	0.00	St. Hyacinthe	0.55
Three Rivers	0.45	Sherbrooke	0.00
Ottawa	0.00	St. Jean	0.50

CANADIAN BEANS.—Different Markets.

Montreal	1.50	Sorel	1.10
Quebec	0.00	Ottawa	1.10
Three Rivers	0.00		

POTATOES.—Different Markets.

Montreal	1½ m'ot	0.70	Sorel	1½ m'ot	0.64
Quebec	"	0.34	St. Hyacinthe	"	0.40
Trois-Rivieres	"	0.61	Sherbrooke	"	0.00
Ottawa	"	0.60	St. Jean	"	0.40

GREEN CROPS SEEDS.—Different Markets.

Red Clover	per lb.	0.69
Vermont Clover	"	0.18
Dutch or White Clover	"	0.25
Timothy	45lbs. per bushel.	1.75
White Vetches	"	1.00
Black Vetches	"	1.00
Mangold's seed	"	0.25
Carrot's seed	"	0.45
Turnip seed	"	0.45

HAY AND STRAW.—Different Markets.

	100 lbs. hay.	straw.	100 lbs. hay.	straw.
Montreal	6.00	5.50	St. Hyacinthe	4.00
Quebec	7.00	6.00	Sorel	0.00
Three Rivers	5.00	3.00	Ottawa	6.00

MANURES.—Montreal Market.

Peruvian Guano	100 lbs.	3.80
American Guano	"	2.50
Animal black	"	1.00
Plaster	brl.	1.00

OIL-CAKES.—Montreal Market.

Linsced cake	cwt.	1.50
Linsced cake pulverised	"	2.00

MAPLE SUGAR.—Different Markets.

Quebec	lb.	0.07	Montreal	lb.	0.09
Three Rivers	"	0.07	Sorel	"	0.09

ANIMAL PRODUCTIONS.

MEATS.—Different Markets.

	Beef.		Veal.		Mutton.		Pork.	
	lb.	qr.	qr.	qr.	qr.	qr.	lb.	lb.
Montreal	0.00	1.00	0.75	0.10				
Quebec	0.09	0.00	0.00	0.09				
Three Rivers	0.06	0.00	0.55	0.11				
Sorel	0.09	0.45	0.45	0.10				
Ottawa	0.10	0.00	0.00	0.10				
St. Hyacinthe	0.06	0.43	0.00	0.11				
Sherbrooke	0.00	0.00	0.00	0.00				
St. Jean	0.00	0.00	0.00	0.10				

CATTLE.—Different Markets.

	Montreal.	Quebec.	Three Rivers.	Sorel.
Oxen per 100 lbs.	6.00	0.00	5.50	7.40
Milch cows	30.00	0.00	18.00	18.00
Calves per head	5.00	0.00	0.00	0.00
Sheep	4.50	0.00	0.00	0.00
Lambs	2.75	0.00	0.00	0.00
Hogs per 100 lbs.	4.00	0.00	7.00	5.00

BUTTER.—Montreal and Quebec Markets.

Fresh butter per lb.	0.25	0.15
Salt butter	0.11½	0.15

CHEESE.—Montreal and Quebec Markets.

Rafin, per lb.	0.15	0.00
American	0.07	9.00

HIDES.—Different Markets.

Montreal	100 lbs.	5.50	Quebec	100 lbs.	6.00
Three Riv's	"	0.00	Sorel	"	0.00

HORSES.—Montreal Market.

Saddle and hack horses	\$120.00
Farm horses	\$0.00
Old horses	\$25.00
Horses sold at auction	\$30.00

WOOLS.—Different Markets.

Montreal	lb.	0.25	Quebec	lb.	0.00
Three Rivers	"	0.00	Sorel	"	0.00

EGGS.—Different Markets.

Montreal	0.16	Ottawa	0.16
Quebec	0.14	Sherbrooke	0.15
Sorel	0.14	St. Hyacinthe	0.15
Three Rivers	0.15	St. Jean	0.12

FISH.—Montreal Market.

The string of 4 lbs.		The pair.	
Carp	0.12	Eels	0.25
Perch	0.20	White fish	0.25
Bass	0.20	Pike	0.25
Dores	0.33	Sturgeon	0.22

FOWL.—Montreal and Quebec Markets.

	The pair.	The pair.	The pair.	
Ducks	0.55	0.50	Pigeons	0.17
Geese	0.85	1.00	Fowls	0.50
Turkeys	1.80	1.75	Chickens	0.00

GAME.—Montreal and Quebec Markets.

	The pair.	The pair.	The dozen.	
Ducks	0.30	0.00	Wild pigeons	0.75
Plover	0.29	0.00		
Partridges	0.55	0.50	Hares	0.12

FRUIT.—Montreal Market.

The barrel.		The barrel.	
Apples fameuses	3.00	Pears common	2.00
Apples grises	6.00	Plums per bushel	4.00
Apples American	3.00	Grapes per lb.	0.50
Pears bons cretiens	12.00	Melons the piece	0.00