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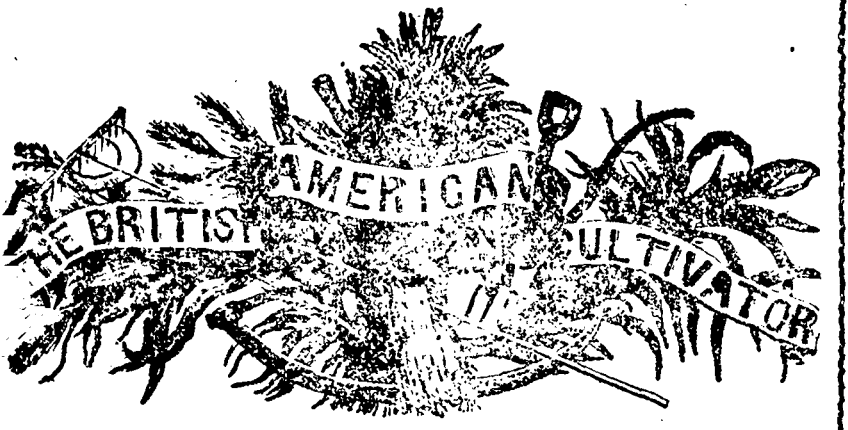

"Agriculture not only gives Riches to a Nation, but the only Riches she can call her own."

'ow Series. TORONTO, DECEMBER, 1847. Vol. III. No. 12.

The present prospect of Agriculture in Canada.

THE present number completes the sixth annual volume of the *British American Cultivator*, and it therefore might not be objectionable to the majority of our readers, that we should give a few practical suggestions, touching upon a variety of matters that have a direct bearing upon the present condition and prospects of our agriculturists. Wheat, the great staple crop of Canada, is in a most perilous condition, owing to the depredations of the two natural enemies of that plant,—the Hessian and Wheat Flies. The habits of the Hessian Fly are pretty well understood by the readers of this magazine. They pass through two distinct generations in a year, by which it will be understood that they are full grown active flies in the months of May and September, and in June and October are active grubs. If the farmers would come to the determination to sow no fall wheat before the 10th of October, then the Hessian Fly would soon disappear—and the same argument would hold good with those who resolve to sow only spring wheat, but to effectually evade those flies, the whole community must adopt the proper means of doing so. Many farmers have been induced to sow late the present season, from having become acquainted with the habits of the Hessian Fly; but owing to the very heavy and frequent falls of rain that have occurred, they have been prevented from getting on their land, and consequently have not sown as much fall wheat as they otherwise would have done. The severe frosts that occurred about the 25th of November, must have had a tendency in destroying much of the late sown wheat, but the damages done in this respect have been less than were brought about by the ravages of the Hessian Fly. Late sowing is to be commenced only in those neighborhoods where the Hessian Fly have made their appearance in great abundance; and where it has been practiced, means should be taken to protect the young plants from the severe action of the winter's frosts. The best course to secure that end, would be to scatter a complete top-dressing of long barn yard manure over the land as soon as possible. This would prevent the snow from blowing off the land, and would secure in a great measure the plants from being destroyed by the severe frosts, and it would also have a very salutary influence in preventing the injury done the plants by the Hessian Fly in the spring. If the young

wheat plants be thoroughly top-dressed with manure in the early part of the winter, at the opening of the spring they will take a vigorous growth; and hence new stools will be sent forth from plants, which would have been otherwise destroyed by the grub of the Hessian fly. The foregoing information will only be interesting to those who have not made themselves thoroughly acquainted with the habits of this great destroyer of the wheat crop, and the best means of evading its ravages.

The next great enemy to the wheat plant is the *wheat fly*, which deposits its eggs on the chaff of the wheat, at the period when the grain is in its embryo state. This insect passes through only one generation per annum, and the only means yet devised to evade its depredations, is that of sowing an early variety as late as the season will admit, by which means the wheat plants would not come into head until the fly had passed through its generation. As the chance of losing the great staple crop of Canada, for a few years, has become probable with those farmers who have watched the progress of the two insects described above, in Lower Canada, the Eastern States, and other countries that have been visited by them, it is well to look the difficulty in the face, and prepare for the worst. As for a remedy, that will be found quite impracticable, unless the plans pointed out should prove as efficacious as we have all along taken for granted would be the case, from the fact, that by their adoption, both descriptions of *flies* would be completely evaded. If no remedy can be found, then all sensible farmers would at once see the propriety of sowing other crops that would be less hazardous. As to the character of these crops, and the best methods of cultivation, no writer on agricultural matters could submit any definite rule for general adoption, but nevertheless some very useful and practical hints might be suggested, and adopted in those cases where they would be considered particularly applicable.

Owing to the depredations of the grub of the Hessian fly, thousands of acres of wheat in Western Canada did not average, the past harvest more than eight bushels per acre. So small a yield as this would not pay the rent of land and the cost of cultivation; and to avoid a similar calamity or loss, we would suggest that those farmers who have good reason to apprehend that their wheat crop will be seriously injured by the above cause should examine their crops early in the spring, and if they find that they have been damaged, no time should be lost in reploughing the land, and sowing or planting it with other crops that would more certainly give remunerating returns. The damage cannot be fully known until the middle of May, and by that time it will be to late to plough the land, where a large quantity has to be done, in time to sow most of the crops usually grown in this country. As for barley and spring wheat, the grub of the Hessian fly works upon these crops to as great an extent as on winter wheat, unless they be sown as late as the last week in May. Therefore it would be useless to sow these crops on winter wheat land, unless the plan suggested be practised. Oats will bear sowing late; and although they are the least profitable grain to grow, still a crop of oats that would average sixty bushels per acre and upwards, would be preferable to an average of eight bushels of wheat per acre. Peas may be sown as late as the first week in June, on well-prepared land, and by sowing them as late as the period mentioned the fly that deposits its maggot in the pea when in the embryo state, will have disappeared when they come into blossom, and thus a better sample may be raised from late than from early sown, if the ground be in suitable condition to bear a full crop, which would be the case if sown upon land that had been carefully prepared for fall wheat. Of the various crops that would prove remunerating, if made to follow fall wheat that had been damaged by the grub previously described, probably Indian corn and pumpkins would be the most remunerating, managed with skill and attention. Fr

sixty to eighty bushels of shelled corn may be grown per acre, and the pumpkins alone can be made to pay the rent of land and the extra management of both crops. At an early period we shall enter more fully into the discussion of the foregoing branches of farm management, and for want of space must, in the meantime, confine our remarks to the consideration of a few matters that have equally as great an influence upon the prospects of our agriculturists as that of partially losing their wheat crop. When the rent of land, cost of cultivation, and management of the wheat crop, are all taken into calculation, it will require a very large yield of wheat to give a net profit of three pounds per acre. The dairy, sheep husbandry, the cultivation of new crops, and the cultivation of those described in the foregoing remarks, will pay as large a profit as wheat, and the risk will be considerably less. We, however, do not wish to influence any farmer to cease sowing wheat, where there is a good prospect that the return will be remunerating. Our motive in discussing the matter at all at this time is, to prepare the mind for a catastrophe which will in all probability visit our land.

In an average of years, prices for agricultural products, under a comparative freedom of commercial intercourse with other countries, must rule at a less price in Canada than what was received during the period that protection was given the products of this colony in the markets of the mother country, hence, it is not to be supposed that farming can be as profitable now, under ordinary management, as used to be the case. The two great drawbacks upon agriculture in Canada, are the high price that has to be paid for labour, and the very great scarcity of capital that appears to prevail throughout all parts of the province. Labour must be high in comparison with the value of the products of the soil in all new countries, so long as large blocks of wild land can be had at a low rate, but this evil might be obviated in a great measure, if a more healthy system of immigration was put into practice. There are a large number of farm-labourers and small farmers in Europe, who might improve their worldly circumstances very materially by removing to this country, and who, at the same time have means of their own to bring them here, and sufficient besides to sustain them until they get comfortably settled.

An acquisition of from 50,000 to 100,000 of that class of emigrants annually to Canada, would give a full supply of agricultural labourers, and it would be a means of reducing the rates of wages to a standard that would be somewhat in keeping with the prices that are obtained for the products of the soil. Pauper emigrants are not the class that are calculated to benefit Canada. Men who have been regularly trained to labour, and who have had a religious and moral training, are the only description of laborer that would prove advantageous to this country, and in our opinion, great success will not attend our agricultural operations, unless a large number of laborers of the above description find there way annually to our shores. The present agricultural laborers of Canada in a very few years, with their present high rates of wages, will soon be in possession of farms of their own, or they will employ their time and means in cultivating rented lands. A fresh supply must therefore be kept up, or else much land must be thrown out of cultivation. To remedy this evil, every effort should be employed to establish a wholesome system of immigration, by which a large number of the choicest emigrate here for the purpose of improving farm-laborers of Europe would be induced to their condition in life. Owing to the operation of unwise restrictions, money in almost any quantity can be had for the purpose of speculating in the products of land, and that too upon the most spurious descriptions of security, whilst at the same time a farmer worth thousands of pounds in landed property, cannot procure the matter of a few hundreds of pounds upon undoubted security, although the money borrowed is required to make his hundreds of acres more productive.

Cultivation of Flax.

A friend recently presented us with the following interesting account of a meeting held in the West Riding of Yorkshire, for the promotion of the cultivation of flax, which we copy from the *Leeds Mercury*. Some of the greatest noblemen of the kingdom took a part in the proceedings of the meeting, and the information elicited is of a highly valuable and interesting nature. The principal speaker on the occasion referred to, was Mr. Henry Briggs, who brought forward a fund of practical information on the subject rarely to be met with. We copy Mr. Brigg's speech for the information of our readers, and in doing so, we hope that some of our leading agriculturists will combine their influence and means in introducing the cultivation of flax and hemp in this country, upon such a scale, that it may ultimately become a profitable article of export.

Mr. Henry Briggs next read his paper on the growth of flax in Great Britain and Ireland. The first part of the paper pointed out the policy of promoting and encouraging the growth of flax in the United Kingdom, as a substitute for imported cotton. The scarcity of cotton and its consequently enhanced price had greatly diminished its consumption; and the greatly curtailed hours of labour, with the attendent curtailment in the amount of wages paid, were now having their baneful effect upon the operatives employed in that branch of manufacture. Under these circumstances, we naturally looked around for some substitute costing less, or being qualified to produce a superior fabric at the same price, and it appeared to him that probably flax was most likely to afford the desiderata, and that as cotton formerly in a great measure superseded the use of flax, so the latter may again obtain the ascendency, and become a formidable rival. He proceeded to take up the objection to the growth of flax, arising from the belief that it is an exhausting crop—an idea which he went on to show was totally discountenanced by both theory and practice, when its cultivation was conducted upon proper principals. Having advanced what he conceived to be sufficient to show that the growth of flax is not necessarily an exhausting process on the land, at least, not more exhausting than wheat, he thus proceeded to maintain that it was a most profitable crop to the farmer:—The expenses of growing flax have been variously estimated, by some much too high, and by others below what I conceive to be the real truth. The proper medium I believe to be about £12 per statute acre, taking into consideration the whole operations, from the preparation of the land to the scutching of the fibre previous to sale to the manufacturer. The details are as follows:—

	£	s.	d.		*Prop. of manual labor.* £	s.	d.
Rent, rate, and taxes,	2	0	0	.....	0	0	0
One ploughing before winter,	0	7	0	.....	0	2	0
Dressing, dragging, rolling, harrowing, and picking,	0	12	6	.....	0	7	6
One ploughing in spring	0	7	6	.....	0	2	1
Interest of capital and use of machines,	0	10	0	.....	0	0	0
Harrowing, sowing, and rolling the seed,	0	5	0	.....	0	1	6
Seed, 2½ bushels, at 7s	0	17	6	.....	0	0	0
Weeding,—6 women 1 day, at 1s	0	6	0	.....	0	6	0
Pulling the crop—8 women 1½ days, at 1s	12s						
2 men 1½ days, at 2s	6s						
—	0	18	0	.....	0	18	0
Steeping, 4 men 1 day, or 2 men 2 days, at 2s	0	8	0	.....	0	8	0
Grassing, do. do.	0	8	0	.....	0	8	0
Scutching, 50 stone weight, at 1s. 6d	3	15	0	.....	3	15	0
Stacking and leading	0	10	0	.....	0	4	0
Rippling or thrashing, 4 men 1 day, at 2s	8s						
6 women, do. at 1s	6s						
—	0	14	0	.....	0	14	0
Contingencies,	0	2	0	.....	0	0	0
	12	0	0		7	6	0

If the above data are tolerably correct, an interesting inquiry ensues, whether flax cannot be produced on such terms as successfully to compete in its cost with cotton, and still leave a fair and reasonable remuneration to the grower. Should this be the case, linen may then be extensively used as a common fabric, not as a luxury confined to the more wealthy members of the community, but as an economical as well as a most desirable and durable material for both personal and domestic use. Now suppose that £4 per acre be considered a fair profit to the farmer, the produce, in order to yield that sum, must fetch £16, which may be estimated as follows:

Produce of a fair *average* crop of flax per acre.

	£ s.	£ s.
Seed—20 bushels, at 6s. 6d.....	6 10	
Tow.....	0 10	
Refuse, suitable for bedding and manure.....	0 5	
		7 5
Leaving the sum of £8 15s to be produced by the sale of the crop of dressed flax, which may be estimated at 50 stone of 14 lbs , 700 lbs., at 3d. per lb.....		8 15
		16 0

If 50 stones of dressed flax should be considered an excessive crop (which from Mr. Warne's and Mr. Dickson's report, it is not,) even 20 stones at 3½d. per lb would produce the same money. An excessive crop is the more particularly desirable from the circumstance, that the more crowded the stems are upon the ground the finer will be the fibre, though the produce of grain or seed will be less; and as the increase is in that particular item in the crop which is the least exhausting to the soil, and at the same time most valuable, it seems highly desirable to adopt the thick mode of sowing. By sowing 3 bushels of seed per acre, as much as 70 stones, or 980 lbs. of fine dressed flax have been obtained, with a produce of only 12 to 14 bushels of grain; whereas by sowing only 30 stones, or 420 lbs. of flax of a coarser quality has been the result, though with a crop of grain amounting to 26 or 30 bushels. At present, I believe, the price of dressed flax varies from £40 up to £120 per ton, or from 5s. or 15s. per stone of 14 lbs , according to its fineness, color, and quality. This discrepancy of inequality proceeds in a great measure from mismanagement, and hence the great scope that exists for improvement, and encouragement held out for attaining excellence in its production and preparation.

I confidently believe that almost in every instance in which loss has been sustained in the growth of flax, it has arisen from the grower either not having had the means, or not having possessed the skill necessary for conducting the operations in an adequate manner. The expense and trouble attendant upon the preparation of flax have been supposed to render its cultivation by the farmer little desirable; but should an increased production take place, the demand for better machines, and for regular district flax dressing establishments would be immediately answered by their productions—as, in this country the demand for the exertion of talent and energy in any particular direction, is always followed by the supply—and if the same or equal talent and ingenuity had been exercised upon the production of machinery for preparing flax for the manufacurer, which have been displayed in after processes of spinning, the advantage to the country would have been immence. The energetic and indefatigable firm of Messrs. Marshall and Co., of Leeds, to whom the linen manufacture of England is so much indebted, I am happy to say, are turned their attention to the preparatory processes of flax dressing, having purchased an extensive tract of land in Holderness, chiefly with the view of growing and preparing flax, and are erecting an establishment on a large scale, for the purpose of steeping, bleaching, and scutching the stem. The dampness of the climate of Great Britain and Ireland is often complained of; and, if a disadvantage in some respects, it ought to be turned to account in those instances where it is favourable to particular vegetation, and this moisture being highly conducive to the prosperous and successful cultivation of flax, that crop ought to be grown. But there is another consideration which I conceive to be most important in estimating the advantage of flax culture in a populous country like England, —which is, that out of the expense of £12 per acre incurred in raising the flax, and preparing it for the manufacturer, about £4 15s. pays the cost of horse hire, manure, rent and taxes, and the remaining £7 5s is expended in the wages of manual labour; whereas in a crop of corn, not about one-fourth of the sum is appropriated to manual labour. According to Government returns, the annual importations of foreign flax are about 70,000 tons, for the payment for which, a sum of about £6,000,000 is sent out of the country. This weight would occupy about 250,000 acres for its production with an expenditure of nearly £2,000,000 in wages, and a profit to the growers of at least the same amount—inducements surely sufficiently potent to encourage the increased home production of this important raw material, not only from the dictates of that all-powerful stimulus self interest, but from the more worthy motive of patriotism. Having enumerated some of the advantages of promoting the growth and extended use of flax in England, he adverted to the consideration whether its fabrics can successfully compete in cost with those of cotton. With regard to its price (he said) I think I have shown that with proper management flax can be afforded, in a state prepared for the manufacturer, at a cost of 3d. to 3½d. per lb. The price of good American or Geogria cotton has within the last 30 years varied exceedingly. At the beginning of that period it was 20d., and about two years ago it had gradually fallen to the very low price of 4½d At present, owing to the deficiency of the crop, it is from 7d. to 8d per lb. It appears therefore that in comparing the respective costs of the raw materials of the two manufactures, flax has an advantage (and occasionally a great one) in point of cheapness—and allowing the after waste in process of spinning to be 20 per cent. greater than that of cotton, the actual cost of operation in other respects being much the same, still flax may be well able to compete with its foreign rival.

Farmers' Recipe for Burns or Fresh Wounds on Man or Beast.—Take from your garden a beet, (the sugar beet is best,) boil till tender in fair water, take it out, and let the water boil down to a small quantity (say a gill,) , turn into a covered cup or small dish. When it is cold it will be as thick as thin paste. Apply to the wound as soon as convenient, change frequently; do not fear trying it because so simple—it will surely prove efficacious.—*Prs. Far.*

To the Subscribers of the Cultivator.

The delay of the present number of the *Cultivator* has been occasioned through some changes that have been affected in our affairs, and likewise owing to the scarcity of paper in the Toronto market. As the changes alluded to will have a very important influence on the future management and character of our Journal, it is very important that they should be properly understood by those who are anxious for the prosperity of our enterprise. Since the issue of the November number of the *Cultivator*, the Editor and Proprietor of the *Canada Farmer*, and ourselves, came to a mutual understanding to amalgamate the two papers in one. Upon trial, it has been found that two agricultural papers could not be efficiently supported in this colony, and after carefully examining the subject, it was found to be to the interest of both parties that the two papers should be combined. The new paper will be styled the *Agriculturist and Canadian Journal*, and will be published twice per month, on a sheet about the size of the *Cultivator*—price, *One Dollar per annum*. It will contain a much greater variety of information and interesting reading than the *Cultivator*, and will in fact be precisely such a Journal as will suit the tastes and wants of all classes of our mixed population. The agricultural department will still be kept up, and the friends of agricultural improvement may always depend upon a full report of the most recent improvements made in agriculture, both on this Continent and in Europe. The paper will be divided into Agricultural, Literary, Mechanical, Scientific, and Ladies' Departments, and in each a variety of entertaining and useful reading may be found, suited to the tastes of the masses of our population. In addition to the appropriate matter found in the various departments of the work, a full and detailed record of the most important events that take place both at home and abroad will be made, and a report on the local and foreign markets will be carefully prepared.

The first number will be sent to *all* the subscribers of the *Cultivator*, as a specimen of the work, and therefore, those who desire it will have to re-order it, either by post, or through our agents. If by the former method, we shall expect the postage paid on the letter, as the profits are so trifling, that we cannot afford to take anything less than a dollar per annum for the publication. We send the first number of the new work to all the subscribers of the *Cultivator*, in order that they may form an idea of its character, and not for the purpose of crowding it upon them. The latter inference can scarcely be made, as the future numbers will only be sent to new subscribers.

A number of applications have been made by Agricultural Societies, for the *Agriculturist and Canadian Journal* to be supplied at the rates formerly practiced by us. A semi monthly sheet cannot be supplied at so low a price, and as we shall have regular agents in the field, the cheapest and most efficient method that can be adopted by us to get our work widely before the public, will be to employ proper canvassing agents. As some societies are most anxious to be supplied with the new work, we shall supply it when fifty copies or more are taken at *three and fourpence* per copy, to be paid strictly in advance.

PROVINCIAL ADVERTISER.—*The readers of the Cultivator*, who have been in receipt of the *Provincial Advertiser*, may have formed an erroneous opinion regarding the religious and moral character of its Editor, from an article that appeared in the October number, headed "Three Essentials of Truth." The writer of that article, from the omniscience of the ALMIGHTY, drew the unwarranted inference, that there was no place of future punishment, which is a doctrine totally at variance with those entertained by the Editor of the *Advertiser*. At the period the number in question went to press, the Editor was absent in the country, and consequently had not the opportunity of revising the proof sheet, and *had no knowledge of the article, until it was* pointed out by a friend. We make this explanation in order that the readers may understand that we disavow the deduction made by the writer.

Provincial Agricultural Warehouse.

We regret to be compelled to make the announcement to our friends, that the above establishment has been closed. Much of the business had to be done on credit—and the times are such at present, that every person evinces a disposition and a determination to curtail expenses. Our establishment was a very expensive one, and probably was commenced a few years too soon for the state of agriculture in the colony. A

all events, it has proved a failure, and the actual loss that we shall sustain, will require every farthing of our present and next year's profits on our other operations to meet. Canada above all other countries with which we have any acquaintance, is the most difficult one to sustain an extended enterprise. Almost every man who engages in a new business, which is calculated to benefit the public, is doomed to become a martyr to the cause. This is a peculiar characteristic feature of our country, and it is one that has a very powerful influence in keeping down the energies of men of undoubted enterprise and business talent. For our own part we made a bold experiment, with a full determination at the time, of succeeding in establishing a Warehouse that would become a very powerful engine in effecting wholesome changes in the physical condition of our native land. To convince our friends that we do not despair entirely of being ultimately instrumental in accomplishing all we anticipated, we still hold ourselves in readiness to supply almost any labor-saving machine that may be required, provided that the cash or undoubted security be placed in our hands previous to the order being filled. We have no more risks to make for our Canada friends, but at the same time are willing to serve them when secured against loss.

Application of Barn Yard Manure.

A correspondent in the *Genesee Farmer*, has recently favoured the readers of that paper with some excellent advice, on the saving and application of manures, which may be summed up in a few words.

1st. His theory is, that barn yard manure should be covered deep in the ground with the plough, so that the gases which arise from it, while undergoing fermentation may be incorporated into the soil, and be taken up with the roots of plants.

2nd. That coarse manures lose half their value, by lying in the heap until thoroughly decomposed.

3rd. That the soil is capable of producing a crop annually without diminution, provided it be supplied with the like properties which the crop requires in its re-production, and his practice based upon the above theory is as follows:

His average annual harvest of wheat is upwards 1500 bushels, the straw of which is put into a large stack in autumn, and during the winter it is fed to his horned cattle, by cutting down from the stack in slices, and scattering it around the yard. This process is repeated from period to period, so that by the middle of March, it is all trodden under foot. In this way his yard is always dry, and the stock need no other shelter that open sheds to protect them from storms. The Indian Corn stalks are cut fine in a machine by horse power, and fed in trough sparingly through the winter, which, together with the straw from the stack, keeps his stock in good condition till warm weather begins, when a little hay carries them through in fine condition. In the last week of April, he begins to draw out the manure, which is put on the land at the rate of from thirty to forty loads per acre. The manure is then ploughed in ten inches deep, good care being taken to have it covered neatly with the newly inverted land, and immediately afterwards the ground is rolled with a heavy roller, harrowed and planted with an early variety of Indian Corn, that is calculated to ripen by the middle of September. As soon as the corn is barely ripe *it is cut up at the ground, and is drawn off* the land upon which it grew. The ground is then ploughed and sown with wheat about the middle of September, and this plan he pronounces after many years trial, to be a better preparation for wheat than a naked fallow.

The foregoing mode of growing Indian Corn is practised by some in Canada, and with the wheat crop the land is sown with the cultivated grasses, and the results have been most satisfactory. No crop grown upon the land will take up *through the sap vessels of the plants, so great a* quantity of barn yard manure as Indian Corn, and if the land be well cultivated the manure will have then passed through its various stages of fermentation, and be in a suitable condition for wheat and other white crops.

Rock-Boring Machine.—Messrs. G. W. & J. Lee, of Marden Creek, Pa., have invented and put in operation, a machine that will bore into common granite or other stone at the rate of five feet per hour, or one inch per minute, by the work of one man at the crank, of course, if steam or horse power was applied, it would accomplish large business. We have not been furnished with a full description of this machine, but expect to receive a model thereof, ere long, when we can describe it in full.—*Scientific American.*

Agricultural Department of our Government.

Canada on all hands, is supposed to be an agricultural country, and in fact is likely to remain such for a long time to come, owing to the scarcity of capital and the thorough absence of manufacturing enterprise that appears to pervade the mind of our population. It therefore seems reasonable that every encouragement should be given by Government, by which the agriculture of the province could be placed upon a healthy footing.

To us it appears strange, that none of our wise politicians should have recommended an agricultural *department of our Government.* A minister of agriculture in Canada would do much towards making agricultural improvement popular, and it would be a certain means of developing the agricultural resources of the province. The duties that would be imposed upon this department of our government, would be such, that efficient steps would necessarily have to be taken to give encouragement to the growth of new plants; and the improvements in machinery and other branches of productive labour made in the province, would be brought prominently before the notice of the public. In fact, such a minister, in such an exclusively agricultural country, would have to thoroughly identify himself with every movement that would tend to develope the unproductive resources of the province. Facts, should now be deemed the only solid foundation for the superstructures of modern statesmen. Our Legislators are not much interested in the development of the great resources of our country, and we apprehend that this state of things will exist until we have a department in our government, the business of the head officer of which, would be to watch over the productive interests of our land. Such a minister or officer of our government, could obtain a thorough knowledge of the statistics of the country, which should embrace every fact relating to its condition and welfare, both physical and moral, and without such knowledge on the part of our statesmen it is impossible to legislate wisely for its interests. The agricultural products of Canada might be greatly increased, if judicious steps were taken by our government to bring about that end. New products should be cultivated, and those that are only partially and indifferently understood, should be brought into extensive cultivation.

Our wheat and potato crops will in all probability go out of cultivation for a few years, unless efficient remedical measures be found that will have the influence of destroying the insects that are preying upon those important crops. The loss that will be sustained from the depredations of these insects will be severly felt by the government and people of this country, and the peculiar situation of the Province demands, in our opinion, that Agriculture should form a part of the government of our country.

We have, we are happy to say, a Governor General who properly estimates the importance of encouraging agricultural improvement, and it is to be hoped that the people themselves have sufficient intelligence to bring before the notice of their Legislators such improvements as would have the influence of increasing the products and wealth of our country and people.

Improvement in Agriculture.

The following glance at some of the improvements which have been made in agriculture within the last fifty years, is from the pen of Alexander Walsh, Esq.:

The Plough.—In this implement the advance in thirty years has been truly astonishing. There is scarcely less difference between the neat cast-iron plough of the present time, and the clumsy wooden article used for the purpose at that period, than between that and the iron pointed crotchet stick used by the ancients. In the ease of working and the effect produced on the soil, every man competent to judge will admit, that the difference effected by improvement in the last thirty years, is equal to fifty per cent.

Threshing Machine.—Experience shows that the farmer who gets out and sells his grain in autumn, admitting that the prices are the same, realized at least ten per cent more than he who does not dispose of his crop till the following spring. But it may be safely asserted, that in grain growing districts, the whole force of the farm, if devoted to that object alone, would not be able to bring his grain into market in the fall, if threshed by hand. Hence the threshing machine has come to aid, and does the work so much better and quicker than it can be done by hand, that the getting out of a thousand bushels of wheat is counted a small affair.

The Horse Rake.—With this instrument, on land fitted as meadows always should be, one man and a horse will do the work of six men with hand rakes. The value of this labor saving ma-

chine will not be disputed by those who have tested its power when time presses, or storms lower over the hay-fields. It is not less valuable as a gleaner in the wheat and barley stubble, where no care can prevent a quantity of grain being left, surprising to one who has never gleaned with the horse rake.

Agricultural Associations.—The splendid agricultural improvements now here and there exhibited, are the results of Agricultural Journals and Agricultural Associations, where enterprising individuals meet periodically, and by interchanging their ideas, increase the general stock, in at least the compound ratio of their numbers; each one returns home with the knowledge possessed by the whole, and with commensurate stock of new suggestions for future experiment and reflection. The spontaneous operations of the human mind in an unassisted state, require ages to arrive at results which the united efforts of numerous individuals, excited by emulation would produce in, perhaps, a few days. Most other employments lead to association while the farmer remains in an insolate state, scarcely regarding the operations of his neighbor.

Agricultural Associations of this and other States have already effected wonders, and these wonders are now becoming the joint stock of the Agricultural Society of this State, which has been got up by the unremitting and persevering exertions of a few gentlemen, who have thereby conferred lasting benefits upon their countrymen.

Indian Corn.—The benefits of skilful cultivation are shewn in the improvement of the corn, as much perhaps as in any other way. A crop of seventy-five bushels per acre, is now as common as fifty was a few years ago; and there can be little doubt that 100 bushels per acre are now oftener reached than were 70 at that period.

Weight of Cattle.—The records of the Smithfield market in London, prove that within one hundred years, the average weight of the cattle killed for that market has nearly doubled, rising from between four and five hundred to between seven and eight hundred, and the greater part of this increase has been in the last forty years. It is calculated that the cattle offered at the Brighton market, near Boston, average at least fifty per cent more at the present time than they did twenty years since. This improvement we owe to the knowledge brought to bear on the breeding of cattle, and agriculture generally.

Improved Pigs.—Here is an improvement, which no one, however slightly acquainted with the animal can deny. The dullest eye can distinguish between the round, fat, beautiful Berkshire, and the thin, lean, long-nosed, and long-legged hound-like creature which seems more fitted for the chase than the sty. The farmer feels the difference in his corn crib, and still more in his pocket. The difference in the cost of feeding and in the pork made, between the improved varieties and those generally fed twenty-five years since, is not less than forty per cent. This is the result of skilful selection and crosses.

Fruits.—Compare the quantity and quality of the vegetables now offered in our markets, with those exhibited thirty years ago, and the improvement is astonishing. From the growth of the cucumber to the production of the most delicious of our fruits, the influence of science is felt, and the encouragement for further effort and the certainty of an ample reward, is every where visible.

Roots.—Turnip Townsend, as Lord Townsend, the introducer of the turnip culture into England, was sneeringly called, by the fools that vegetated within the precincts of the court, has added by that root alone, it is estimated, not less than sixty millions annually to the value of English agriculture. The introduction of the potatoe into general use as an article of food, has only equalled the benefit conferred by the establishment of the field culture of the turnip.—*Mish. Far.*

Apple Paring Machine.—An improved machine for paring apples has been invented and patented by Messrs. Bullock and Benson of New York. We had supposed that Yankee ingenuity had previously brought this article to the greatest possible perfection, but it will be admitted that something new has been added, when the fact is known that this machine will perfectly take off the skin of an apple, in the neatest manner, in about one second, and that it will continue to work at this rate as fast as the apples can be taken off and put on. It is quite simple in its construction, though considerably different from the common machines of the kind. The one which we saw in operation, exceeds in its operation anything of the kind we ever witnessed,

The price is said to be only two and a half to three dollars.

Agricultural Errors.

There are many agricultural errors among the farmers of Canada, which investigation has often proved to be such, but the knowledge of which has failed in reaching their ears, or has reached them through an imperfect channel. Of these errors that of the transmutation of one plant into another through the seed, is very common. The seed of bad wheat we are told produces chess (Bromus secalinus.) Such assertions are altogether unsupported by facts; these indeed are pretended to be given, but after having been inquired into, have uniformly turned out to be unfounded. Wheat or other grain may possibly, indeed, by a series of unfavorable circumstances be deteriorated, as by a reverse treatment it may be improved, but still the botanical characteristics of the species always remain the same, the form of the flower and ear of the wheat plant, and the general shape and disposition even of the leaves, will be but very slightly altered, and will be as incapable of assuming the loose form of the ear of chess, and its other characteristics, as an apple tree will be of putting on the foliage and fructification of the willow. The apple may indeed deteriorate into the crab, but what a similarity does not even the casual observer note between the two; the same as between the giant and the dwarf. The flower, the shape of the fruit, and that of the leaves, may be said to be the same. Nature abhors violent transition in the moral and physical world. The pea is still as distinctly of the vetch tribe as it was three thousand years ago. The discovery of its seeds in the hands of Egyptian mummies, shows that in that early age it was cultivated. But what similarity is there betwixt the wheat and the chess? The flower and ear are altogether dissimilar, and there is no modification of these organs, no advance of wheat towards chess. The transmutation would be made at once, and be followed by no further change. The plants are not even of the same genus. The triticum and bromus form quite a contrast.

Another prejudice is against pickling seed-wheat to prevent smut. "What good can it do? Smut will never grow." Here the microscope proves the fallacy of the idea. The seeds of fungi are detected on the grain and straw, by it rust and smut are found to be distinct living plants, parasites seen existing upon other living plants, similar to the miseltoe on the oak, or the small plant that twines round the flax. The rust is very similar to the mushroom family in appearance and habit. Like many of them it grows rapidly in moist warm weather. Pickling, by destroying the seeds of the smut which are very minute, and lodged in the form of dust upon the grain, preserves the wheat from its ravages, as the seeds of smut are more easily deprived of life than are those of wheat. Many are the experiments that prove the truth of this, and it is almost superfluous to repeat them here. J. M.

London, C. W.

Loss of Agricultural Property by Lightning.

We regret to learn that our friend Mr. Isaac Askew, of Amherstburg, Western District, has sustained a severe loss from the effects produced from lightning, having struck his barn. A number of head of improved stock were killed, consisting of horses, cows, heifers, and a very valuable Durham Bull, and besides, a large quantity of unthrashed wheat, twelve tons of hay, and a lot of farming implements, were all destroyed by fire. Mr. Askew is one of those enterprising English farmers, who settled in the Western District a few years ago, who have been instrumental in imparting a spirit of enterprise and improvement, on the minds of the old Canadian farmers of that fertile District. As a token of the high esteem that is entertained towards him, for the good offices he has performed, in concert with others, in building up the cause of agricultural improvement, his neighbours and friends contributed upwards of £100, with a view of making good a portion of his loss. We mention the foregoing calamity, for the purpose of pressing upon the attention of farmers, the importance of getting their property insured. Farm houses, barns, granaries, stacks, and live stock, are subject to the least risk, of any description of property with which we are acquainted, and therefore, if Agriculturists would unite in the matter, Insurance Companies might be established exclusively for their property, which would enable them at a trifling cost to obviate such losses as has been sustained by our friend Mr. Askew, as well as the various other descriptions of risks that Agricultural property are more or less subject to. The plan of the Canadian Mutual Insurance Companies, is one that would probably be the

safest, and the least objectionable on the whole, for the exclusive Insurance of Agricultural property, and under proper management the average rates of assurance need not exceed *one half per cent* or *ten shillings per annum* on a hundred pounds worth of property. Barns, farm houses, furniture, live stock, and all other descriptions of property, might with some propriety be Insured, if Companies could be established, by which only Agricultural property would be Insured, and the owners of that property would mutually bear the loss sustained by any of their unfortunate neighbours. We would recommend some of our intelligent farmers, to take action in this matter, and press the subject upon the attention of Parliament, at the approaching session.

Horse Distemper.

This disease, more properly named *angina*, is a violent inflammation of the mucous membrane of the throat, which rapidly increases to suffocation, if active remedial measures are not employed. Poultices of *flax-seed* to the outside of the throat, and barley water, sweetened, and acidulated with vinegar, injected upon the inflamed surface, are very useful, after the general remedies mentioned under the article, *Inflammation*, have been employed.

There is one species of this disease which is disposed to run into a state of gangrene, and is very fatal.

Hemorrhage.—Loss of blood, causing by the opening of an artery, inwardly or on the outside of the body. Alum, vitriol, and astringent medicines generally, applied upon the opening of the artery, are commonly effectual in stopping the flow of blood. *Internal bleeding requires* bloodletting for the purpose of checking the action of the heart and the artery, cool acidulated drinks, and perfect quiet for some time, until the vessels have time to heal.

Injuries and Diseases of the Hoof.—When the hoof is bruised, or receives a blow which bruises the soft part underneath, the horse is lame—the hoof is hot, and by striking lightly on the part, we perceive it is sore. It will be proper to bleed in the foot, bathe the hoof with a solution of green vitriol, or sugar of lead, and make use of emollient poultices.

When the sole of the foot has been burnt by applying a shoe too hot, pricked by the shoe or some hard substance crowded between the shoe and the frog, or otherwise injured, the horse will be lame, and the matter must be promptly looked into. If the whole is burnt, we must cut away the burnt part and fill the cavity with the composition, No. 12, or with a composition made by melting together equal parts of tallow and pitch. These compositions may be applied with advantage in the other cases mentioned above, according to circumstances. The hoof sometimes becomes rotten, and *then it will be necessary* to cut or rasp away the diseased part—wash the wound with the composition, No. 6, and dress it *with pledgets of lint dipped in turpentine. When* the disease is not severe, stimulating lotions should be employed, until the new hoof is formed.

When the hoof is naturally dry, or becomes so through disease, it is disposed to crack, sometimes from top to bottom, and through the whole thickness of the hoof. When recent and superficial, it will sometimes cure it to keep it well oiled, but if this does not answer, pare down to the quick, and cut away the flesh if it is disposed to crowd up into the seam, or touch it with caustic —*dress with lint dipped in spirits of turpentine*—fill up the seam with tar, and cover the foot with a piece of cloth well greased, and bind the dressings firmly on. These dressings should be removed every four or five days, or oftener if matter is discharged. There should be great care used in shoeing, for some time afterwards. When there is a separation of the foot from the foot, *the dead part of the hoof* should be rasped away, and lint, wet with oil or turpentine, applied, as directed above in the case of rotten hoof, to stimulate *the vessels of the part and dispose them* to take on a healthy action.—*Man. of Vet. Med.*

Superior Mode of Curing Hams.—Agreeably to your request, I send you the process of curing the hams I sent you in March, which recently called forth the admiration of the American Agricultural Association and the Farmer's Club at New York

I made a pickle of two quarts of salt, to which I added one ounce of *summer savory*, one ounce sweet marjoram, one ounce adspice, half ounce saltpeire, and one pound of brown sugar. I boiled the whole together, and applied the mixture, boiling hot, to one hundred pounds of ham, and kept in the pickle three or four weeks

My process of smoking was not the most expensive, but may *not be the less* available on that account. I smoked the hams in a seed cask, with one head in, with a small hole for the smoke to come out, hung my hams to the head, and used about a peck of mahogany sawdust for fuel. I smoked them but one week.—*Exchange.*

Selection of Grasses for Pasturage or Hay.

There are perhaps few things of greater importance to the agriculturist than a proper selection of grasses for pasturage or hay, and there seems to be nothing more generally neglected. It is but of late years that even in Britain, a mixture of different kinds of grasses has been found almost to double the productiveness of pasture, and on this side the Atlantic the subject seems to have been entirely overlooked. In the mother-country the rye-grass appears to have been adopted by accident, without reference to the disadvantage; and here the same has happened in regard to timothy.

Scientific agriculturists are well aware of the extreme difference in grasses, in regard to nutrition, productiveness, time of flowering, and after growth. A sod composed of the earlier grasses speedily loses its verdure, and is much inferior to one composition. A more favorable mixture has been observed. The springing up of the natural grasses, it is true, always in some measure, compensates for the loss, but this is a work of time. One cannot but feel surprised that timothy should be the solely cultivated grass in Canada, since it is so very deficient in aftermath. Every farmer is aware how little pasturage can be expected from a field sown with timothy alone. This is most to be lamented as, in this province clover is so very frequently destroyed by winter snow or spring frosts. What a loss in many years is sustained by this misfortune! What a derangement of the rotation of crops by its occurrence! The farmer has no resource but to plow up the fields (then rendered otherwise unproductive,) for grain crops, how unfit soever they may be for tillage, how inconvenently soever he may be situated by having so large an extent of fallow, and so limited an extent for hay. His stock too will in all probability be disproportioned to the extent of pasturage, as in the best parts of Canada the commons are already over-stocked.

To remedy an evil of such magnitude, is surely worthy the attention of the Directors of the Provincial Agricultural Society. In the present state of things, no regular rotation of crops can ever be acted upon, no certain amount of stock can ever be raised. And, in the present depressed state of the grain markets, who is there that will maintain that growing wheat is more profitable than the pursuits of the grazier or dairyman? What is the remedy? Experience, of course, can only certainly tell. Grasses that at home are found to be productive, may not be so here. The difference of climate is such, that we can well conceive that no certain data can be gathered from British experiments. Certain however, it is, that without trial we can never hope for success. We may suggest that, as plants of the same natural families are frequently similar in their properties, we might make trial of the Alopecurus pratensis (fox tail grass,) so similar to the Phleum pratensis (timothy.) Its hay is equally nutritious and abundant, and its aftermath is very luxuriant, in which the timothy is so deficient. It might be found in common with many other grasses to be hardy during winter.

If space would allow, we might enumerate other grasses as much recommended or more, but at present we forbear. It is not as a mere substitute for clover that other grasses should be introduced. Look at the present state of our woodlands. Covered, and that only for about ten or twelve short weeks in summer by a growth of flowering plants, they are comparatively profitless except for timber, and this state of matters is in itself a great temptation for the owners to have the wood cut down, for few are willing to forego present advantages for probable ones at the end of 15 or 20 years: and to what a state such a policy must reduce Canada at no distant day requires no prophet to foretel. In France one-tenth of the realm is covered with forests; if this be required in that fine climate where winter can scarcely be said to exist, where no wood is required for fences, and where coal has been found in some districts, what would we require in this hyperborean climate with little else to depend on for fences and fire-wood; for the geological strata of Canada forbids us to believe in the existence of bituminous coal except in the farthest south-west extremity of the province, contigious to the Pennsylvania coal-fields. Who can say that even one-tenth of our Canadian woods is reserved by its proprietors for wood, when one-seventh at least would be required.

The fact is, that emigrants are practically ignorant of what wood is needed in an old settled country. Few of them have spent over twenty years in the province, and that under circumstances altogether dissimilar to the present, or future, and it is experience after all that guides mankind The rapid rise in the price of fire-wood in Toronto and Montreal durin the last five

years "speaks volumes." Cordwood has been sold for four dollars in Toronto, and eight in Montreal per cord.

Make then our woods productive. The Duke of Atholl, in Perthshire, annually fattens immense herds of cattle in his forests, which he has sown down with woodland grasses. Could the same not be done at small expense in Canada? Could the *poa nemorales* not be taught to cover the soil of our Canadian woods, which would then shelter from the summer heats, and feed with nutritious herbage, flocks that else had been on the verge of starvation. Woods, then found profitable, might still minister to the most necessary comforts of life, might long continue to be the ornaments of a province, whose natural tameness nature seems by their means to have struggled to supply.—*Communicated.*

New Peaches.

We can attest to the accuracy of the following statement, from the *Michigan Farmer*, having seen some specimens of Mr. Dougall's peaches at the Provincial Agricultural Exhibition at Hamilton. They were superior to any variety ever before exhibited in Canada:—

"I have just received from J. Dougall, Esq., a basket containing three varieties of his Seedling Freestone Peaches. One of them, which I shall take the liberty of naming, Rosebank, after the name of Mr. Dougall's seat near Amherstburgh, C. W.—is a very large globular peach, with a shallow, but distinct suture all round, rather deeper at the top than at the sides. The fruit enlarged upon one of its sides—skin of a dull yellowish white, richly marbled with bright red and deepening upon the sunny side into a dark red. Flesh yellowish white, but red at the stone, stone quite rough, and the flesh adhereing somewhat to it. Very juicy, melting and of the highest flavor. We have specimens of many of the most approved varieties before us, but the flavor of this surpasses them all. The stem of the Rosebank, being very short and the fruit large, every specimen was deeply marked by the branch to which it was attached. Another variety, which from its colour, I shall name Dougall's Maroon, is a smaller peach than the Rosebank. Fruit round and flat. Suture at the top only, and very slight. Fruit enlarged upon one of its sides. Skin of a yellowish white, the largest side beautifully marbled with bright red and maroon, deepening on the smaller side into a very rich, deep maroon. Flesh yellowish white, slightly red at the stone. Stone very small. Very juicy, melting, and will compare well in flavour with most of the older named varieties."

A few Hints on the proper situations for Peach Trees.—I often wonder why people in general in this country cut down all the trees without immediately planting others: they are little aware of the benefit derived from the shelter afforded by forest-trees even in Canada, tropical fruits and plants may be reared in sheltered situations. The Peach-tree, for example, which grows so luxuriantly and blooms so freely, and yet seldom ripens its fruit, will, with due attention to situation and shelter, amply reward the grower for his pains. Plant them in a spot well protected from the cold north winds; keep the tree thin by cutting out the old wood, and occasionally shortening the young wood, when the shoots are too long and strong. By avoiding low rich or wet soils, and planting in poor and dry soils, the tree does not make so much wood, and will not of course require so much pruning. With proper attention to the above directions, Peaches will grow abundantly in Canada.—*Com.*

To the Editor of the Cultivator.

Sir,—

I beg to recommend to the President and Directors of the Provincial Agricultural Society, the English plan of giving Prizes or Honorary Rewards for the best cultivated Farms, which has done more than previous efforts to emulate and bring out good practical Farmers.

I suggest the following as adapted for Canada:

Class 1st.—Farms of 250 acres or upwards, in cultivation, 1st, 2nd, and 3rd Prize, or Honorary Reward.

Class 2nd.—Farms not less than 100 acres in cultivation, 1st, 2nd, and 3d Prize, or Honorary Reward.

Persons intending to compete should give due notice, and the Farms be viewed by local Judges *in each district*, who should report to the Secretary of the Provincial Society, that officer will then send other Judges to view the Farms of the successful competitors and award the Provincial Honors.

I am, Sir,
Your obedient servant,
Henry Moyle.

Sheep-walk, in Brantford, Nov. 23, 1847.

Distribution of Government Bounty among Agricultural Societies.

We heartily commend the following scheme for effecting an improvement in the organization of Agricultural Societies, believing that so far at least as the distribution of the Government Bounty is concerned, it would effect a very important change therein. The leading features of the scheme, are based upon broad and liberal principles, which if honestly carried into practice, would have the effect of creating a spirit of liberality among all classes, which would in a prominent manner exhibit itself in the improved condition of the funds of the several Agricultural Societies of the Province. We commend this scheme to the notice of the friends of Agricultural Societies, and if any are competent to suggest an improvement, our columns are open for information of that character:—

Messrs Editors,—Whilst I am deadly opposed to that constant change, which, with little or no reason, is yearly made in some of our Provincial statutes, that most nearly concern every inhabitant of our country,—I am not so wedded to what has been enacted by the wisdom of our Legislators, that I am anxious that our statutes shouldlbe like the laws of the Medes and Persians, where circumstances absolutely require their attention I, therefore, am free to acknowledge the necessity of, and ready to advocate the amendment, in several respects of the statute, under which our different Agricultural Societies derive aid from the Provincial Treasury That stalute was enacted when there were only a few District Agricultural Societies hardly any Township Societies, and certainly no Grand Provincial Association for the promotion of "Agriculture, and the encouragement of Manufactures and the mechanical arts" within the Province. Now we have all three. Therefore, I contend that what I have no reason to doubt, was suitable *at the time* it was passed is not suitable to our *present* condition. The circumstances of our Societies having changed, the law, I hold, must be changed to meet those changed circumstances

Let us look at these Societies for a moment, and I think you will agree with me; and add to my feeble advocacy the weight and influence of your able pens

The District Society draws the money from the Government, as soon as the small sum of £25 has been raised in the District. In olden times the District Societies being *alone* in the District, kept *all* they drew; and were enabled to award handsome premiums. But as soon as Township Societies began to spring up, which claimed a share of the £950 from the Government, the District Societies felt the drain on their resources, and, like people whose income is gradually growing smaller, became some what jealous of the Township Societies; and, so far from encouraging their formation, in some instances, indirectly used their influence against their formation.—This fact is known to many. Again, look at "the Grand Provincial Association." It is an enterprise worthy of those who devised it—patronised by the Representative of Royalty—encouraged by the first men of the country—looked upon with great interest by all classes of the community; commending itself to the universal attention of "the fourth estate" in the Province, collecting 1000 specimens of the growth, produce, and manufactures of this young country—and drawing together, in spite of wind and rain, thousands of the youth, beauty, intelligence, "bone and sinew" of the country; all of whom declared, that though above their ancles in mud and mire, and well drenched with rain, they were more than repaid by what they saw on the ground, and in the show-rooms. And yet, this grand enterprise has been obliged to go a begging to the several District Societies of the Province to give it a small share of their funds; and after all their begging, is actually not able to pay the premiums awarded at their last exhibition; is, for the time, bankrupt!

I now propose the amendment, which, I think, the statute requires. Let the same sum be granted annually to the various Agricultural Societies in Canada West, (without distinction as to their names) which might be claimed at the present moment, if there was a District Society in each District—and let that sum be AVOIDED amongst them IN PROPORTION TO THE AMOUNT RAISED IN THE SEVERAL SOCIETIES, whether Township, District, or Provincial. There are, I believe twenty Districts in Canada West. Suppose each of these has as they might easily have, a District Agricultural Society, you have then £5000 claimed annually by these twenty Societies. Let the Legislature grant this sum (if it be thought too large a smaller one), for the promotion of Agriculture in Canada West. We will suppose the sum to be £5000, and that the various Societies, Township, District and Provincial, raise a sum of £2000, of which the Provincial raises £200, then I would grant it from the fund of £5000,

the sum of £100: if the Niagara District Agricultural Society raises, as it did this year £50, then I would grant it £100—if any Township Society raises £40, as some no doubt have, I would grant them £80—to each *in proportion to the amount* raised during the preceding year, according to the returns, now duly made to the Inspector-Generals Office. Under the present statute some small Districts, and some that are not small, raise from their own members the sum of £20; and, on that, claim from the Government the same aid of £200, as is claimed by Districts like ours, wherein the sum of £252 has this year been raised, within our own bounds—*If this advantage was accorded to newly settled* and poor Districts, such as that of Simcoe, generally speaking, is, then I would not condemn the law so strongly as I do. But take the case of the Prince Edward District. It embraces five townships; old, thickly settled, and wealthy townships. Suppose these five townships have each of them a Society: and those Societies each raise from private subscription the magnificent sum of £.0, they can claim the large sum of £250 from the Provincial Treasury. Thus each Township Society will have £50 from the Provincial Treasury, to scatter in their Township, though they have raised from their own private resources, the small sum of £10 currency. This may not have been litterally the case with the Prince Edward District; they may have raised amongst themselves as large a sum as our District has; but there is nothing in the statute to prohibit or discourage their doing just as I have supposed. At any rate I could name more than one District where this plan has been pursued, where two or three Societies have raised £50, and upon that drawn £250; and that within the last year or two. Now I contend that this feature of the present statute requires amendment: for it is manifestly unjust to take from the Provincial funds (to which Districts, having 25 Townships, contribute five times as much, *cæteris paribus*, as those Districts which have only five townships), and give to the other five townships as large a sum as you give to the other twenty-five townships.

Let every Society draw from the Provincial grant for Agriculture, *according to its liberality or public spirit*. Let the division into Districts be retained, only for the convenience of paying the sum due to that District Society, and its township Societies to the Treasurer of the District Society. Let *him* retain *from that sum* the *proportion* raised by his Society during the preceding year of all the monies raised in the District; and let him pay the balance to the various Township Societies, in the several proportions which they have a right to claim. And let the Treasurer of the Provincial Association, who belongs to *no District, draw direct from* the Provincial Treasurer.

The division could be made to the several Districts in the same way, that the division of the school fund is now made: only the amounts raised in the preceding year, and not the number of children between five and sixteen, would form the basis of *computation*.

I believe, Messrs. Editors, that this plan would meet with general approbation; would be doing injustice to none, (though the small Districts might not like it); would create a healthy spirit of emulation amongst all; would draw larger sums from the pockets of wealthy farmers in order to get a *fair proportion for their Societies* would remove all cause of jealousy between the District and Township Societies, since the latter would draw their proportion from the Provincial £5.0.0, and not from the District £250 as at present; and rescuing the Provincial Society from its present state of financial embarassment, would enable it to increase year by year its funds, and the benefits, which, I trust, it is destined to confer upon the country of my birth.

T. B. F.

November, 1847.

P. S.—Perhaps you, Messrs. Editors, or some of your small corps of correspondents will call the attention of our Legislators to this question. From the great interest now felt on the subject of Agriculture, I feel satisfied that it only requires the attention of those, who make our laws to be called to the subject, to secure for us such a statute, as will effect (perhaps not after his peculiar views), all that is aimed at by your present correspondent.

How to Prepare Superior Mince Meat for Pies.—Take stoned raisins, currants, sugar, and suet, of each 2 lbs.; Sultana raisins, boiled beef (lean and tender), of each 1 lb.; sour or tart apples 4 lbs.; the juice of two lemons; the rind of one lemon chopped very fine; mixed spice ¼ lb.; candied citron and lemon-peel, of each, 2 oz.; and chop the whole very fine.

Butter and Churning.

In some of the middle States it is a common practice to churn the milk soon after it comes from the cow, adding something to curdle the milk a little; but this is not the best way to make butter, for it requires too much labor to churn.

The labor of churning is much diminished by bringing the cream to a proper temperature at the commencement of the process. About sixty degrees is the mark that should be indicated by a thermometer. Some make it a little warmer, sixty-five degrees. Sixty-two degrees will answer well, and every one should have a thermometer at hand when butter is made.

If the cream is too warm then butter comes too quick and too soft, and it is quite difficult to separate the milk from it. If the cream is too cold the labor of churning is great, and the quantity of butter is small. The cream should not be set very near a fire when it is cold. A gradual warming should take place, and on a cold day the cream may stand half a day in a room of the right temperature as shown by a thermometer hanging near the churn. But a surer way is to dip the glass into the cream to determine its warmth.

While the cream is in the pots waiting for churning day, it should be stirred thoroughly at least once a day, as this prevents its moulding and makes the churning easier. The cream not be rapidly warmed when it is too cold, for some of the particles will melt and injure the butter as well as increase the labor of churning.

As soon as the butter is well gathered the buttermilk should be turned off and pure water should be turned in to take its place. The churning must now be resumed for a few minutes and then the water must be turned off. This should be repeated till the water ceases to look milky. The butter may then be salted as high as one ounce to the pound, for on the second working of the butter the salt is partly lost in the milky matter that is worked out.

The labor of working over the butter to separate every particle of milk from it, is arduous, as the butter is now hard and unyielding. A brake therefore, something like brake that bakers use in working bread, should be kept in all large dairies. The cost is not great. A stone platform is best, and the lever may be fastened at one end to a staple in the stone.

It is now agreed that butter may be worked over so much as to injure it; yet it must be worked long enough to rid it of the milk. When it is well washed in cold water, if there are any liquid particles left they will not putrify as milk will, for the matter will be brine rather than salted milk.

Many object to the use of water, and think the flavor of the butter is injured by it. But we can see no good reason for the objection, and we know that water does not spoil it, for water-washed butter obtains the highest premiums as often as butter unwashed. Water does not mingle with oily matter.

Some years ago we suggested the propriety of using a brake to work butter. We now hear that they are common in some places.

We advise beginners not to be in too much haste in the commencement of churning. If the cream is agitated violently at first it coagulates and prevents the proper jostling of the particles together. Begin slowly and you will have the more weight of butter.—*Mass. Ploughman.*

How to make Apple-Butter.

You express a wish to know how the best apple-butter can be made, and as I consider myself *an fait* at that business, I have great pleasure in sending such directions as I believe to be *the best.*

The large copper-kettle three-quarters full of *pure sweet cider*, made from sound apples, is set over the fire before five o'clock in the morning. I let it boil two hours, and then put in as many apples, which were peeled, cored, and cut up the night before, as will fill the kettle, and at the same time, I throw in about two quarts of nicely cleaned peach stones, which by sinking to the bottom, and being moved about incessantly by the stirrer, prevent the fruit from setting and burning, which would spoil the whole. I take care in selecting the apples to secure a large proportion of *sour* ones; for, as the cider is sweet, unless this precaution be taken, the sauce will have a vapid taste that nothing can remove; and all the apples must be of kinds that will boil easily to a jelly.—On the hearth, around the fire, I place numerous pans and pots of apples and cider, simmering and stewing, which I empty into the kettle as fast in succession as the contents boil away enough to make room for them; but after twelve o'clock I never allow any more to be added to the mass. The boiling must be continued

steadily until the whole is reduced to a smooth, thick marmalade, of a dark brown color, and no cider separates when a small portion is cooled for trial.

From the moment the first apples are put into the boiling cider, the whole must be stirred without a moments intermission, otherwise it will settle and burn; but the handle of the stirrer must be passed from hand to hand as often as fatigue or inclination makes a change desirable.

My kettle holds half a barrel of cider, which, with the first apples in it, begins to boil about nine o'clock in the morning, and the whole is done enough by eight o'clock in the evening, when a sufficient quantity of powdered all-spice, cloves, and cinnamon, may be added to season it to your taste The apple-butter must be dipped out as soon as possible when it stops; for, if it cools in the copper or brass, it is in danger of becoming poisonous, as may be detected even by the unpleasant taste imparted by the action of the acid upon the copper. I prefer sweet stone, or earthen-ware pots to keep it in, but where the quantity made is very large, a barrel may be employed.—*Am. Agriculturist.*

How to make Saur-Kraut.

Take as many drum-head cabbages, or any other kind having a firm head, as you wish to preserve, tear off the outer leaves, quarter them, cut out the stalks, and chop the remainder into small pieces by hand or with a machine. Then, to every 100 lbs. of cabbage, take 3 lbs. of salt, ¼ lb. of caraway-seed, and 2 oz. of juniper-berries, and mix them together in a dish or bowl. Then procure as many clean casks, strongly hooped with iron, as may be required, and fill them with layers of the chopped cabbage, about 3 inches thick, sprinkling each layer, as it is pressed in, with the mixture of caraway-seed, juniper-berries, and salt. When each cask is full, lay over it a coarse linen cloth and a wooden follower or lid, just fitting within the mouth of the cask, upon which must be placed a stone or weight sufficiently heavy to prevent it from rising, and allow it to ferment for a month. The cabbage produces a great deal of water, which floats around the sides of the casks to the top of the follower or lid. This must be poured off, and its place supplied with a solution of lukewarm water, whole black peper, and common salt, taking care that the cabbage is always covered with brine. In order to keep the kraut fresh and for a long time, the casks should be placed in a cool situation as soon as a sour smell is perceived.

Uses &c—Saur-kraut is not only a wholesome vegetable, but also one of the best preventives of the sea-scurvy that we have. Consequently, no vessel bound on a voyage, particularly through hot climats, where the common potato will not keep, should sail without a full supply of this healthful food. It may be served up for the table, prepared in a similar manner as fresh cabbage; or it may be washed in soft water, and then stewed in a stove, or oven, for three hours with sficient water to cover it with the addition of a little butter, taking care to stir it now and then, or it will burn. At the end of two or three hours, put some sausages, pork, bacon, or any kind of meat you like, but corned pork is generally used. If any be left it is equally good warmed over. Served up in this way, it forms a very nutritious dish, and is much relished by those who have long been accustomed to its use. As this is the true "Saur-Kraut" of the Germans, it may not, on the first trial, prove agreeable to the olfactories of all our American readers; but it hardly need be said, that it is a standing winter-dish at the tables of the rich in Germany, cooked either by the process of slowly stewing, with a little water alone, or with a small piece of bacon or corned pork, and sent to table in the same dish.—*Am. Adg.*

A Rat Powder.—A correspondent of the *Albany Cultivator* recommends the following for rats, of which he relates this story:

"I once, however, did *see* a tame rat, (in Edinburgh, at the back of the Castle, in the year 1837,) which, having been previously smeared with a certain composition—that which I am about to describe—was let loose in a vault, and in less than half an hour returned followed by some half dozen others, which seemed so enamoured of the decoy, or of the scent that hung about him, that they suffered themselves to be taken alive in the rat-catcher's hands, without ever offering to bite. The preparation I purchased from an eminent practitioner in rat-catching. It is as follows:

Powdered assafœtida,.....½ grain,
Esential oil of Rhodium,.....3 drachms,
Esential oil of Lavender.. .....1 scruple,
Oil of Ainseed.....1 drachm.

Disease in Cattle.

Sir,—Allow me to direct the attention of your agricultural readers to one more of the diseases of cattle, *one of frequent occurrence, and,* unless immediately relieved, not unfrequently attended by fatal results; it is also one of those diseases with which the farmer should be well acquainted, and possess the means necessary to give relief. I allude to what is commonly known by the names of "*Hoove, Hoven, Blown, Blasted,* &c."

It consists in an inordinate distention of the first division of the stomach, called the maw, paunch, or rumen, with gas generated by the food, whilst undergoing the fermentative process, and which is *no doubt frequently the result of a debilitated* state of the animal and especially the stomach, but although this may, and not unfrequently does, act as a predisposing cause, still a strong and healthy stomach may become hoven from the exciting cause alone—such as eating greedily of some succulent herbage, as young clover, lucern, tares, turnip tops, cabbage, &c., especially when the substance partaken of is wet with rain or dew. It is also a consequence of an entire obstruction in the œsophagus or gullet (as I stated when speaking of choking,) that there is during the *healthy action* of the rumen a constant eructation of gas from the organ, and of course, whenever this escape of gas is prevented, hoove must be a natural consequence. Animals are very liable to become hoven when changed from a poor to a luxuriant pasture, and, consequently should be paid particular attention to at those times. I have frequently known animals become hoven from eating turnips or other bulbous roots whilst in a frozen state, and which is easily accounted for by there being swallowed with the food at those times a quantity of air in a highly condensed state, and which, on being suddenly brought in contact with the heat of the stomach, is quickly rarified and expanded, and thus produces hove.

The symptoms of hoven are very decisive, and not easily mistaken by a common observer. They are a sudden suspension of mastication and rumination—the animal is much distressed—the breathing laborious—the head droops—the eyes are swollen—the tongue hangs from the mouth—there is a constant driveling of spumy saliva—the abdomen rapidly becomes distended, and percussion produces a hollow drum-like sound, on which will be especially the case on sticking the left flank, (immediately under which lies the posterior part of the rumen.) These symptoms *gradually and rapidly increase in violence, until at last* the suffering animal staggers, falls, struggles, and dies. Indeed, so fearfully rapid is its progress, that I have known instances where death had taken place in less than twenty minutes from the commencement of the attack. In some cases the coats of the rumen become ruptured when there will be a partial remission of the urgent symptoms, but only to cause the poor beast a more lingering and more painful death.

In the treatment of hoven we must depend more upon the use of mechanical than medical *means. Medicine will be of little avail, even* if it be at hand, from the uncertainty of its entering the rumen at all if given in a fluid state, except the stomach pump be used. What I have known to be of great service, is to mix a quarter of a pound of pepper with six or eight times its weight of common lard, dividing it in small pellets, and given in the same manner as we would give a horse a ball. These pellets given in quick succession will occasionally open the œsophagean canal, and thus allow some of the gas to escape. and if to this that patient be kept in *slow* motion, he will soon be relieved. In addition to this, the pepper will act as a stimulant, and the lard as a laxative, and thus produce purgation. But our best and most certain mode of procedure is to immediately pass down the "flexible tube or probang," (using the ball end,) in the same manner as described by me when speaking of choking, taking care that the tube will admit the free passage of the gas through it; if so, it will easily escape, and any accumulation which may take place after the tube is withdrawn may be liberated in the same manner.

Another method of evacuating the confined gas is by making an artificial opening through the left flank into the rumen, for which purpose an instrument called a "trocar" should be used. It consists of a sharp-pointed stillet, having a canulla or metal sheath; this is thrust into the rumen, when the stillet is withdrawn, and the canulla allowed to remain in until the gas has escaped, when the wound is to be closed with a plaster of common pitch. The trocar is better than a knife, inasmuch as it allows a more free escape of the gas, leaves a smaller wound, and

does not allow any of the gas or any air to escape into the abdominial cavity. The situation for puncturing the rumen is on the *left* flank, about midway between the pinbone and last rib, and a span from the short bones of the back, passing the instrument inward, downward, slightly forward. Care must be taken not to operate too high up, or there will be danger of wounding the kidney or large bloodvessels. After the patient has been relieved, he should be kept up for a few days on a mash diet, and not again exposed to the same exciting cause.

The flexible tube and the trocar are both valuable instruments, and every farmer should possess them; they are inexpensive and easily used. I have known animals die for want of having one at hand immediately.

There is another disease of the rumen termed maw-bound, or gram sickness, which, in order that it may not be mistaken for hoven, I will briefly allude to. The symptoms by which it may be known are—loss of appetite, suspension rumination, fever, a frequent grunting of the animal; the rumen is distended, but feels hard and unyielding; percussion yields a dead, heavy, solid sound. It is not so sudden or so violent as hoven, (except in extreme cases,) although it is scarcely less dangerous. It is a distention of the rumen with *solid* substances, as corn, chaff, dry bad hay, &c. Eating freely of meat or barley, and then drinking a quantity of water will produce it most violently; and it is surprising what masses of incongruous matter has been found impacted in the rumen of cattle, such as pieces of rope, leather, and even large quantities of *iron wire*, and by no means unfrequently half masticated toppings of wood—this latter substance is especially a cause of "maw-bound" in the early part of the spring season.

The treatment of this disease had better be left to a veterinary surgeon, who alone is competent to undertake it with a fair chance of success, as it will require variations according to the circumstances of each particular case, and occasionally it will be necessary to open the rumen and extract its contents by the hand—nor is this disease so sudden as to prevent his being called in in season; in fact some animals suffer it for months without evincing any very urgent symptoms.

I trust the insertion of the above remarks, may be serviceable to some of your agricultural readers, and if so, I shall be abundantly paid for any little trouble I may have taken.

I am Sir, your obedient Servant,

PETER LEECH,

Veterinary Surgeon, M. R. C. V. S

Yeovil, Sept. 7th, 1847.

AGRICULTURAL LECTURES AT KING'S COLLEGE.—Our readers will please bear in mind, that the course of Lectures to be delivered by George Buckland, Esq, Professors Crofts and Nicholls, on Agricultural, Chemistry and Botany, will commence at the Lecture Rooms, King's College, on the 12th of January. The apparatus that will be employed, to practically illustrate the various interesting branches of science applied to Agriculture, is of the most costly and perfect description, and the lectures cannot fail to be instructive to those who are anxious to become acquainted with the science of Agriculture. This is the first attempt to introduce a scientific course of instruction, applied to Agriculture in Canada, and it is to be hoped, that those friendly to the movement, will evince a willingness to support it by attending the lectures. If it be desirable to have an Agricultural Department to King's College, this is most certainly a very favourable opportunity, to give a practical proof to that effect. There are many aspiring young farmers in Canada, who might derive a very great amount of benefit from the lectures under notice, and we earnestly trust that scores will attend the course, and thus aid in elevating the standard of Agriculture.

Lime Water for Hens—Accidental discovery.—During the last season, Mr Joseph Wilcox, of this town, having occasion to administer lime water to a sick horse, inadvertently left a pail of the preparation in his barn, which remained there for some months, serving as a favourite drink for his hens. He soon afterwards found that the laying of his hens was apparently increased to a considerable extent. Becoming convinced of the importance of the (to him new) discovery, he has, during the present season, kept his hens constantly supplied with lime water, placed in troughs within their convenient access, and the result was an increase in eggs of nearly four-fold as compared with previous experience. He is willing to share the benefits of the experiments with his neighbours, if they choose to try it; and hence this publication. The newness of the discovery (though it may not now be new to all) is claimed only as applicable to the mode of imparting the lime in this case—its use in another form for the same purpose having been previously understood by many.—*Wayne Sentinel*

Remarks on Horticulture and Rural Taste.

BY ELIZABETH.

Nature has been bountiful with her gifts to our beautiful State, and should not all feel anxious to improve what has been so abundantly bestowed? We often see large farms with extensive fields under a high cultivation, and seemingly every effort made to get as many dollars as possible from every acre of land. This is all right. But when we turn to the house, perhaps we see a newly painted mansion with its green shutters exposed to the burning rays of the sun, without a shade tree or a shrub to give freshness to the scene, or impart loveliness to the spot; and the yard filled with dock, thistles, and other weeds! Can it be that the inmates of such a mansion have no taste for plants and flowers? Do they think the hours thrown away that are devoted to the culture of "nature's loveliest gem. I do not envy them their feelings.

"I love the flowers, the fair young flowers,
Wher'er their dwelling be,
Though springing on the mountain side,
Or 'neath the greenwood tree."

There is a power in scenes of rural beauty which affects our social and moral feelings. One may judge with a good degree of confidence, of the taste and intelligence of a family, by the external appearance of their dwelling. A habitation, however spacious and costly, with nothing ornamental or interesting around it, indicates a want of delicate and kindly sentiment among its inmates, their books are generally few, ill chosen, and seldom read.

When we see a house however humble, which is apparently as comfortable as its owner has means to make it, with the delicious grape or some other vine climbing up the porch, the yard neat and tasty, we feel assured that this is the abode of quiet and rational enjoyment. A fondness for scenes like this is seldom blended with coarseness of sentiment or rudeness of manners. Why should we devote so much attention to the external ornaments of our house, while we never seem to think of displaying our skill in out door improvements? What is more delightful than the balmy breath of morn, rendered doubly grateful by the perfumes of flowers?

How sweet to inhale the fragrance of the opening rose, or pink, which our own hands have planted and cultivated! Cannot some of those delicate young ladies who seem to fear that a little exercise in the yard or garden will injure their beauty, be induced to try the experiment and see if they do not both look and feel better? How many there are that spend half of their precious time in reading the "last work," looking after some new fashion, making a few fashionable visits, and then pretend to think that they have performed a vast amount of useful labor! When will the human mind expand enough to *see* and *feel* that health, and beauty, and usefulness are enhanced by spending a few scraps of time in the culture of those external ornaments at *home* that throw around it such an air of contentment, that the attachment which families have for that sacred spot, will cause them to look back with the most endearing recollection, when far away?

But I must stop, I do not deem myself capable of writing for others, but wish to elicit the mind and pen of those competent to instruct in this and every other good work. Much is to be done for many of us in erasing our erroneous ideas and predjudices in a relation to the dignity of labor, in preparing our minds for enjoyment in the works of nature, in inspiring a love for natural beauty everywhere, and for all that is lovely and delightful in the works of our Creator. The inhabitants of the country should rise above the mere drudgery of life, become familiar with nature in her charming aspects, and take pleasure in viewing God's every varying works.

"There comes from every fading flower
A lesson for the heart."

What are the richest fruits or the brightest adornments of earth, without the intellectual nature, the moral fruits of the heart and mind.

Willow Cottage,
Ross County, June 1847.

—*Ohio Cultivator.*

Good Indian Cake.—One pint of buttermilk or sour milk, in which dissolve two teaspoonsful of saleratus, (a little less if your milk is not much sour); take one spoonful of butter or lard, with a salt spoonful of salt, and two spoonsful of sugar; rub them together, and add three well beaten eggs; then put the milk and add Indian meal till about the consistency of thin batter; turn into common cake pans; bake in a quick but not furiously hot oven. It will be done in half or three quarters of an hour. If your baking is not well done, your cake is *spoiled.*

To the Editor of the Cultivator.

Sir,—The wheat plants do not appear to be in a very thriving condition in this section of the Province, and for a solution of the same, I am under the necessity of applying to you as being an agricultural expounder.

On inspecting several fields of wheat sown in the middle of September, after a fortnight's growth, I found one-fourth of the plants in a sickly yellow condition, and which after a day or two withered completely away. On pulling up some of these plants, I found the roots to be entirely destroyed, and others appeared not to have been touched On pulling the plants by the tops, the blades broke away in the middle as if by suction; or in other words the parts where it gave way appeared to be more dead than the rest of the plant, as if a worm grub or insect had been sucking its juices. As I could never find any thing of a worm, though told that the destruction is caused by one, I am inclined to doubt, not that the assertion of a worm may be incorrect, but that my informers fail to assert the right, one giving his opinion on the wire-worm, and another on the common earth worm, and of course it must be a worm of some kind. Now, as I would not give three dollars an acre for some fields I have seen, a full elucidation of said worm will be a boon conferred on many who like myself may be called young farmers.

Amicus.

Etobicoke, November, 1847.

Stafford's Patent Dryer.—For preventing flour and meal from souring, and grain from heating. One of the machines is a cylinder with horizontal flange, which revolves in a trough, slightly inclined; the article operated upon is spouted upon the upper end, whence it works its way gradually to the other, passing many times over the cylinders. It is then discharged by a spout. The cylinder is heated by steam, and the condensed water is returned to the boiler; and the weght attached to the safety valve regulates the pressure and consequent amount of heat. The efficiency of the operation consists in the great amount of heated surface of cylinder and flanges which the substance passes over, and the perfect ventilation afforded.

The machine is a stationary dryer, which is composed of a series of heating tubes within a casting, combined with a series of ingeniously devised perforated tubes which affords perfect ventilation to the grain in its passage through the casing; at the bottom is a hopper and regulating gate; the heating agent is steam, and the condensed steam is returned to the boiler. It will be observed that in the stationary dryer no motive power is necessary, as is the case in all other machines for drying that have come under our notice. By these processes, grain, flour, meal, and other substances, have their moisture expelled without change of color, quality, or flavor; and when this is done the articles may be kept an indefinite time if the usual means are adopted to keep humidity from them. Of the importance and necessity of the application of such inventions, we need not inform our readers. A certain mode of preservation of our bread-stuffs will generally ensure us a certain market in some quarter of the world.

Killing Sheep.—Elijah M. Davis, White Plains N. Y., says if bells are put on one or two sheep in a flock, it will prevent dogs killing them. "Before I put bells on my sheep," says he, "I was considerably troubled with dogs; but since I belled them I have not been troubled at all, while some of my neighbors who did not use the same precaution, have suffered more or less. A sheep killing dog is a sneaking creature, and when they start up the sheep, bells make a noise and the dog sneaks off. If the sheep are within a half a mile of the farmer's house the bells will give the alarm."

How to treat Lard.—The trying of lard is an important branch of economy, requiring a little care and some direct information. Water, be it remembered, should never be made use of in this process, since it cooks the fat and makes it soft and liable to become speedily rancid. Put a lump of fat into a pot, and then stand the pot along side of the fire, gathering around it a few embers; let a little of the fat try out, after which put the fat over the fire; with such precaution there is no danger of the lard's scorching and no need of water, but the lard, when fully cold, will be found quite firm and solid, which cannot be the case if water be made use of in trying out.—*Scientific American.*

One way to Preserve Cabbages.—Cut the head from the stump, and pack closely in a cask, taking care to fill up all the vacancies with chaff or bran, and keep in a dry cellar.

Agricultural Schools.

We are of opinion that a portion of the Crown Lands might, with very great profit to the country, be appropriated by Government for the Establishment of Agricultural Seminaries of Learning, where both the practice and science of Agriculture might be taught the youth of our land. The wants of our country now demand that such Institutions should be established in various Districts of the Province; and, in our judgment, the most feasible plan that has been suggested for bringing about this desirable object is that of the Government granting a large block of land, which should be put in market, and the proceeds invested, to raise a fund to sustain such Institutions A large and permanent fund might thus be raised, which would in process of time be amply sufficient to establish an Agricultural Seminary or College, in connexion with an experimental Farm in each of the Districts of the Province. Other modes of raising a fund, to bring about this desirable object, have been suggested, but we apprehend that some of them would, in practice, be found inoperative, from the fact, that the means would be inadequate to carry out such Institutions upon a respectable scale.

If the farmers of Canada were really awake to their own interests, they would establish respectable Educational Institutions, such as would be adapted to give a good, sound, and practical education to such of their sons as they intend to make Agriculturists, without waiting for the action of Government in the matter The improved system of giving encouragement to Common Schools, that is now in process of being established in this Province, will unquestionably have a very important influence in raising the standard of education among our rural population; and the great majority of our farmers must, of course, look to this source to educate their sons and daughters. But we are nevertheless maintain, that the Common Schools, under ever so efficient management, cannot impart a finished education to a young farmer, who is desirous of becoming thoroughly acquainted with the various departments of science that have a bearing upon Agriculture; and in no place can such an education be had so cheaply and efficiently as at an Agricultural College, where both the science and practice of husbandry will be taught, by competent Professors. Farmers' sons, who are designed for Agriculturists, if sent to College to obtain a liberal education, would scarcely turn their attention to farming, after having spent a few years in the society of young students, designed for the Learned Professions, unless, in connection with those Institutions, where the science and practice of Agriculture became a prominent part of the course of instruction taught in them. As scientific instruction, applicable to practical Agriculturalists, has never been taught in our highest Seminaries of learning, consequently but few, if any, of our junior farmers have attended a regular course of Lectures at those Institutions; and the loss to the country, in this respect, is at this time very seriously felt. In the most thickly-settled and wealthy portions of our rural Districts, it is a rare thing to find a farmer who, by education and talent, is in every particular well-qualified to fill important posts of honour or emolument, that may be at the disposal of the Government and people of this Colony. This argument particularly applies with force, when reference is made to Canadians by birth and education; and this admission we make with a very great degree of reluctance. It is to be hoped that the Canadian people, whether by birth or adoption, will look to this mater; and, if no better method presents itself, to bring about the establishment of the Educational Institutions contemplated, the one of forming Joint Stock Companies, if placed under proper management, might be made effectual, in securing to the sons of Canadian Farmers, a sound practical education, such as would enable them to carry out their operations upon a more certain and profitable scale. An Agricultural College, with a suitable farm and apparatus, could not be commenced with any

certainty of success with a less capital than £10,000. If established upon a Joint Stock principle, it would require at least one thousand shares, at £10 each. As the benefits to be derived from an Institution of this character are, to the minds of many of our very best farmers, more imaginary than real, it would require a very considerable effort, on the part of the friends of such a movement, to get as much stock subscribed as would be required to establish one Educational Institution of this kind; and, therefore, if the attempt should be made at all, it should decidedly be a movement on the part of the Western Canadian farmers, from Sandwich to the extreme Eastern portion of the Upper Province. If the first experiment proved successful, other Companies would spring into being, and in a few years they would become abundant, and would, in process of time, be instrumental in changing the entire physical condition of the country. A thorough knowledge of the quality of different soils, and their adaptation to the numerous crops grown, would be in the possession of hundreds of our brightest farmers' youths; and at those Institutions the cultivation of new and untried plants would become a matter of careful experiment, from year to year, by which means the most enlightened system of the management of those, as well as all the other crops grown from the soil, would become familiar to hundreds of those who, in a few years, will hold the destinies of this fine country in their hands. We strenuously urge upon the friends of Agricultural Improvement the adoption of such measures as they, in their judgment, may deem expedient, for the successful establishment of Educational Institutions, such as would be calculated to develope the productive resources of the country.

Cultivation of the Artichoke.

The following Communication, from a respectable farmer, in the Western District, affords another proof of the value of the Artichoke, as a substitute for the Potatoe. It may be grown quite as easily, and upon as great a variety of soil, and will give as large an acreable return as the potatoe. But it cannot be considered as valuable a plant as the potatoe, first, because it is neither as nutritious nor as palatable as the potatoe, and, besides, it is very difficult to extirpate from the land. It is, however, a valuable vegetable, and it is one, too, that will become very generally cultivated, if the potatoe should go out of cultivation for a few years, or until disease in that plant is removed. A number of respectable famers in the Home District have grown the Artichoke for the three past years, and they have them served on the table as a culinary vegetable, instead of the potatoe, and who have, in our presence, frequently pronounced them to be quite equal to the potatoe. Be that as it may, we are quite convinced that they will prove a profitable crop, under good cultivation; and we are rejoiced to hear so good an account of this long neglected vegetable, from our Correspondent:—

Harwich, Western District,
25th November, 1847.

Sir,—Being fully impressed with the value of many of the practical observations in your paper, and having, among other things, tried the cultivation of the Artichoke, from your recommendation, I will give you the result of my experiment. In the middle of May last, I cut one peck and a half into rather smaller sets than potatoes are cut into, and planted them in hills, four feet apart (which was too far apart), and three sets in a hill. I went through them only once with the hoe, and cut the weeds out. It was new land—first crop. The soil is clay loam, covered with vegetable soil. The return was far beyond what I expected. On the 1st November I dug up sixty bushels, and I am perfectly satisfied there are as many in the ground as will do for seed another year. The tops grew to the height of from eight to ten feet; and I fed my working cattle for three weeks on the green tops alone: they eat them greedily, and in preference to corn-stalks, and did well upon them. I tried the cattle with the tops early on, before they flowered, but they would not eat them until after the first frost. I think they are a more profitable crop than turnips or potatoes, and answer for feeding stock in the same way. Where the vegetable mould was deep, the tops were longer, and the roots less; where the roots got to the clay, they were much better, and the tops shorter.

Yours, &c.,

A SUB CALEB.

EDUCATIONAL AND SCIENTIFIC DEPARTMENT.

THE APPLICATION OF SCIENCE TO AGRICULTURE.

No. III.

Before we enter upon the details of Agricultural Chemistry, it may be useful to give a brief and general statement of the nature and objects of this interesting and important branch of science. Chemistry, then, treats of the composition and decomposition of all material things, and explains the laws by which their changes are governed. It has been ascertained that all substances, with which we are acquainted, possess two kinds of properties,—*Physical and Chemical.* Hence the distinction between Natural Philosophy and Chemistry. The former treats of matter in masses, and of motions that are perceptible to the eye, while the latter investigates the constituent parts of material objects, the force by which their minutest particles are held together,—involving changes and motions that are frequently too subtle to be detected by mere vision.

To illustrate this distinction, take a loaf of bread, and break it into pieces by the force of the hands; in this case it is evident no change has been produced, but of a *mechanical* kind,—the fragments into which the loaf has been broken, possess precisely the same qualities as did the undivided mass. But if the loaf be subjected to certain processes, by which the flour water, yeast, and salt, of which it is composed, be separated from each other, and exhibited apart, here *chemical* changes are effected, which are widely different from those induced by mere mechanical force. A piece of chalk may be easily broken into smaller fragments by a hammer,—still no change in the composition of this substance takes place,—the change only affects the size and form of the original lump. But subject the chalk to a powerful heat, and the chemical forces will be brought into play, and a complete change in the composition of the substance will take place. The chalk will lose much of its weight by burning,—having the water and carbonic acid gas expelled, with which it was associated; and what remains will be caustic lime. By additional heat, even the lime may be separated into a gas and a metal—*oxygen* and *calcium*—which are the two elementary constituents of lime. Hence this substance in the nomenclature of chemistry is denominated the *oxide of calcum.*

Matter is arranged under two very distinct divisions, *organic* and *inorganic*; in both of which there are numerous objects, of the greatest importance to the farmer, and with the properties of which he ought to be intimately acquainted. The inorganic department of nature includes all that numerous class of objects, differing widely in external appearance, which do not possess the principle of life. The earths, stones, water, the atmosphere, &c, come under this denomination. *They are devoid of life,*—and of course of those vessels and organs which are necessary to the support of life; hence they are called *inorganic.* Widely different indeed is the other grand division of nature—the *organic.* Under this head are included all the numerous varieties of animals and plants,—from the minutest animalcule (myriads of which may colonize a leaf or a drop of water), to the huge elephant,—from the moss of a Siberian Desert, to the majestic forests of the torrid zone. The wonderful and mysterious principle of life, pervades the whole of this endlessly diversified class of bodies. They are in various degrees endowed with organs for procuring food, and for assimulating that food into their own structure. How widely different is the mineral. Possessing no organs of nutrition, the stone increases in bulk merely by the external deposition of its materials; directed only by mechanical and chemical forces. The vital power, however, which resides in the plant, and in a yet higher degree in the animal, exercises a controling influence over the entire economy of its subject, and modifies the ordinary laws of Chemistry and natural Philosophy to an extent which the most advanced state of science is wholy incapable of explaining. This fact, while it reads to the speculative philosopher a salutary lesson of humility, should produce in all minds a devout reverence for, and a humble dependance on, the Being, who is the author and giver of life.

Again, all bodies are divided by chemists into simple and compound. Simple bodies are homogeneous in their nature—that is, they consist of only one kind of particles, whereas compound substances are made up of two or more elementary or simple bodies. Whether a substance be simple or compound, can only be determined by experiment. It has taken a long time, in which a vast amount of labor and research has been expended, to bring chemistry to its present advanced state; and much yet remains to be accom-

lished, before that most useful and interesting science can be considered as complete. The following illustration will be sufficient to shew the distinction between simple and compound substances. Take a piece of lead, and try to alter *appearance and character, by cutting, hammering, melting*, or any other means. Do with it what you may, it will still remain the same in nature or composition,—it will be neither more nor less than lead. We call lead, therefore, a simple or elementary substance. If a quantity of copper or tin, which are likewise elementary substances, be melted with lead, the result will be a substance different from either, denominated a *compound*. Chemistry enables us to separate the elementary or simple substances, of which a compound is made up: a process that is termed *analysis*,—'separating, or taking to pieces,'—an operation of the highest importance, as we shall hereafter shew, to the pursuits of the practical agriculturist. Soils, plants, and fruits, are all compound substances; and by chemical analysis may be shewn all the various elements that enter into their composition. The chemist, in many instances, can do even the contrary of this:—he can, after separating the elements of a compound, cause them again to combine,—a process that is designated *synthesis;* that is, putting together. It is worthy of remark, however, that the synthetical powers of the chemist seem confined to the inorganic kingdom of nature. He may succeed in reconstructing from their original elements, a mineral or a soil, but when he comes to organic structures—that is, substances which are controuled by the principle of life—his art is entirely at fault. In the present advanced state of the science, he can analyse them with facility and certainty, but in attempting to reconstruct even but a grain of sugar or woody fibre, he totally fails! What a striking agreement is here presented between a fact in science and a solemn truth of Revelation: that the wonderful and mysterious principle of life, is under the sole controul of the Creator!

In the ancient writers we find frequent mention of the four elements,—earth, air, fire, and water. Now, these are not chemical elements at all, but compounds, as we shall hereafter fully shew. Instead of there being only four elements, as the ancients supposed—(though we are not quite certain as to the precise sense in which they used the term)—modern chemistry makes us acquainted with *fifty-five*,—all of them ponderable, and subject to the agencies of light, heat, and electricity, which are imponderable. We shall not go into even the shortest description of all these elementary bodies, as that would indeed be *to write a treatise on chemistry*, instead of sketching such portions of the science as have a useful bearing on the pursuits of the farmer,—which is the chief object we proposed in this series of papers. Several of the elements are extremely rare substances, and do not appear to exert much influence in the economy of nature, while there are others that exist in great abundance and enter largely into the composition of most bodies. So far as agriculture is concerned, we need not consider minutely more, perhaps, than half-a-dozen of these elements. Our remarks must necessarily be very brief; but most of our readers who may desire to pursue this subject further, will happily now-a-days find no difficulty in procuring a good elementary treatise upon the whole science, and we earnestly recommend our younger readers to do so.

It is a remarkable fact, which cannot fail to strike the mind with astonishment and admiration, that amidst the endless varieties of living beings, including plants as well as animals, the greatest simplicity prevails, relative to the materials of their composition. Who would have expected, prior to experiment, that all organic substances, including every size and variety of plant and animal dispersed over the face of the globe, may be resolved into no more than four elementary principles? Yet so it is. From three, or at the most, four simple substances, the Creator has produced all that astonishing variety and beauty that we behold in nature, so lovely to the eye and enrapturing to the heart! These elements are *carbon, hydrogen, oxygen*, and *nitrogen*. We will briefly describe them.

1*st, Carbon.*—This substance enters largely into the composition of most inorganic bodies, particularly of plants and trees—the greater part of whose bulk consists of carbon. This element assumes a variety of forms. It is usually a black hard substance, more or less porous, such as the well known substance, charcoal. Coke, black lead, and lamp black, are other varieties of carbon; and when they are heated to redness in the air, or in oxygen gas, they unite with that element, and form a gaseous compound, called *carbonic acid*,—a substance, as we shall shew in its

proper place, of the greatest importance in the nutrition of plants.

It may, perhaps, surprise some of our readers when we state that the *diamond* is nothing more than *a pure variety of carbon.* However different it may appear in its external character or commercial value to common charcoal, yet it is essentially the same substance. This is one among the many extraordinary things which chemistry reveals to the enquiring student.

2nd. Hydrogen.—This, and the other two elements which follow, are gaseous bodies, whose presence cannot be detected by the senses. Hydrogen is the lightest of all substances, and combines with oxygen to form water. It also enters into combination with other substances but it will not support combustion or animal life. It is not our object to give instructions for preparing the gases—an operation that requires some apparatus and considerable caution; those who desire to institute experiments, will find suitable directions in any modern elementary treatise on chemistry. The readiest way of procuring hydrogen is from the decomposition of water, by pouring diluted sulphuric acid on granulated zinc, or iron filings, when a copious stream of the gas will be evolved.

3rd. Oxygen.—It is calculated that one-half of the solid materials of the earth consists of oxygen; but in that case it exists in the solid form. We meet with it as a liquid combined with hydrogen in water. In the atmosphere we find it as a gas united with nitrogen, forming about one-fifth of the bulk of the air we breathe, without which, indeed, the atmosphere could neither support combustion nor animal life. Hence, oxygen has been denominated *vital* air. It has a very strong affinity for most bodies, and consequently enters readily into numerous combinations, and performs a most important part in the economy of vegetation, and the products of the farm. It is easily procured by exposing a strong heat, the oxide of magnesia, the red oxide of mercury, or chlorate of potash; the latter, particularly, is rich in oxygen.

4th. Nitrogen.—This gas possesses properties the very opposite to those of oxygen. If a lighted taper be placed in a vessel containing nitrogen, it will be immediately extinguished, and an animal so placed would likewise cease to exist. This gas seems to possess no other remarkable property. In bulk it occupies nearly four-fifths of the atmosphere; one of its principal uses appears to consist in its tendency to weaken or dilute the oxygen, and thus adapt the air to the actual state and wants of living beings. Nitrogen as an elementary constituent of organic structures, is found more largely in animals than plants; some portions of the latter indeed, such as gum, starch, sugar and woody fibre, consist only of carbon, hydrogen and oxygen. Although their gases cannot be distinguished from each other, or from common air by the senses, yet a burning taper enables us to do so readily. Hydrogen will burn while it extinguishes the taper; nitrogen extinguishes it but will not take fire. Oxygen itself will not burn, but it will cause the taper to burn with extraordinary rapidity and brilliancy. Without, therefore, this important element in the atmosphere a candle would not burn, a fire could not be lighted, nor could an animal live!

It is well worth remembering that the organic part of all the endless varieties of animals and plants that exist upon the earth, is made up of one solid substance, carbon, and the three gases just described. These elementary principles however, are combined in very different proportions. *Carbon* usually forms about *one-half* by weight of all those vegetable productions, in a dry state, which are used as food for man or beast. *Oxygen* constitutes a little more than *a third*, *hydrogen* about *5 per cent.*; while *nitrogen* will vary from 2 to 4 per cent.

When plants are burned in the open air, that portion of their substance which is dissipated by heat and denominated their organic part, consists only of the elementary substances just enumerated, while the remainder of this substance will be reduced to ashes. These ashes consist of what is called the *inorganic* portion of plants, and they usually contain some ten or eleven different substances, which it is necessary we should consider, that our enquiry into the constitution of plants may be somewhat complete.

The ash of plants varies considerably, not only in different species, but in the same variety, particularly when produced from different soils. The following earthy substances are to be found in varying proportions, in the ash of plants, and consequently, every fertile soil must contain them, either actually or artificially:—

1st. Potash.—This substance is too well known to need description. It enters largely into the

composition of plants. Wood ashes which always contain a considerable portion of potash, are deemed highly as a manure.

2nd. Soda.—This is well known as the carbonate of soda, and by boiling it with quick lime, the carbonic acid is easily separated. The *nitrates* of potash and soda are very powerful manures.

3rd. Lime.—This substance is found in the ashes of all plants. It exists in nature, combined with carbonic acid, in all limestone, which is hence denominated a *carbonate of lime*. The carbonic acid is expelled in a gaseous state by the action of heat, in the process of burning lime.

4th. Magnesia.—There is a limestone which yields this substance in different proportions. When burnt into lime, it has been found by experience to be very detrimental to certain soils, particularly when the lime contained a large dose of magnesia.

5th. Silica.—This is a substance which forms the basis of sand, flint or quartz. A small portion enters the plant in a fluid state, which serves to give strength and smoothness to the stem. This earth occurs in large quantities in all high, porous soils.

6th. Alumina, enters largely into all the varieties of clays, and renders the soil sufficiently adhesive to support firmly the roots of plants.

7th. Oxide of Iron.—The rust of iron is a familiar sample of this substance. It is iron combined with oxygen. When it exists in soils in large quantity, it is very prejudicial to vegetation.

8th. Oxide of Manganese is seldom found in plants in soils, but in small quantities.

9th. Sulphur is found more or less in most animal and vegetable substances. By uniting with a definite portion of oxygen, it forms the well known substance called *sulphuric acid*. This latter substance, by uniting with other bodies is of great importance in agriculture, as well as in the arts.

10th. Phosphorus is a singular substance, having a strong tendency to ignite when exposed to the common temperature of the air. It has a strong affinity for oxygen, forming *phosphoric acid*, which is found in small quantities in the ash of plants. It likewise unites with potash, soda, lime, &c., and forms a large class of *phosphates*, which perform an important part in the formation of productive soils, and in the economy of vegetation.

11th. Chlorine is a very suffocating gas, or air, of a greenish colour. It is a powerful agent in the process of bleaching, and is very valuable for disinfecting purposes. It combines with the metallic bases of potash, soda, lime, &c.,—forming the *chlorides* of those substances. It is a remarkable fact that this suffocating and most disagreeable gas, when combined with sodium, (a singular metallic substance, having so strong an affinity for oxygen as to ignite upon water,) forms that most necessary, mild, and agreeable condiment *common salt*, or chloride of sodium.

We have now taken a general view of the various substances that enter into the composition, both of the organic and inorganic parts of animals and plants. The important question of the analysis of the ashes of the cultivated plants, is undergoing the most vigorous investigation by several of the most eminent chemists in Britain and on the continent of Europe. The Royal Agricultural Society of England, offered some time since a liberal assistance to these investigations; and we are informed that Professor Way has already made public some interesting and important results. We feel assured, that he researches which are now being made in this direction, will, ere long, throw much light on what are now confessedly dark and unsatisfactory points in practical agriculture. And, induce what may we not hope in reference to the advancement of our ancient and important art, from the auspicious union of science with practice?

Cold Bedrooms.—A person accustomed to undress in a room without a fire, and to seek repose in a cold bed, will not experience the least inconvenience, even in the severest weather. The natural heat of his body will very speedily render him even more comfortably warm than the individual who sleeps in a heated apartment, and in a bed thus artificially warmed, and who will be extremely liable to a sensation of chilliness as soon as the artificial heat is dissipated. But this is not all the constitution of the former will be rendered more robust, and far less susceptible to the influence of atmospherical vicissitudes than that of the latter.—*Journal of Health.*

A Fine Polish for Marble.—Common wheat-straw, when burnt to ashes, is found to contain a a portion of flinty earth in the form of a most exquisite powder, and may be used to advantage in giving the last polish to marble.

Harvests without Previous Sowing.—In the *Schnellpost* we find an account of a method of compelling the wheat plant to become perennial, like grass, and to perfect its grains annually without annual sowing of seed, which has been successfully practised at Constance, in Germany. It was discovered by a steward of an estate named Kern.—His method after ploughing and manuring the land and sowing it with Summer or Winter wheat, is to mow it in the Spring before the ear makes its appearance. This process is repeated several times in the season, and the product is used as hay. The plant is then allowed to grow and be cut in the ordinary manner. The next year it ripens earlier and bears more abundantly than wheat treated in the ordinary manner. It is manured in the autumn like grass in the meadows, and in Spring cleared from weeds In this manner, from one field, four successive harvests have been gathered.—*Tipperary Free Press.*

Curious Agricultural Phenomenon.—A speci men of wheat, grown by a farmer named Keat ing near Newchapel, has been left at our office It is a double ear, and Keating states that he ha two acres of a similar wheat growing at presen In the year 1843 his daughter found, in gleanin an ear similar to the one left at our office, whic she brought to her father. He planted the grain and has since continued to sow their produce un til he has now a splendid field of the wheat. Th ear contains one hundred and twenty-one grains —*Tipperary Free Press.*

How to make Mead.—To one gallon of wate add four pounds of pure honey, and aromat herbs or not, according to taste. Boil the whol in a copper nearly three-quarters of an hour, an skim well. Then allow the mead to stand in th copper until nearly cold, when it should be bo tled up and kept till old enough to drink.— *American Agriculturist.*

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