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THE

Canadian Agriculturist,

OR

NAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

XIII.

TORONTO, APRIL 16, 1861.

No. 8.

Farm Operations.

work of the farm is now commencing in earnest, and the attention of the cultivator some time to come be wholly engrossed pressing and multifarious details of his . The season must be considered late; ct, however, is out of the ground; the s disappeared; recent rains have fallen olidate the surface, and there is good to hope that agricultural operations will without any serious drawbacks or inter-. Winter wheat we trust has not been uly damaged,—in some places, as is e case, it is looking weakly. Where ce is loose, and the plant lifted by the e application of the roller, as soon as and will admit, will be beneficial, and re should be taken to drain off any stag-er; particularly on heavy soils.

who ploughed their clay soils in the begin to appreciate the advantages of tion; the frost having effected a state ization which could not otherwise have ined. Sandy soils are not affected in manner, or at least not to anything ame extent, and may be left to depend working. Never work land, especially r soils, while it is wet; much better . days, even though the season be late. ive harvest greatly depends upon get- l-prepared seed bed, and the selection .d. In nothing, perhaps, do farmers

more commonly err than in the latter; although of late, there is reason to believe, more attention has been paid to this very important matter. Not only should pure, well-ripened seed be selected, but it is of importance that it should occasionally be obtained from a distance, and from different soils, as it is well known to practical men that such changes are highly beneficial. This remark applies to all kinds of grain, which are certain to deteriorate more or less, by repeatedly sowing the seed raised from the same soil. Oats in particular rapidly degenerate in this climate, and seed should every few years be got from a distance; say from the eastern sections of these Provinces, and the nearer the sea-board the better. The farmer would do well to bear in mind that the adage, "Like produces like." applies to the cultivated cereals as well as to animals.

Where land was deeply ploughed in the fall it may often be brought into excellent tilth for seeding without again ploughing, by using a heavy cultivator as soon as the ground gets sufficiently dry. Land for barley requires a deep and fine tilth; peas should be sown as soon as the soil will admit, also vetches, when intended for feeding green to stock, then follow oats, barley, &c. The sooner spring wheat is sown the better,—always premising, of course, in this as in all other instances that the land is in a suitable condition. Many farmers, however, have sown spring wheat late,—the Fife variety for instance, from the beginning to near the

middle of May, in order to avoid the attacks of the midge, and the results have been generally successful. Some districts last year produced from 25 to 30 bushels per acre. Potatoes in collars or pits should be carefully examined, if not done before, and the healthiest-looking tubers selected for seed.

Live stock still require attention, and such as have a good supply of turnips and mangels left will now be able to comprehend their value. Mangels, if properly preserved, will continue fresh and palatable to cattle through the greater part of next month, and they are excellent for milch cows. Horses will require richer and more ample food as spring work increases; a few carrots or other roots in connection with an increased supply of oats, will keep them fully up to their work, and greatly promote their health and sleek appearance. On no account, if it can possibly be avoided, should animals be turned on pastures till the grass has fairly started and covered the ground. Meadows or pastures too closely eaten in spring never recover their wonted energy, and will produce but a comparatively small supply of hay or feed, during the rest of the year.

Horse and Cattle Foods.

We have had occasion in previous numbers of this journal to speak of the preparations now so common in Europe for feeding cattle, some of which even have been offered for sale in the larger towns of this province. Various stimulating substances are mixed with ordinary cattle food, and sold at exorbitant prices. They are thus made extremely palatable to the animal, which naturally enough thrives upon the good things provided for him. We will not now stop to inquire how far they themselves may be beneficial, even admitting the temporary advantage; our object is simply to show that it will not pay, and must involve the purchaser in pecuniary loss. For our facts we are indebted to an article on this subject in *The Field*, an ably conducted English paper, devoted to rural matters.

If the price of oil-cake, ranging at about £10 sterling a ton, forms the limit from which any ordinary return can be expected, how can an article, sold at a price realising from 300 to 400

per cent. on the cost price of the materials of which it is composed, ever bring any return at all? Such savoury condiments, dished up at from £40 to £50 a ton, have no more fattening powers than the ordinary cakes and meal, of which, indeed, their bulk is principally composed. Locust beans, the different oil cakes, and Indian corn, form the basis of these cattle foods so often paraded before the public, with which sundry stimulants, making a kind of curry-powder concoction, are mixed up. This, though it may be highly agreeable, yet, at the price above stated, forms a most costly addition to the ordinary outlay for feeding, and an animal once pampered on such material can hardly fall back on ordinary food; hence the price of fattening is greatly enhanced, but without any increase of the saleable carcass, for there is a natural limit in this direction. A compound at £40 a ton will make no more flesh than oil-cake at £10 but if the farmer approves of and will have the compound, let him simply mix the material himself. There is no secret in the composition for the test is at hand in a simple analysis. The following is an ordinary formula:—

TO MAKE ONE TON OF MEAL.

	cwt.	qrs.	lbs.	£	s.
Locust bean, finely ground, at £6 a ton,	6	0	0	1	15
Indian Corn, at £7 a ton	9	0	0	3	3
Best linseed cake at £10 a ton	3	0	0	1	19
Powdered turmeric, at 8d a lb.	0	0	40	1	6
Sulphur, at 2d a lb.	0	0	40	0	8
Saltpetre, at 5d a lb.	0	0	20	0	8
Liquorice, at 1s a lb.	0	0	27	1	7
Ginger, at 6d a lb.	0	0	3	0	1
Anti-ced, at 9d a lb.	0	0	4	0	3
Coriander, at 9d a lb.	0	0	10	0	7
Gentian at 8d a lb.	0	0	10	0	8
Cream of Tartar at 1s 8d a lb.	0	0	2	0	3
Carbonate of Soda, at 4d a lb.	0	0	6	0	2
Levigated Antimony, at 6d a lb.	0	0	6	0	3
Common Salt, at ½d a lb.	0	0	30	0	1
Peruvian Bark, at 4s a lb.	0	0	4	0	15
Fenugreek, at 9d a lb.	0	0	22	0	15
Total	20	0	0	£13	7

Looking at this composition, it will be evident at a glance that the chief ingredients are ordinary commercial locust bean, Indian corn and oil cakes. These form its bulk, and constitute nine-tenths of the whole; the remainder being made up of condiments and stimulants, the sulphur and antimony being intended to upon the skin in the production of a fine coat, and the fenugreek forming a kind of mucilage, prevent any ill effects that might arise from the stimulating character of the food. T.

Ingredients have no doubt been selected with skill, and an animal may be expected, and not unreasonably, to thrive on such savoury substances. For this precious article (which it unquestionably is) the modest sum of 42s. a cwt. is demanded, or at the rate of £42 a ton, upwards of 200 per cent. on the cost price; even taken at the valuation given above, which for the one-tenth or stimulating portion might be considerably reduced, if the several materials were bought at wholesale prices. We prefer, however, to take the ordinary trade reduction, in order to give the widest margin possible for the cost—this, after all, being the simple point at issue. If a farmer wishes for the article, the use of which, containing as it does so much stimulating matter, is very questionable, and chooses to pay from three to four times the intrinsic value, it is, of course, at his option to do so; but as the whole question of farming is one of paying, we will put it plainly,—can it pay to feed animals on substances costing from £40 to £50 a ton? A knowledge of the constituent elements of these foods may induce a pause before the outlay is made. Competition, we receive, has of late sprung up in the manufacture of these cattle foods, and the price has consequently declined. Thorley, the original manufacturer, not only advertises to an extraordinary extent, but publishes a yearly almanac, and a weekly paper, for the express purpose of puffing his productions.

Trials of Bone Dust Manure.

EDITOR OF AGRICULTURIST.—In 1854 I procured ten bushels of bone dust from Toronto, and applied it to turnips, at the rate of fifteen bushels to the acre, along with about half the quantity of barn-yard manure. The piece was equally marked, the rest of the field being sown with the usual quantity of barn-yard manure. The turnip crop showed no improvement whatever, but the following crop of wheat showed a marked improvement, and the following barley one still more. The next two crops were clover, and they both showed distinctly the benefit of the bone dust came to. After that the summer fallowed, but the difference in the last crop was not so marked.

1858 I procured four bushels of bone dust and tried it on turnips again. They showed a marked difference this time at the start, but

unfortunately when they were nearly meeting in the middle the grasshoppers came and stripped them completely, but the bone dust showed its beneficial effect on the two following crops.

Cobourg, 1861.

R.

[With respect to the action of bones, much will depend on the character of the season, and the degree of fineness to which they are reduced. Half inch bones will occupy a long time in dissolving, as they decompose but slowly. For turnips, and where immediate action is required they should be procured in the finest possible state, and if treated with sulphuric acid, forming what is called a super-phosphate of lime, their action will be much expedited. Mr. Lamb, of this city, keeps bones for sale, reduced to different degrees of fineness, and we have heard of many instances in which farmers supplied by him have experienced results quite as satisfactory as those above detailed. Our correspondent, who is a good practical and observant farmer, sends us the following information on this subject from a late number of the *Mark Lane Express*. We shall be happy to hear from those parties to whom bone dust was supplied from Mr. Lamb's establishment under the superintendance of the Board of Agriculture two years ago, stating the result of their experience. —ED.]

BONE MANURE.

This is universally considered one of the best kinds of manure that can be applied to the land, whether for corn, grass, or root crops, and its extensive and increasing use is a proof of the estimation in which it is held. Not only are the bones of those animals slaughtered in this country employed as manure, but nearly 80,000 tons per annum are imported from foreign countries, chiefly for the same purpose, and yet the supply is by no means equal to the demand. Had not the importation of guano commenced about the year 1840, it is probable that bones would have risen to £10 or £12 per ton.

“That bones must be beneficial as manure,” says Mr. Nesbit, in his pamphlet on Agricultural Chemistry, “will appear from a very simple consideration. Animals are fed upon vegetables, and the whole of their bodily structure grows out of the food, or is eliminated and formed from it. If the food did not contain phosphate of lime, the bony structure of the body could not be built up. If the soil in which vegetables grow did not contain phosphate of lime, the seeds of vegetables could not be matured.—Supposing the arable land of this country to have been robbed for a thousand years of phos-

phate of lime, and never to have received any back again; assuming this ingredient to have been continually exported in the shape of milk, cheese, sheep, and oxen, it is clear that unless the land had an unlimited amount of phosphate, which we know is not the case, there must have been a proportionate diminution in the quantity of such materials. Hence it is that when certain substances which had been taken out for a long period have been again suddenly applied, land worth hardly 5s. per acre has sprung up to the value of 15s., and there has been an enormous increase of crops."

One of the most valuable qualities of bones is the slowness with which they decompose, and the length of time during which they continue to give out the phosphates. It is found upon analysis that one pound of bones contains as much phosphoric acid as 28 pounds of wheat or of 250 pounds of potatoes. Now, a crop of wheat of four quarters per acre, and reckoning it at 60lbs. per bushel, weighs in round numbers, 2,000lbs., which contains only as much phosphate as is found in 71lbs. of bones. It is clear, therefore that if the bones are put on at the rate of $3\frac{1}{2}$ cwt. per acre, supposing them to decompose rapidly and give out the phosphates in proportion, a large proportion would be wasted. But that this is not the case the following circumstances prove. A gentleman, who occupied a large farm in Norfolk, finding, towards the close of his wheat sowing, that he was likely to have a considerable quantity of bone dust left, if he continued distributing it at the ordinary rate, directed his foreman to increase the quantity. On going to the field the following day he found that the man had *doubled* the allowance, and that instead of having any to spare, he would not at that rate, have enough to finish manuring the remaining seeding land. He therefore told him to go back to the usual quantity of about 1 cwt. per acre, at which rate the field was finished. The crop of wheat proved a very heavy one, as well as the succeeding crop of turnips, on that part of the land which was thus doubly dosed with bone dust. Now mark what follows. *Eleven years after*, the farmer on riding with a friend over his land, came to this field, which was again, for the third time after the above occurrence, under wheat. On entering it, he requested his friend, if he should, in riding down the furrow, find any difference in the growth of the wheat, to point it out. After riding a few yards into the wheat he suddenly stopped. "What in all the world have you been after here?" he exclaimed. "This wheat is six inches higher, and as stout again as the rest; how came this to pass? The farmer then explained to him the occurrence we have related and which proves not only the value of bones as a manure for a single crop, but that by the deliberate manner in which they give out the phosphates in decomposition, they possess a more permanent value than any other kind of manure.

But bones are not only valuable on account of the phosphoric acid they contain: they also contain nitrogen in the proportion, according to some chemists, of six, and of others of four per cent. As the bones decompose this becomes ammonia, the value of which in manure is now well understood by almost all agriculturists. The conversion of bones into superphosphate of lime by the addition of sulphuric acid, by precipitating the decomposition, probably alters the conditions, by causing the immediate distribution of the phosphoric acid in the soil; and thence it requires a less quantity to be applied to the land to produce a crop. The Americans have adopted a new method of dissolving bones, which may probably be employed to advantage in this country, as the bones will not require to be ground. A ley is made with lime, in the proportion of one bushel of lime to six gallons of water. To two hundred pounds of bones put sixty gallons of this ley, and boil them for a few hours until the bones are dissolved, when they may be reduced to a dry powder, and applied in the same way as guano or any other artificial manure. This mode of application has been found to produce very satisfactory results. The lime used was made of oyster shells, as the best for the purpose. "It has been repeatedly demonstrated," says an American writer, "that one bushel of dissolved bones, for immediate effect, is equal to five times as much ground bones; in other words that one pound of *nascent* or soluble phosphate of lime, is worth more than five pounds of *normal*, or natural phosphate of lime, or bone-earth." This economic application of bones is becoming more and more common, being cheaper, and involving less labour; and the result is quite as certain and as good. The only difficulty in the purchase of bones, in whatever form, is that of getting them genuine on account of the adulteration with *scutch*, or the refuse of the tanpits, oyster-shells, and other cheap ingredients, the proportion of which bones is regulated, with some dealers, by the price paid per ton. We have known as much as 50 per cent. of *scutch* mixed with bones agreed on between the merchant and his customer, a country bone crusher.

The Cultivation of Tares.

FOR THE AGRICULTURIST.—In the *Agriculturist* for March 16th, there is an article on the culture of vetches, or tares, (for the terms synonymous) in which you say you shall be happy to hear from such of your readers as have had practical experience with them. We have been in the habit of growing them on a small scale for many years, and may say that we look upon them as a green or fallow crop, and sow them in the same field with our green crops.

In preparing land for tares, we think the

method is to manure the ground in the fall, and plough it carefully down; then, as soon as the ground is in a fit state to work, we go over it with a cultivator, making a fine, mellow seed bed, and then sow the tares at the rate of about two bushels per acre. Where the crop is sown for soiling, alone it is well to sow about half a bushel of oats mixed with the tares; the oats will, in a measure, prevent the tares from lodging, and will consequently keep them from dust, and other impurities; as, when the season is damp, the tares are apt to lie down and mildew. In that case, stock do not eat them so well. A top-dressing of plaster, when the plants begin to make their appearance above ground, will promote an early growth. If any of the tares are intended to ripen for seed, the plaster had better be omitted, as on such soils they grow too much to straw (if plastered) for ripening their seed well.

If wanted in large quantities for soiling, they should be sown at intervals of from ten days to a fortnight, so that they may be fed to stock when they are in their greatest perfection,—that is, from the time the blossoms begin to appear till the seed is fully formed.

The principal purpose we grow them for is to feed to working horses at noon during the working season of summer-fallowing, or while working them in mowing and reaping machines, drawing grain, or other kind of work during the busy season, when they have not time to fill themselves on our usually short summer pastures; we have no doubt that farmers generally would find it to their advantage to grow a small quantity every year, for such purposes. Tares seem to grow as well here as in Great Britain; the principal difference that we see is, that here, in most cases, they will cut only once, there they will cut twice; should the season be a wet one here they may cut a second time, but rarely. To show how much they are esteemed as a feeding crop we make the following extract from Morton's Cyclopædia of Agriculture:—"Sheep fatten faster upon green vetches, than on any other herb vetch, which occasions its constant use by ram-breeders. Horses improve more rapidly upon it than on clover or grasses. Horned cattle thrive surprisingly upon this fodder. Cows yield more butter from the tare than any other provender; and pigs voraciously consume and prosper on it without farinaceous food." Another writer states: "that an acre of good vetches, sown in the yard or stables will keep more horses than six acres of the best pasturage; they succeed best in a wet season. A good smothering crop of vetches, cut before they go to seed is nearly as good to precede a wheat crop as a summer fallow." Mr. Lawe's experiments on tares extending over many years, prove that, like peas and beans and clover, vetches are an improving, rather than an impoverishing crop. To show the extent to which they are grown, we

may state that there were estimated in England in 1854, to be 218,551 acres in tares. In Scotland in 1857 the returns gave 18,418 acres in tares, and in Ireland, in 1859, the returns gave 33,207 acres in vetches and rape, as they are combined in the returns from Ireland. We have no idea of the quantity grown in Canada, as there is no notice of them in the census at present being taken.

It is prudent to raise sufficient seed for another year; but a crop of seed tares raised for sale is seldom very profitable, as some years, when they are a good crop for feed, they produce very little seed, being very uncertain in that respect; then the price varies much, and there is seldom much demand for them in Canada. When grown in Britain, expressly for seed, they are frequently mixed with horse beans,—to afford them support for climbing; the proportion the beans should bear to the tares is as one to four by measure, the tares grown by this method are said to ripen better and make a finer sample of seed. We have tried this method once here, and they ripened a week earlier than those that were sown without the bean. Tares thrive best on heavy soil, but will grow on any land if well manured.

W. R.

Cobourg, April, 1861.

Cultivators.

EDITORS OF THE AGRICULTURIST.—In the last No. of the *Agriculturist*, 16th March, I see over the signature of "Caledon," an enquiry for a two-horse cultivator, simple in construction, that a blacksmith could mend in case of accident, and at such a price that a person having a hundred acre farm could afford to buy. As to the two first points, I am quite sure I could suit your correspondent, but in the latter, he could best judge after a trial of one of my cultivators. I will endeavor to give you and your readers a short description of the cultivators I manufacture: in the first place, the iron is all wrought,—the teeth or blades are laid with steel, and can, when required, be sharpened, or the steel renewed by any good blacksmith. They can be set to cultivate from one to ten inches deep, and are intended to be used with the hind wheels of a common lumber or spring wagon or cart, horse-rake wheels, or wheels furnished with it if ordered. Two horses can work it from three to six inches deep in spring on ground that has been fall-plowed, (or on stubble ground,) about as easy as they can plow the same ground. The teeth or blades being long, they are not liable to clog with the stubble or long manure. By a lever across the axle, with the front end attached to the cultivator, by a short chain, the driver can, without stopping the team, raise the cultivator to clear the ground 8 or ten inches, so that any sods or other obstruction that might hang to the

teeth would drop off. By raising it and fastening it up by the two set bars or keys, (which is quicker done than I can write it) and placing two short boards on the cultivator four or five bags of seeds can be carried on it with the convenience of a cart or wagon. Yours, &c.,

Gananoque, April 1861. HENRY COLLARD.

[The above information would be more complete if our correspondent had given the price of the implement.—Ed.]

Best Fertilizers for Indian Corn.

The first thing necessary to secure a good corn crop, is to select suitable lands for planting. Corn requires a rich, warm and well drained soil—such as the alluvial or river flats; next to these are the sandy or gravelly loam, or when the season is favorable, a tenacious loam, muck or clay soil, will, if properly managed, produce fine crops.

My experience is, that extra culture nowhere *pays better than in the corn crop*; and from a series of experiments I am led to the conclusion that, on a loam or clay soil, there is no better fertilizer within the reach of farmers, generally, than *long, unfermented barn yard manure*.

From long experience I would recommend the following, as the most likely means of securing a good crop:

1st. Select lands naturally or artificially well drained; if a sod, break it up as soon after harvest as circumstances will permit, and as deep as your team are able. Then let it lie, until near the season of planting; harrow thoroughly, and commence drawing the long, unfermented manure from the barn yard; covering one land first—putting on as much as can be turned under by a careful plowman. Then set a team to plowing—mixing the mellow soil and manure well together. If you have, or can conveniently hire them, set teams enough to drawing manure to keep one plowing; thus covering and mixing it with the soil, before much of its fertilizing properties escape and go into the atmosphere by evaporation. Thus most of the gases which escape, when manure is exposed to the heat of the sun, will be mixed with the soil, which will also be warmed by the fermentation of the manure while decomposing—all of which will aid in starting the young corn plant.

After the ground is plowed, then drag it thoroughly, and mark it in rows, north and south, three feet apart, for our northern varieties of corn, as nearly straight, or in line, as possible, and it will be ready for planting. Be careful in selecting good seed, which may be soaked twelve hours, in a solution of saltpetre, by dissolving one pound for each acre, adding warm water enough to cover the seed. My custom has been to soak only as much over night as would be planted the next day. This

I have found to be the cheapest and best article I have tried for starting corn.

We are now prepared for planting, which should be done by careful men, and not by boys; the rows being but three feet distant, and calculated to be worked but one way, the corn should be dropped in hills as near eighteen inches apart as practicable, without the trouble of marking; drop not less than three nor more than four grains in a hill; cover one inch deep, with loose earth.

As soon as the corn is up, put about a large spoonful of plaster, upon each hill, and soon as the rows can be followed, go through it with a cultivator, or horse hoe—mellowing the earth as near the hill as practicable, leaving the surface level; let hands follow with the hoe, and stir the earth about the hill; as soon as thus hoed, plaster again as before directed; and as soon as the grass or weeds start go through again with the horse hoe—throwing the earth up to the hills, and set hands to straighten up the corn, and the labor is completed, until the corn is glazed, when it should be cut up, setting from sixteen to twenty hills together, and binding firmly at the top. When thus tilled, if the season is favorable, the husking will show that you will have about 200 bushels ears of corn, per acre, I have raised on an acre, by this culture, 227 bushels of ears. The land and corn measured by competent and disinterested persons. The land upon which this crop was raised was a loam and had never been manured, until the season this crop was raised.

My practice now is, to use all of the barn yard manure, each spring, upon corn; then follow with oats, barley or spring wheat, and with one plowing; sow early in September, with Mediterranean wheat, and apply five bushels of plaster per acre, as a top dressing before the wheat is up. A field of ten acres, thus farmed, yielded a large crop of corn, which was injured by frost, and not measured. The oat crop averaged over forty bushels per acre; the wheat over twenty one per acre; and last haying, we cut over two tons of hay to the acre, without any other seedling than from the manure, and without any other manure than for the corn crop, and plaster for the wheat. A. J. W.—*Journal N. Y. State Ag., Society.*

CHEMUNG, February 1861.

Imports and Exports of Agricultural Products.

EDITOR OF THE AGRICULTURIST.—Permit me to call your attention to the Trade and Navigation Returns for 1860, published in the *Leader* of the 11th inst.

These Returns contain information most valuable to our farmers, and which, by a slight rearrangement of the tables, might be laid before them in a manner to strike the most careful

and to direct the efforts of those anxious for information to guide them in their efforts at improvement.

The Returns show the Imports and Exports of all agricultural produce, but have no table of the net export—so as to show at a glance the realsurplus exported annually from the Province, the proceeds of which are the profits of the farming community.

Such a table might be constructed from the Returns, and show both the quantity and value of every article imported and exported under the heading in the Returns of "Animals and their Products," and "Agricultural Products," as well as the total import and export of each. If made from the commencement of the Reciprocity Treaty with the United States it would show the working of that Treaty, and its real importance to the farmers and traders in agricultural produce in the Province.

As an instance of the valuable and curious information to be elicited from such a table I could instance the value of cattle exported in 1859 and 1860—in 1859 it was \$925,477, and in 1860, \$628,897, a diminution of \$298,576, or about one third, while the value of the export of Horses has increased \$179,884, of Swine, \$112,101, and of Sheep \$48,840. A yet more important result would be shown in the value of wheat, flour, and bran exported for the following years:—

1851—value	\$ 6,742,200	price per B.	\$1.31.
1855	" 11,750,020	" "	1.85.
1856	" 10,476,327	" "	1.39.
1857	" 3,690,428	" "	1.06.
1858	" 2,763,509	" "	0.97.
1859	" 1,097,742	" "	1.06.
1860	" 6,367,061	" "	1.13.

I might suggest the propriety of such a table being in the future added to the usual Trade and Navigation Returns for the Province.

HEADINGS OF THE PROPOSED TABLES.

1. Total Imports—quantity or No. value.
2. Total Exports, " " "
3. Excess of Imports, " " "
4. Excess of Exports, " " "
5. Net Imports, " " "
6. Net Exports, " " "

The imports must be taken from the "free list" and ought to be arranged in a manner to correspond with the form of the export tables of Animals and their Products, and Agricultural products in the return of export. Their form answers very well to show the trade—but not seeming at a glance both the import and export any article included in the Reciprocity Treaty. Allow me to request a place in your Journal

for this letter as well as your exertions, in some manner or other to get up a set of the tables indicated.

I have no doubt that their value would be fully appreciated. Your most obedt. Servt.,

Dunville, April 19th, 1861. JOHN JARROW.

Saving Manure.

EDITOR OF AGRICULTURIST.—In the last *Agriculturist*, Mr James Courtney asks three questions, the second, "Which is the best method of saving manure—in barn yards fitted with tanks—or in manure cellars?" And you, Mr. Editor, have given a very good answer, and you wind up by saying that you would be glad to hear from any of your readers who have had experience in the matter. I will give you my plan, which you may publish if you like it.

I have a covered shed, 60 feet long and 16 wide, and into this I cart the droppings from my stables every day, for I keep all my cattle and horses tied up, and the stables cleared twice daily. The manure shed is closed up on the north side and east end, and thereby the snow is nearly all kept out, and the manure does not freeze, and therefore decomposition goes on all the time. During the month of March I turn the heap, beginning at one end, and finishing at the other. Therefore, by this means the whole of my winter manure is ripe for use as soon as I am ready to use it. I have had no fire fang and no waste. Whatever liquid flows from the heap, I take care to have thrown back again over it, and thus all is saved. Yours, &c.,

R. L. DENISON.

Dovercourt, April 9th, 1861.

Wheat and other Grain in Drills.

MESSRS. EDITORS AGRICULTURIST.—Will you or some of your readers tell me how grain should be sown in drills—and how wide should the drills be apart? 2nd. How wide should the kernels be apart in the drill? 3rd. How deep should the seed be put in the ground. And what difference should there be in the breadth of the drills, and number of kernels, say, to the foot in the drill, between wheat, oats, barley, and peas? By answering these few questions you will oblige, Yours, &c.,

April, 1861.

A. FARMER.

[Grain Drills are usually made to deposit the seed in drills ten inches apart; sometimes more or less; some drills admit of adjustment to sow wider or less distances; but generally ten inches is considered an advantageous width. The distance apart of the kernels in the drills will of

course depend on the quantity sown to the acre, and the size or plumpness of the grain. A bushel of wheat is estimated to contain from 700,000 to 800,000 grains. An acre of land contains 52,272 feet in length of drills at ten inches apart. This at the rate of a bushel of wheat to the acre would give an average of about 15 grains to the foot in the drill, and other quantities and kinds in proportion. From three to four inches would be a suitable depth to deposit any of the seeds above mentioned.—Eds.]

Take Care of your Cattle and your Meadows.

EDITOR OF AGRICULTURIST.—Allow me, through your excellent paper, to say a word or two to my brother farmers.

At this season of the year, when the grass is young and tender, do not yield to the temptation to let your sheep and cattle go on your meadows and fields while you are giving them hay and other dry food; all they can get for some time to come will only scour and weaken them, as well as cause them to dislike and spoil their good food.

Besides this, they will seriously injure the soil by trampling on it while wet. Moreover, they will bite out the very heart of the young plant, and thereby not only keep back its growth; but materially lessen the quantity of the future crop. A word to the wise is sufficient. S. KING.

Ryckman's Corners, April 8th, 1861.

The Agricultural Statute.

The following are the amendments adopted by the Board of Agriculture of Upper Canada, at their meeting in Toronto on the 13th and 14th ult., to the "Act respecting the Bureau of Agriculture and Agricultural Societies," 22 Vict. cap. 32, Consolidated Statutes, to be submitted to the Legislature for incorporation in the law.

The several sections mentioned to be amended as subjoined. In order to show distinctly the alterations proposed to be made, the words inserted or changed from the present reading of the Act are here printed in Italics:—

XIII. It shall not be lawful for either of the said Boards to pay or allow any sum to a Member thereof, for acting as such Member, except the amount of his actual necessary expenses in attending the regular meetings of the Board; but each of the said Boards may appoint a Se-

cretary from among themselves or otherwise and may pay him a reasonable salary for his services, and the Treasurer of the Agricultural Association shall be *ex-officio* Treasurer of the Board of Agriculture.

XV. It shall be the duty of the Boards respectively:

1. To receive the Reports of Agricultural Societies, and before granting the certificates hereinafter mentioned, to see that they have complied with the law;

2. To take measures, with the approbation of the Minister of Agriculture, to procure and set in operation a model, illustrative or experimental farm or farms in their respective sections of the province, and in connexion with any public school, college, or university, or otherwise, and to manage and conduct the same;

3. To collect and establish, at Toronto and Montreal respectively, an Agricultural Museum and an Agricultural and Horticultural Library, and to promote the knowledge and practice of the Veterinary Art;

4. To take measures to obtain from other countries animals of new or improved breeds, new varieties of grain, seeds, vegetables or other agricultural productions, new or improved implements of husbandry or new machines which may appear adapted to facilitate agricultural operations, and to test the quality, value, and usefulness of such animals, grain, seeds, vegetables or other productions, implements or machines,

5. And generally to adopt every means in their power to promote improvement in the agriculture of this Province.

XVII. The said Boards shall transmit to the Bureau of Agriculture a copy of their resolutions, By-laws or other formal proceedings, immediately after the adoption thereof, and at the commencement of each year a detailed statement of receipts and disbursements made up to the 31st December of the previous year;

2. And every resolution, By-law, or other proceeding of the said Boards respectively which may involve an expenditure of money to an amount exceeding ten pounds, shall not be passed except with the assent of a majority of the members thereof.

XXXIV. The members of the Boards of Agriculture and of the Boards of Arts and Manufactures, the Presidents and Vice-Presidents of all lawfully organized County Agricultural Societies, and of all Horticultural Societies, Incorporated Mechanics' Institutes and Arts Associations, and all subscribers of Five Shilling annually, shall, in their respective sections of the Province, be and constitute an Agricultural Association for that section.

XXXV. The Members of the Board of Agriculture and the Council of the Board of Ar-

and Manufactures, and the Presidents and Vice Presidents of County Societies, and of all Horticultural Societies, *Mechanics' Institutes and Arts Associations*, (or any two members whom a County or Horticultural Society, *Mechanic's Institute or Arts Association*, may appoint instead of its President and Vice-President,) shall be the Directors of such Agricultural Association; and it shall be lawful for the Agricultural Association to elect a Treasurer, and pay him a reasonable salary.

XXXVI. The said Associations may each hold an Annual or biennial Fair or Exhibition, which shall be opened to competitors from any part of the Province, and the said Directors shall hold a meeting during the week of the Exhibition and may at such meeting elect a President and Vice-Presidents, and appoint the place for holding the next meeting and Exhibition of the Association, and may make rules and regulations for the management of such Exhibition, and may appoint a local Committee at the place where such exhibition is appointed to be held, and prescribe the powers and duties of the said Committee.

XXXVII. The Board of Agriculture, with whom shall for this purpose be associated the President and Vice-President of the Board of Arts and Manufactures, or any two persons from time to time named by the said Board in place of such President and Vice-President, and one other member of the Council of said Board, to be elected annually by said Council, shall be the Council of the Association, with full power to act for and on behalf of the Association between the annual meetings thereof; and all grants of money, subscriptions, or other moneys made or appropriated to or for the use of the Association, (except money collected by or granted to any local Committee for the local expenses of an Exhibition) shall be received by and expended under the direction of the said Council, and the *President of the Board of Agriculture, and President of the Board of Arts and Manufactures shall be respectively ex-officio President and Vice-President of said Council, and the Secretary of the Board, together with the Secretary of the Board of Arts and Manufactures, shall be 'ex-officio' joint Secretaries of the Association.*

XXXVIII. All contracts and all legal proceedings by, with, or concerning the Association, shall be made and had with the *Council of the Association*, in its Corporate capacity, and no other contracts, agreements, actions or proceedings shall bind or affect the Association.

XLVIII. The said Societies shall hold their Annual Meetings on the *third Thursday* in the month of January, in each year, and shall at each Meeting, elect a President, two Vice-Presidents, a Secretary and Treasurer, and not more than seven Directors.

XLIX. The Presidents of the several Town-

ship Agricultural Societies, and also the Presidents of *Incorporated Mechanics' Institutes* receiving Government aid, and of Boards of Trade, (or any other person appointed by such Society, Institute or Board, in the place of such President,) within the County shall in addition to those before named, be 'ex officio' Directors of the County Society: Provided that each such Township Society and Mechanics' Institute shall have upon its list of members at least ten persons who are also members of the County Society, and paying not less than one dollar each, or that such Society or Mechanics' Institute shall otherwise have contributed ten dollars annually to the funds of the County Society; and the said Officers and Directors shall and may for the year next following the annual Meeting, and until the election of their successors, exercise all the powers vested in the County Society by this Act.

LI. The said Officers and Directors shall, in addition to the ordinary duties of management, cause to be prepared, and shall present at the Annual Meeting, a Report of their proceedings during the year, in which shall be stated the names of all the Members of the Society, the amount paid by each set opposite his name, the names of all persons to whom premiums were awarded, the amount of such Premiums respectively, and the name of the Animal, Article or thing in respect of which the same was granted, together with such remarks and suggestions upon the Agriculture and Horticulture of the County, and Arts and Manufactures therein, as the Directors shall be enabled to offer; there shall also be presented to the said Annual Meeting, a detailed statement of the receipts and disbursements of the Society during the year, which Report and Statement, if approved by the meeting, shall be entered in the Society's Journal, to be kept for such purposes, and signed by the President or a Vice-President as being a correct entry; and a true copy thereof certified by the President or Secretary for the time being, shall be sent to the Board of Agriculture, on or before the first day of *March* following.

LV. The said Societies shall hold their Annual Meeting on the *second Thursday* of the month of January in each year, and shall elect a President, Vice-President, Secretary and Treasurer, and not fewer than three or more than nine Directors.

LVI. The said Officers and Directors shall prepare and present to the Annual Meeting of the Society, a Report of the Society during the year, in the same manner as hereinbefore directed for County Societies, and containing information under the same heads; and shall transmit a true copy thereof, certified by the President or Vice-President, to the Secretary of the County Society, in time for the Annual Meeting thereof on the *third Thursday of January*.

LVIII. Whenever the President and Secretary of the Board of Agriculture shall certify to the Minister of Agriculture that any County Society has sent to the Board Reports and Statements as required by this Act, for the year then last previous, and shall also certify that the Treasurer or other Officers of the said Society has *on or before the first day of July of the then current year*, transmitted to the said Board an Affidavit, which may be in the form of Schedule B to this Act annexed, and may be sworn to before any Justice of the Peace, who is hereby authorized to receive the same, stating the amount subscribed for that year and paid to the Treasurer of the County Society by the Members thereof, and by the several Township Societies of the said County, it shall be lawful for the Governor of this Province to issue his Warrant in favor of such County Society for a sum—&c., as in Act.

LIX. The following Electoral Divisions, namely:—the city of Toronto, the city of Kingston,—the city of Hamilton,—the Town of Brockville,—the town of Niagara,—the town of Cornwall,—the city of London,—and the city of Ottawa, as bounded for purposes of representation in the Legislative Assembly,—shall each be entitled to receive a sum not exceeding four hundred dollars for the encouragement of Horticulture, Agriculture, Manufactures and works of Art within their respective limits :

2. Provided that a sum equal to not less than one third of the sum to be so paid by the Government, be subscribed and paid to the Treasurer of a Society to be formed within such Electoral Division, in the same manner as County Agricultural Societies under section forty-five of this act, to be called "The Society for the Upper Canada Electoral Division of—," or as the case may be.

LX. Every Township or Branch Society organized according to the Act hereby repealed, or to this Act, and sending a report of its proceedings to the County Society, as hereinbefore required, shall be entitled to a share of the grant to the County Society, in proportion to the amount which shall have been subscribed by the Members of such Township or Branch Society, and deposited with the Treasurer of the County Society, on or before the first day of May, in each year, as compared with the amounts so deposited by the other Township and Branch Societies of the County; and the sum so deposited by any Township or Branch Society shall be repaid, along with its share of the Public Grant, so soon as the said grant shall have been received by the County Society:

2. Provided that one half and no more of the sum so received by any County Society shall be subject to division among Township or Branch Societies—&c., as in Act.

The Influence of a first Impregnation.

In our issue of Jan. 5th in an article "A curious theory in the physiology of breeding" we hinted a possible, indeed a probable solution of the "cause of many of the disappointments of which practical breeders complain."

A writer in the *Southern Rural Gentleman* says:

"It has been asserted by some observers, that when a female breeds successively from several different males, the offspring often bears a strong resemblance to the first male, which is supposed to arise from certain impressions made on the imagination or nervous system of the female. Although this is sometimes or often the case, we doubt very much whether it is so frequent as to be considered as a rule.

Secretary Goodale's Report for 1860 says, "There can be no doubt such an impression is made, and demands the special attention of all breeders." With the most celebrated breeders of England it is fast becoming a settled opinion that the 'male first having fruitful intercourse with the female, exerts an influence upon her subsequent offspring by *other* males,' that it is not the result of chance or accident, but a fixed principle in the laws of re-production.

Such a strange and mysterious theory—one of great importance—is borne out by a great number of facts. A few of which we quote from Goodale's last Report.

In several foals in the royal stud at Hampton Court, got by the horse "Actaon," there were unmistakable marks of the horse "Colonel." The dams of these foals were bred from by Colonel the previous years.

Alexander Morrison, Esq., of Bognie, had a fine Clydesdale mare which in 1843 was served by a Spanish ass and produced a mule. She afterwards had a colt by a horse, which bore a very marked likeness to a mule—seen at a distance, every one sets it down at once as a mule. The ears are nine and one half inches long.

It appears to have been known among the Arabs for centuries, that a mare which has borne a mule, is ever after unfit to breed pure horses.

A pure Aberdeenshire heifer, the property of a farmer in Forgue, was served with a pure Teeswater bull to which she had a first calf. The following season the same cow was served with a pure Aberdeenshire bull, the produce was in appearance a cross-bred calf which at two years old had long horns; the parents were both hornless.

Six very superior pure-bred black faced horn ewes, belonging to Mr. H. Shaw of Leoch Cushnie, were served by a Leicester ram, (black faced and hornless.) The lambs were cross. The next year they were served by a ram exactly the same breed as the ewes themselves. To Mr. Shaw's astonishment the lambs were without an exception hornless and brownish

face, instead of being black and horned. The third year (1846) they were again served by a superior ram of their own breed, and again the lambs were mongrels.

A sow of the black and white breed became pregnant by a boar of the wild breed of a deep chestnut color. The pigs produced were duly mixed, the color of the boar being in some very predominant. The sow being afterwards put to a boar of the same breed as herself, some of the produce was still stained or marked with a chestnut color which prevailed in the first litter and the same occurred after a third impregnation, the boar being then of the same kind as herself. What adds to the force of this case is that in the course of many years' observation the breed in question was never known to produce progeny having the slightest tinge of chestnut color.

A young woman residing in Edinburgh, and born of white parents, but whose mother previous to her marriage bore a mulatto child by a negro man servant, exhibits distinct traces of the negro.

It is by no means an infrequent occurrence for a widow who has married again to bear children resembling her first husband.

A very striking fact may be related in this connection, which while it may or may not have practical bearing on the breeding of domestic animals, shows forcibly how mysterious are some of the laws of reproduction. It is stated by the celebrated traveler, Court de Strzelecki, in his physical Description of New South Wales and an Dieman's Land. "Whenever," he says, "a fruitful intercourse has taken place between an aboriginal woman and an European male, that aboriginal woman is forever after incapable of being impregnated by a male of her own nation, though she may again be fertile with a Euro-
pean."

A reliable farmer related to us a remarkable instance within his own observation in proof of the influence of a first impregnation, we repeat in language, "For many years my father was possessed of a breed of cattle which he called the *belly stripe*—the cattle were black with the exception of a stripe of white around her body.—When the first Durham bull was introduced into our own one of the belly stripe cows was put to him, with the expectation of obtaining a calf resembling the bull, but to our great disappointment the calf, a heifer, was a *belly stripe*. I raised the calf—when two years old she was mated by a Durham bull and produced a calf resembling the likeness of the bull. She was afterwards served by a belly stripe bull *but the calf was a Durham.*"

Such instances as those already given which might be multiplied to an indefinite number cannot be the result of impracticable vagaries or of fanciful imagination—but are of so marked a character as to deserve and demand a candid and thorough investigation.—*Eastern Farmer* (June.)

Agriculture: Its Past, Present, and Future.

(Continued from page 202.)

What Modern Agricultural Progress owes to Manufactures.—Let us ask how it is that within the last seventy years agriculture has made such enormous strides as compared with its former history? The answer is ready and simple. We have become the workshop of the world; nearly nine-tenths of our population are engaged in, or dependent upon, manufactures, commerce, trade, and other occupations, non-agricultural; whilst this once purely agricultural people represent now only one-tenth of the national population. Agriculture owes nearly its all to the spinning-jenny, the power-loom, the mule, and the thousands of new inventions and new occupations of modern times. Mighty steam pours into the national lap the estimated labours of a supposed population equal to that of the whole world. The well-to-do and multiplied millions—under ground, above ground, on the broad waters, and on the busy rail, make greedy and unsatisfied demands on the British farmer, who, shame to say, helpless and powerless, is unable, because unwilling, to respond to the call. Like a negligent shopkeeper, he compels his best customers to deal with and strengthen his competitors' hands over the water. Is there one agriculturist who can still harbor in his mind a lurking belief that his own interest is opposed to that of trade, commerce, and manufactures? If so, let him sweep away, in his imagination, the towns, and cities, and factories, the iron and coal mines, the railways, and mercantile fleets; and let him fancy himself, like the ancient Briton, a producer with no other customer than himself, his lord, his warriors, and his governors.

There was a time when Agriculture cast a jealous and disapproving eye on Manufacturers, but I trust intelligence has removed it. It is precisely because the British farmers have their customers—the British manufacturers—almost at their doors, and that other corn-producing countries have not any manufacturers, that British agriculture is more rich and thriving. The larger the population employed in manufacturing for foreigners, the better for the English farmer and the English landlord; for no doubt the latter will always participate largely in the farmers' well-doing. Farmers and country gentlemen sometimes look with an unkindly eye on apron-string farmers or cotton lords; but this should not be.

How the Commerce of Towns contributed to the Improvement of the Country.—The increase and riches of commercial and manufac-

turing towns contributed to the improvement and cultivation of countries to which they belonged, in three different ways. First, by affording a great and ready market for the rude produce of the country, they gave encouragement to its cultivation and further improvement. This benefit was not even confined to the countries in which they were situated, but extended more or less to all those with which they had any dealings. To all of them they afforded a market for some part either of their rude or manufactured produce, and, consequently, gave some encouragement to the industry and improvement of all. Their own country, however, on account of its neighborhood, necessarily derived the greatest benefit from it; its rude produce being charged with less carriage, the traders could pay the growers a better price for it, and yet afford it as cheap to the consumers as that of more distant countries. Secondly, the wealth acquired by the inhabitants of cities, was frequently employed in purchasing such lands as were to be sold, of which a great part would frequently be uncultivated. Merchants are commonly ambitious of becoming country gentlemen, and when they do, they are generally the best of all improvers. A merchant is accustomed to employ his money chiefly in profitable projects; whereas a mere country gentleman is accustomed to employ it chiefly in expense. The one often sees his money go from him, and return to him with a profit; the other, when once he parts with it, very seldom expects to see any more of it. Those different habits affect naturally their temper and disposition in every sort of business. The merchant is commonly a bold, a country gentleman a timid undertaker. The one is not afraid to lay out at once a large capital upon the improvement of his land, when he has a probable prospect of raising the value of it in proportion to the expense: the other, if he has any capital, which is not always the case, seldom ventures to apply it in this manner. If he improves at all, it is commonly not with a capital, but with what he can save out of his annual revenue. Whoever has had the fortune to live in a mercantile town, situated in an improved country, must have frequently observed how much more spirited the operations of merchants were in this way than those of mere country gentlemen. The habits, besides, of order, economy and attention, to which mercantile business naturally forms a merchant, render him much fitter to execute, with profit and success, any project of improvement. Thirdly, and lastly, commerce and manufactures gradually introduced order and good government, and with them the liberty and security of individuals, among the inhabitants of the country, who had before lived almost in a continual state of war with their neighbors, and of servile dependenc; upon their superiors. This, though it has been the least observed, is by far the most important of all

their effects. Mr. Hume is the only writer who, so far as I know, has hitherto taken notice of it."

The Effect of a new and Extensive Gold Finding affects the "price" of agricultural produce, if not its "value," as shown by the following extract from Doubleday's "Financial History of England," and, no doubt, is doing so now:—"The grand alteration in the value of the precious metals, and, of course, of money along with them, to which I would refer the reader, is that which took place in about thirty years after the discovery of America, by Columbus, in A.D. 1492. The reign of Henry VIII. commenced in A.D. 1509. Before he had reigned twenty years, the conquest of Mexico and Peru had been completed by the Spaniards; and the Portuguese were busy in the Brazils, which they ultimately overran and subdued. From that time—that is to say, from the early part of the reign of Henry VIII., gold and silver continued to be poured into Europe, in unprecedented plenty throughout the period comprised in the sixteenth and seventeenth centuries, causing a continually growing circulation of money and a rise of prices in all commodities over all Europe, for which men were puzzled how to account, and which began to be sensibly felt in England about the middle of Henry's reign. This was the first time that men had witnessed the phenomena of a huge accession, all within a few years, to the precious metals then circulating; and to those living at the time the whole was a puzzle and a mystery. The enhanced prices were in England wholly attributed to monopoly, to hoarding, to forestalling, to large farms—to any cause but the true cause, which true cause was the lowering of the value of gold and silver, by the discovery of the rich mines of Mexico, Peru, and ultimately of the Brazils. To prove, then, the real effect of the vast and rapid addition to the circulating medium, we have only to take a bird's eye view of the prices before and after the event. Let us begin with wheat. The following is extracted from Adam Smith's "Wealth of Nations":—"Prices of wheat before and after the opening of the American mines; Average, A.D. 1423 to 1451, 10s. 7d. per quarter; 1453 to 1497, 8s. 5d.; 1459 to 1560, 9s. 2d.; 1561 to 1601, 4l. 5s.; 1595 to 1636, 50s.; 1637 to 1700, 5l. 3d." Here we see that during the period between 1560 and 1601, a space of forty years, the average price of wheat has grown five-fold. And that grain was scarce during those forty years but because, throughout the whole of them, the precious metals kept pouring into Europe from Peru and Mexico, with a rapidity almost incredible. To show that the same effects were produced upon the prices of all sorts of merchandise and commodities, I subjoin a curious document, extracted from Drake's "Economicum:"—

Table of Prices.

Prices proclaimed at York, 1393.		Prices at York in 1733.	
£	s. d.	£	s. d.
Strong Beer, per gal.	0 0 15	Strong Beer, per gal	0 2 0
Milder sort,	0 0 1	Mild Ale.	0 1 0
Finest Claret Wine.	0 0 8	Best Claret.	0 17 0
All Common White		White Port.	0 8 0
Wines, per gal.	0 0 6	Red Port.	0 8 0
Wines finest Beef.	1 0 0	Choice car of Beef.	9 10 0
Next Best.	0 14 0	Next Best.	8 0 0
Witch Kyle Ox car.	0 13 0	Scotch Kylee	4 4 0
Witch Cow.	0 10 0	Cow, ditto.	3 0 0
Carass of Mutton,		Carass of Mutton,	
best.	0 1 8	best.	1 10 0
Ditto, worse fed.	0 1 6	Ditto, worse fed.	1 0 0
Carass of Fine Veal.	0 2 6	Carass of fine Veal	1 6 0
Woolher sort, ditto.	0 1 6	Another sort, ditto.	0 15 0
Lamb.	0 0 8	A Lamb.	0 12 0
fat Pork Hog.	0 3 4	A Fat Pork Hog.	2 10 0
Smaller Pig.	0 3 0	A Smaller Pig.	2 0 0
Capon.	0 0 4	A Capon.	0 1 9
Hen.	0 0 1 1/2	A Hen.	0 0 9
fat Goose.	0 0 4	A fat Goose.	0 2 0
car of Pigeons.	0 0 3	A doz. Pigeons.	0 1 3
Woodcock.	0 0 1 1/2	A Woodcock.	0 0 9
Teal.	0 0 1 1/2	A Teal.	0 0 9

she will soon have at least a million of horse-power. I speak practically and guardedly on this matter. Every farmery of 100 acres will, for the purpose of cultivation and general manipulation, require four-horse power. If 100 acres require four-horse power, sixty millions of acres will require 2,400,000 horse power.

The Topography of our Farms inflicts a Gigantic Charge on Farm Produce.—It is singular that, whilst 1,400 years ago the civilized Romans left with us indestructible examples of facile intercommunication by broad and well-made roads, straight as the flight of an arrow, we content ourselves with perfect contortions in our roads and lanes. To sit down and calculate in detail the loss occasioned by these deviations from rectitude, would produce an alarming and astounding aggregate. But how is this now to be remedied? No one will attempt the task with our present cumbrous, costly, and ridiculous mode of transfer; and so one item, or rather one means, of a successful competition with foreign production is debarred from us. The financial history of the cost of a quarter of wheat, in all its details, would afford an instructive and profitable lesson, and would exhibit a biting satire and a severe rebuke. It would humble our agricultural pride, and would show that we cannot, as agriculturists, stand the test of commercial criticism. When I say this, let it be understood that I especially refer to the duties and shortcomings of landowners, who, being principally our law-givers, have the power (if they choose to exercise it) of amending the laws of Conveyancing. Assuming that the frequent removal of heavy steam engines and machinery from one part of the farm to another, or from one farm to another, will render necessary temporary railroads, or very improved public and farm roads, it becomes of the utmost importance on the score of economy, that our agricultural topography should be amended. A farm of 640 acres would fill one square mile—the buildings being central and the road straight, every portion would be readily accessible; but if a survey were to be given to us of the existing topography of every farm of that size, it would reveal a barbarous waste of means intolerable in this age of practical economy.

Rarey on the Training of Horses.

The education and training of horses, (we purposely avoid the word, "breaking" in popular use,) is an art similar in kind in many respects, to that of educating and training children and youth. In regard to both, children and colts, it is essential to success, that two points be well established, viz., the superiority of the master and his uniform kindness toward the child or the colt to be educated and trained for service or usefulness. With regard to both there will be found as there has been, a great diversity of capacity

The Present and Past Condition of Agriculture in its relation to Manufactures.—Agriculture enjoys great privileges and advantages now, in comparison with former times. The skill, capital, and enterprise of our manufacturers, aided by that great invention steam, has raised up an enormous population of customers non-agricultural, placed at the disposal of agriculture cheap and abundant clothing, as well more perfect and less costly implements of agriculture. In 1487 three-quarters of corn were given for one yard of fine broadcloth; now a quantity obtainable would be near eight bushels; nobody wore knitted stockings until Queen Elizabeth's reign. She is said to have been the first person in England to wear them. She received them as a present from the Spanish ambassador. We all know that our ploughs and other agricultural implements harmonize in reduction of price with our cheap cotton and woollen manufactures. The village Church on the Sabbath presents the pleasing pattern of elegance and cheapness. The wife and children of the agricultural labourer, whose daily wages represent the value of one bushel of flour, are clad in colours, patterns, and qualities that convince the observer how much agriculture owes to the science and skill of manufactures. The recent discovery of the sewing machine has multiplied by millions the powers of the seamstresses. But how has this been brought about? Not by an obstinate adherence to old customs, but by a recognition of the value of science, and by an availing of its powers. In this respect agriculture has much to learn from manufactures, and must be hasty to follow its example.

The Future of Agriculture must be based on a General Use of Steam Power.—This has been a manufacture what it is, and will make agriculture what it ought to be. At present we scarcely say that agriculture has used steam power, but she may now have 50,000-horse power:

and susceptibility for training. Some horses appear genial and good willed, quick to apprehend what they are wanted to do and show a readiness to do it: others are ill-willed, stupid and dull of apprehension. The same is true of children and youth. Hence a diversity of treatment is required from the teacher who undertakes to train either colts or children. The master who kindly appeals to the good qualities of his pupils and treats them with affection, if he has capacity, patience, persistence, and firmness, cannot fail of obtaining the highest success whether his learners be rational creatures or brutes. The docility of the animal is drawn out by kindness, without which but little can be effectively taught or communicated, whatever the capacity of the creature may be.

The elements of good government are knowledge, wisdom, firmness, patience, persistence, kindness and affection. Where these are found in exercise, combined with experience and observation, there is a good disciplinarian, whether his attention be turned to educating and training colts and steers, or boys and girls. Such a combination makes up what is called the law of love, as set over the law of force. We have all read the fable of the sun and wind in which is exemplified the triumph of mildness over that of force in disrobing a traveller of his cloak. What force could not do, genial gentleness soon effected. It is in the latter that the power of Mr. Rarey in horse-taming is found over that of the old-fashioned "horse-breaker," as formerly called.

The horse, like a child, soon becomes fond of those who treat him affectionately. Hence, harsh words and rough treatment are out of place in training colts to the harness or to the saddle. Having secured the confidence and fondness of the horse, man can do almost anything with him that he desires. It is important, therefore, to teach the horse what it is desired he should do and submit to. Mr. Rarey first shows the saddle to the colt rather than place it upon his back in a sly way as is often done. So of the harness. In this way, almost any horse may be taught to fear neither an umbrella nor drum, or anything else, that is at all common for the animal to see or hear. Mr. Rarey would have others do as he does himself, approach the horse gently with his eye full upon him when he is about to begin the work of taming the creature. Let the horse become accustomed to the touch of man. Handle his head and neck and limbs in a manner that betokens gentleness and kindness, perfectly devoid of fear and ill-will. Take up the foot of the animal, strap it up as indicated last week in an article on another branch of this subject, and in due time do the same with respect to the other fore-foot, and the animal will soon become tired of struggling, and will lie down and become submissive. Then continue to treat him with familiarity and

fondness handle the parts where he formerly showed the greatest unwillingness to be touched, and very soon he learns that there is nothing to fear from the touch of man. Show him the umbrella which he formerly feared, and the drum that excited alarm, and he very soon becomes fearless of both as has been too often demonstrated by Mr. Rarey and his disciples to admit of a doubt or a query. Thousands can testify to the truth of this as they can to the cure of kicking, or the sensitiveness of grooming about the ears or the hind legs, or the trouble in shoeing.

Cruiser, one of the worst horses ever known, has become, under this treatment, almost as docile as a lamb and as gentle as a child, doing the bidding of his master as if it afforded him the greatest pleasure.—This was a case that baffled all attempts of force as far as subduing the animal for use was concerned. Mr. Rarey, by kindness, has overcome the exceedingly irritable and bad temper of the beast, subjugated his viciousness and rendered him entirely docile. Let the cruel, rough, noisy "horse-breakers" ponder this new system of taming, educating and training horses, and one of the noblest of domesticated animals will be spared from that inhumane treatment of which the horse is too often the victim. The barbarous way of training colts and steers, which has been too often seen, must give way to this intelligent and humane mode of training them for usefulness upon the farm and the road. The dark age of man's cruel treatment of the horse, called "breaking," must pass away, and the system of kindly educating and training him take its place.

Says a modern English writer, there is not more noble and useful animal than the horse, and none more liable to hardship and ill-usage. Cruelty to animals,—a humiliating truth to Christendom to acknowledge,—exists mostly in civilized society, and civilized society "only require the existence of laws to protect brutes from inhumane treatment, to which they are often subjected in spite of humane law. The savage of the desert shows a humanity to the savage that serves him, and the most untamed even are seen to be most sensible of feeling towards the willing slaves of barbarians. In no case whatever should any cruelty be allowed in the working of horses. A gentle correction may be tolerated, but the unmerciful beatings them with whips, rods or sticks and the kicking of them with a heavy boot or shoe by the driver should be immediately checked, and if a ploye, he should be immediately dismissed, and if the owner, prosecuted and punished as the law provides. The farmer, or gentleman should make this rule known to those he employs to drive his horses. Conduct more reprehensible and disgraceful can hardly exist, or a feeling more degraded can scarcely be imagined than that of abusing the horse. In no point perhaps in the whole circle of agricultural economy

ould the master's authority be more vigorously exercised or more imperatively enforced. The offence is one that admits of no excuse but of fitness for the place, and being without palliation is, therefore, entirely unpardonable.

The secret of good government in the family, the school and the State, the nation, and in the able, alike, will be found in the distinct recognition and the unqualified acknowledgement on the part of the governed of the right of those in places of authority to exercise power and control over those, for the time being, who occupy subordinate relations. When and wherever this is the case, a well-ordered family or school is maintained. In all other cases, disorder and confusion prevail; for where no rightful authority or superiority is recognized, there will be no willing obedience, but a continual conflict and strife. How many families and schools is this the case to-day. The same is true of domesticated animals with regard to their keepers. Mr. Rarey's success, as we have already said, lies in his complete demonstration to the understanding of the over-sensitive or vicious horse, that it is in the power of the horsetamer and trainer. When satisfied of this the horse yields, and his education begins when he learns that man is his superior. Hence the willingness with which he obeys and serves his master; also the unwillingness to serve an inferior. In this view lies the secret of willing submission; also that of disobedience. Hence to our mind Mr. Rarey's system of horse-taming is based upon philosophical principles, which underlie all governments, whether human or divine, in regard to both man and beast.

Mr. Rarey gave a lesson on horse-taming on Friday evening week, and on Saturday afternoon, with as great success as heretofore. On Monday evening he gave a free entertainment the benefit of the hackmen and truckmen, which was largely attended. Mr. Rarey's lectures have been well attended, and his entertainments in the training of sensitive and vicious horses exceedingly entertaining and satisfactory to those who witness them. Truly may he be denominated the benefactor of the horse, the noble animal, so essential to the wants and necessities of man, and yet, and we regret to say is so often maltreated by his heartless owner or careless driver or groom. May we not hope for a brighter future has dawned for the equine world?—*Boston Cultivator*.

Kohl-Rabi.

We take the subjoined article from the *Irish Times Gazette* of March 16th. This root has been growing in Canada on a small scale, but with the result we are not informed. Perhaps some of our readers who have tried it will favor us

with their opinions. The seed, we presume, can be obtained from our principal seedsmen.—
EDS.

Every intelligent farmer who knows the value of root crops, knows all that is injudicious to limit his cultivation of that important class of plants to one kind. Were it not for no other purpose than merely to spread the busy season over as wide a period as possible, so that there would not be too much to do at once, a diversity is desirable; but it is still more so from the fact that the effects produced on stock are greater when we have a diversity at command, than when we are confined to only one or two kinds. Some kinds of roots are good for one purpose, others for another purpose; some kinds are suitable for consumption at one period, others at a later period, and others again still later. Another advantage is that a variety of roots lessens the risk of loss of a supply of winter food from the failure—total or partial—of any one kind, and hence the judicious cultivator will not limit himself to one or even two kinds of root crops.

Believing, as we do, that root culture is of the most essential consequence, we proceed to describe briefly the cultivation of an extremely valuable variety of this class; it being necessary to commence operations at the present time, as will be seen in the course of the following remarks.

Although kohl-rabi has been partially cultivated for many years, especially in England and Ireland,* it is only of late that its value has become generally known, that is, comparatively so; because there are still many farmers, extensive growers of root crops, who are yet unacquainted with it. This plant is sometimes designated the "turnip-stemmed cabbage," the "Hungarian turnip," as well as other names; but its proper designation is that under which it was first introduced, viz., kohl-rabi.

There are eleven varieties in cultivation, those best suited for field culture being the Late Green or White Kohl-rabi, the Late Purple, the Oblong Purple, and the Giant Green Globe; the latter, recently introduced from Germany, being highly spoken of.

Kohl-rabi may be grown on any turnip soil, but it thrives best on heavy lands, even when these are of too stiff a nature for turnip cultivation. The preparatory operations during autumn and spring are the same as those for turnips, etc. A full supply—20 to 25 tons per statute acre—of farm-yard dung must be given, and the addition of light manures, containing a

* "In 1734 the kohl-rabi was first brought into notice in the field culture by Mr. Wynne Baker, the Secretary of the Dublin Agricultural Society."—Lawson. J. R. A. S. E., vol. 20.

considerable portion of phosphates—such as phospho-Peruvian guano, bones, superphosphate, etc.—is highly desirable. Salt is also a valuable auxiliary in the cultivation of kohlrabi, and it may be applied at the rate of 4 cwt. to 6 cwt. per statute acre.

Kohlrabi seed may be sown in the end of April or beginning of May, in the same manner as turnip seed; but the better plan is to grow the plants in a seed-bed; transplanting them when they are six or eight inches high into drills in the field. The seed-bed should be dry, and manured in autumn or during winter, and the place chosen should be a sheltered spot, open to the sun. In the end of February or during March sow the seed, in the bed, thinly in drills, 12 inches apart. This permits the use of the hoe afterwards, for the purpose of keeping the beds clear of weeds, as well as stirring the soil, which promotes the growth of the young plants. A second sowing may be made in the beginning of April, and a third sowing at the end of May or beginning of June. "A bed six yards square will afford sufficient plants for one acre (statute) of land; and 8 oz. of seed will be necessary for the seed bed"—(Lawson). The first sowing will be ready to be transplanted in May, the second sowing in June, and the third towards the end of July or beginning of August. The first sowing will be transplanted into part of the regular green crop break; the plants obtained from the others will follow vetches, etc.

About the beginning of May part of the green crop division will be prepared, drilled at 27 inches, and dunged with farm-yard manure and the auxiliaries we have mentioned. After the drills are closed a light roller should be passed along to level the tops. The plants will then be taken from the first sown seed-bed, and dibbled in about 16 or 18 inches apart along the top of the drills. Moist weather is best for transplanting. If "clubbing," or warts, each containing a small maggot, is found on the plants in the seed-bed—similar to the "clubbing" common on cabbage plants—it has been recommended to dip the stems, as the plants are lifted upon the seed-bed, in the following composition: fresh soot one gallon; powdered saltpetre, one pound; water being added "reduce it to the consistency of coal tar."

The plants obtained from the second and third sowings will not produce as heavy crops as that from the first sowing. It will be necessary therefore, when transplanting, to dibble in the late plants closer than in the case of the first sown. Those transplanted in June will be dibbled 14 to 16 inches apart, and those in July or beginning of August from 12 to 14 inches. The after cultivation consists in the frequent use of the horse hoe, until the leaves meet in the drills, with the hand hoe to stir the soil between the plants in the lines.

The leaves of kohlrabi are quite as valuable

for feeding purposes as the bulbs, and both "are about twice as valuable as ordinary turnips, and materially surpass the best swedes"—(Anderson). The plant also stands intense frost, and as it keeps well either stored or in the field, it is extremely valuable for spring use in the case of fattening sheep or ewes. It does not affect milk or butter when used as food for cows. If the plant is stored in November, like turnips, etc., the storing process need not proceed faster than the consumption of the leaves will admit, as it would be improper to waste the leaves, considering their value as food; whilst the frost-resisting properties of the bulb render it unnecessary to store early, merely for the purpose of saving the bulbs from damage.

Kohlrabi is relished by every description of stock. Sheep may be folded upon the crop where it grew, or the bulbs may be given them sliced in boxes; for cattle the bulbs require to be sliced or pulped, and steamed or boiled for pigs. Messrs. Lawson sum up the special features of kohlrabi in the following terms:—

"Its advantages over the swedes are, that cattle, and especially horses, are fonder of it; the leaves are better food; it bears transplanting better than any other root; insects do not injure it; drought does not prevent its growth; it stores quite as well or better; and it affords food later in the season, even in June."

Agricultural Intelligence.

Carrot and Spring Wheat Matches of the United Agricultural Societies of York Township.

At a meeting of the members of this Society held at Eglington, January 31st last, it was resolved,—

That a Match or trial of skill in the cultivation of the Belgian Carrot be held this year, open to the surrounding Townships; the quantity of land to be one-quarter of an acre, under the control of the Directors.

Persons wishing to compete at the Carrot Match shall each pay the sum of \$3 on or before the 1st May next ensuing, and the same shall constitute him a member of the Society for that year. It was also resolved,—

That a Match in Spring Wheat, not less than two acres, be held under the auspices of the Society this year, open to the surrounding townships.

Persons not members of the Society, wishing to compete at the Spring Wheat Match, shall pay the sum of \$3 on or before the 1st May, and the same shall constitute him a member for the year. Those already members to pay a sum of \$2 each.

Provincial and State Shows for 1860.

Canada West, at London,	Sept. 24, 25, 26, 27
Illinois, at Chicago,	Sept. 9, 10, 11, 12, 13, 14
Iowa, at Iowa City	Sept. 21, 25, 26, 27
Kentucky, at Louisville,	Sept. 17, 18, 19, 20, 21
New-York, at Watertown,	Sept. 17, 18, 19, 20
Oregon,	Oct. 1
Wisconsin,	Sept. 23, 24, 25, 26, 27, 28
Wisconsin Agricultural and Mechanical Association, at Milwaukee,	Sept. 2, 3, 4, 5, 6

COUNTY AND TOWNSHIP SPRING SHOWS.—We have notice of the following Shows to take place this Spring:—

West York, with York, Vaughan and Etobicoke Townships, at Weston, April 24th.

North and south Wentworth and Hamilton city Horse Show, at Hamilton, April 25th.

Whitchurch, Show and plowing match, on the farm of Mr. Israel Clubin, 5th Con., April 24th.

West Gwillimbury, at Bond Head, April 25th.

East York, Scarboro and Markham, at April 25.

North York Riding and King Township, on the farm of Mr. Joel Lloyd, Yonge Street, 23rd April.

London Township, at Montgomery's Hotel, London 23rd April.

Haldimand County, at Cayuga, April 25th.

Rainham, at Rainham Centre, April 18th.

Walpole, at Haurant's Tavern, April 24th.

Seneca, Oneida and Cayuga, at York, Grand River, April 26th.

South Wellington and Guelph Township, at Guelph, May 1st.

Horticultural.

Dwarf Trees.

TO THE EDITOR OF THE AGRICULTURIST.—In our last number Dr. Beadle asks for some information respecting dwarf apple trees, from those who have had practical acquaintance with them. Eight or ten years ago, I imported from England a quantity of Paradise stocks, and grafted many of the largest as soon as they arrived and put them in the ground. The tops

that were cut off were planted as cuttings, and grew up freely. In a few years I planted them out about two feet apart each way, expecting soon to have beautiful little bushes loaded with fruit according to Horticultural books on the subject; but in about two years I found they grew so freely that I had to transplant every other row, and every other tree in the row that were left. They are now very handsome bushes, branching out close to the ground, and many of them eight or nine feet high, but many of them have not yet borne fruit. In pursuance of Downing's advice in his work on fruit many were grafted with Northern spy, expecting an early supply; but my experience is that apples on Paradise neither bear sooner nor make smaller trees than on common apple stocks. If I wanted more dwarf apples, I should be quite indifferent whether I used Paradise or common apple stalks, but I should graft them with Hawthorn dean, Keswick Codlin, or Duchess of Oldenburg, and train them as bushes; but for most situations I should prefer stems from 1 foot to 6 feet, according to the climate and the situation (whether orchard or garden) for which they were intended. I may observe that the Paradise stocks are much better rooted than common stocks, and of course the trees bear much better, whether they will be as lasting I cannot say.

My experience with dwarf pears is something the same. I find my pears upon quince grow faster and more luxuriantly than on pear stalks, but I get fruit about as soon upon pear stalks, about the third year from the graft. My soil is a warm dry gravel, likely to promote early productiveness rather than otherwise. Perhaps I had better add, that I have neither Dwarfs nor Standards of either apple or pear for sale, but am raising both solely for my own use.

JOHN ATKINS.

Near Fonthill, C.W., 4th of 4th mo. 1861.

The Garden.

In dry, warm soils the putting in of garden crops is usually preceded with in this month, but the present backward season will throw much of the work into May. The ground should be dug and manured as soon as the weather will permit, but it is not advisable to sow the crop till both soil and air have attained to a suitable state of warmth and dryness. Peas, early potatoes and summer cabbage, spinage, salsify, onions, lettuce and radishes, require the best attention of the gardener, afterwards come carrots, parsnips, late cabbage, beans, beets, &c. Among permanent crops, may be mentioned,—asparagus, rhubarb, sea-kale, parseley, thyme,

sage, and the different kinds of pot and domestic herbs. The flower garden should now be got into order, and prepared for sowing the various kinds of annuals, &c., and transplanting flowers, as the season for all these operations is now at hand.

We take the following brief directions for cultivating a few of the more ordinary garden crops and the varieties adapted to this climate, from the Descriptive Catalogue of Mr. J. Fleming, seedsman and florist of this city:—

ASPARAGUS.—Large Giant.

Asparagus beds should be well drained by a layer of stones, oyster shells, or bones, on which lay brushwood cuttings and some turf. On this make the bed of sandy loam, stable manure, and coarse sea or river sand, (but avoid yellow or brown sand containing iron.) Lay this on the drainage bottom two feet thick, then put the roots on it, in rows eighteen inches apart, and a foot apart in the rows, cover four inches with same compost. Before winter cover the bed with leaves and manure about four or six inches. In spring, fork in the manure slightly and give a good dressing of salt.

ENGLISH BROAD BEANS.—Broad Windsor, Early Mazagan, Monarch Long Pod.

Broad or Windsor Beans do not succeed well in this climate, the summer heat coming on them before they are podded, which causes the blossoms to drop off. The best soil to grow them is a rich stiff clay, and on a northern border, shaded from the mid-day sun. Sow in drills two feet apart, the drills two inches deep, and the seeds three inches apart.

DWARF OR SNAP BEANS.—Dwarf Yellow six weeks, Dwarf White Speckled, Dwarf Red Kidney, Dwarf Black Speckled, Royal Dwarf, Dwarf China, Pink Eye.

Kidney or French Beans may be planted any time in May, in drills, two inches deep, the beans two inches from each other, the drills about eighteen apart. If a regular succession is required, sow a few every few weeks from the 1st of May to the 1st of July.

RUNNING OR POLE BEANS.—Lima or Butter Beans, Scarlet Runners, Case Knife, Red Cranberry.

All described under this head require poles eight or ten feet long. They are planted at the same time with the dwarf beans, and, like them, require a warm mellow soil. Stick the poles three feet apart each way, raise a hill, and plant around them six or seven beans; cover one inch deep with light, mellow earth.

BEEF.—Long Smooth, Extra Long, Long Blood, Early Turnip-rooted.

Blood Beet, Long and Turnip, may be

sown in a good, rich, deep soil, about the first week in May. Draw drills about a foot apart, and one inch deep; sow moderately thick, when the plants are up strong, thin them out the distance of six inches from each other in the rows.

BROCCOLE OR GREENS.—German Greens, Scotch Greens.

This is the general term for that class of cabbage tribe which do not head, but are used for greens in their open growth. Sow in seed-bed about the middle of May, and when of suitable size transplant to eighteen or twenty inches apart each way, and cultivate like cabbages.

BROCOLI.—Early Purple Cape, Early White Cape, New Walcheren.

CAULIFLOWER.—Early London, Extra Early French, Late French, Half Early Paris.

Brocoli and Cauliflower require a deep rich soil, of a clayey nature and highly manured. To produce early cauliflower or brocoli, the seed ought to be sown in a hot-bed early in March. When the plants are quite strong and hardy they may be planted out in the garden about the middle of May. Plant in rows two feet square. The kinds that will do well in this climate are the Early London and French Cauliflower, Purple Cape and Walcheren Brocoli.

CARROT.—Early Scarlet Dutch Horn, (for forcing,) French Horn, Long Orange, Fine Selected Altringham, Early Horn, Half Long Scarlet, Red Altringham, Red Surrey, White Belgian (for field culture.)

The most suitable ground for growing carrots is a deep, rich soil, that has been well manured the previous year. Sow any time in May, in drills one foot apart and one inch deep. When the carrots are up, thin them out four inches apart, and keep the ground free from weeds. The kinds that are generally sown in gardens are the Early Horn, Long Orange, and Red Surrey; for field culture the White Belgian and Altringham. The produce of one acre of field carrots, when properly cultivated, may be rated at from 800 to 1000 bushels. In cultivating them on the field system, the drills ought to be two feet apart, and the carrots thinned out at least twelve inches asunder.

CABBAGE.—Early York, Sugar Loaf, Winningstadt Large Early Summer, Shilling's Queen (new,) Late Quintal, (new and fine,) Early Dutch (new and fine,) Large Drumhead, Red Dutch, for pickling Savoy Marcilen, (new,) Large Cabbage Savoy, Large York, Early Battersea, Atkins, Matchless, (new,) Enfield Market, St Dennis (new and fine,) Flat Dutch, Savoy Green Curled, Savoy Cattle's (new.)

Cabbage, both early and late, may be sown any time in May. The best situation for raising the plants is a rich, damp piece of

ground, partially shaded. Seed sown in a situation of this kind is not so subject to be destroyed by the black flea. When the plants are strong they may be planted out in rows and managed the same as directed for cauliflower. The best kinds for summer use are the Early York, Large York, and Winingstadt; for winter use the Drumhead, Flat Dutch, Quintal, and St. Dennis.

CELERY.—White Solid, Seymour's Superb, Cole's New Crystal, Red Solid, Cole's Solid Red, Cole's White, (superb.)

This vegetable is much esteemed as a salad. It requires considerable attention to grow it to perfection. To have early celery, the seed requires to be sown in a hot bed in the month of March; for winter celery, the seed may be sown any time before the middle of May. Sow on a small bed of fine rich earth—beat the bed down with the back of the spade; sift a little fine earth over the seed; shade the bed with a mat or board until the plants begin to appear. Celery plants ought to be picked out into a nursery bed as soon as they are two or three inches high. Cut the roots and tops a little before planting; water them well and shade them from the sun until they begin to grow. Let them remain in the nursery-bed about one month, after which they will be fit to transplant into the trenches. The best sort of soil to grow celery in is deep rich loam, and in an open part of the garden. Mark out the trenches a foot wide and three feet between each trench. Dig the trenches one foot deep, laying the earth equally on each side. Put three or four inches of well-rotted manure into the bottom of each trench; put a little of the surface soil over the manure; dig it well up, incorporate the soil with the manure; dress the plants by cutting off the long leaves and the end of the roots. Plant in single rows along the centre of each trench, allowing six inches between each plant. Water them well, and shade them from the sun until the plants begin to grow. In earthing up celery great care should be taken not to cover the heart of the plant.

CUCUMBER.—Long Prickly, Early Frame, Short Prickly, Long Ridge. Also, the following choice varieties for frames: Sir Colin Campbell, Manchester Prize, Sagg's Royal Exhibition, Five Fighter, Conquerer of the West, Lion House.

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

ENDIVE.—Green Curled, White Curled.

Is a hardy annual, cultivated principally for a winter salad. It is also used in

stews and as a garnish for the table. Sow from late in the spring to the middle of summer, in shallow drills fourteen inches apart; thin the plants to one foot in the drills, and, when fully grown, tie over the outer leaves of a few plants every week or fortnight, in dry weather, to blanch, which takes from one to three weeks. Draw up a little earth to the base of the plants. Rich, mellow soil in an open situation, is most suitable.

EGG PLANT OR GUINEA SQUASH.—The Egg Plant is a very tender vegetable, requiring a hot-bed to bring it to perfection. *Early Long Purple.*—The earliest and most productive. Fruit long and of superior quality. *Large Oval Purple.*—This variety is more generally cultivated. It grows to a large size, oval shape, and dark purple colour. There is a prickly and a smooth stemmed sort. The prickly grows the earliest, and the Smooth Stemmed is the earliest.

Sow in hot-beds early in the spring and transplant to two and a half feet apart each way, in very rich, warm ground. Draw earth to the plants as they advance. For the want of a hot-bed, the seeds may be sown in window pots early in the spring, or later, on a warm light bed, made in a sheltered part of the garden.

LEEK.—Large Flag.

Sow very early in spring, in drills six inches apart, and one inch deep. Thin out to one inch apart, when they are about seven inches high, plant them out in rows eight inches apart and as deep as possible not to cover the centre young leaves. Water them thoroughly if dry weather when planted out. Draw earth up to them as they grow. Require very rich soil. Take up and store away before winter.

LETTUCE.—Paris Coss, True Malta or Drumhead, Curled Silecia, Victoria Cabbage, Simpson's Early, for forcing.

Lettuce is easily raised from seed, which may be sown from the 1st of April to the end of June. If good headed lettuce is wanted, the plants should be transplanted out on a rich piece of ground in drills, twelve inches apart and six inches in the drill. The Malta or Drumhead and Victoria Cabbage are the most suitable kinds to sow, as they head without tying up.

ONION.—Large Pale Red, Large Yellow, Weathersfield Large Red, Danvers Yellow, Early.

The yellow and large red are the best for a general crop.—The ground for onions should be well prepared, by digging in plenty of well-rotted manure. The seed may be sown from the middle of April to the middle of May. Sow in drills one inch deep and twelve inches apart. When the young onions are up, thin them out to the distance of three inches apart.

PEPPERS.—Large Red, Cherry, Small Red.

Sow early in hot-bed, or in open ground in a seed bed, about the middle of spring, in a warm light ground. When three inches high, transplant to eighteen inches apart each way; hoe frequently.

PARSLEY.—Curled, Double Curled, Myat's Matchless, (for garnishing.)

Soak the seed a few hours in luke-warm water, and sow early in spring in drills an inch deep and one foot asunder. Thin out the plants to four inches apart. To preserve in winter, remove some plants and set them in a light cellar.

PARSNIP.—Dutch Hollow Crown, Long Smooth White.

Parsnips require a deep rich soil. Sow in drills, one inch deep, and the drills 15 inches apart. Cultivate the same as directed for carrots.

PUMPKIN.—Common Field, Mammoth, Cheese. May be planted in the middle of spring, amongst the Indian corn, or in the field or garden, in hills eight or ten feet apart each way, with four seeds in a hill. In other respects, are cultivated in same manner as melons and cucumbers; but avoid planting them anywhere near either of those.

PEAS, EXTRA EARLY.—Daniel O'Rourke, 2½ feet high, Early Frame, 4 feet high, Early Kent, 2½ feet high, Bishop's Long Podded, 1½ feet high. For general crop,—Champion of England, very fine, 4 feet high, Blue Dwarf Imperial, 2½ feet high, Harison's Perfection Dwarf White Marrow, 2 feet high, Harrison's Glory Dwarf Blue Marrow, 2 feet high, Napoleon's Dwarf Blue Wrinkled, 2 feet high, White Marrowfat, 5 feet high, Missouri Marrowfat, 3 feet high.

A light dry soil, not over rich, suits the pea. If they grow too vigorously and show no sign of bloom, run a spade along about eight inches from the row straight down, and thereby root prune them. Do this each side the row, and they will bloom in a few days. Plant as early as the ground can be worked, and again every two weeks for succession throughout the season. Plant in single or double rows from four to six feet apart, according to the different heights, about an inch apart in the row, and three inches deep; hoe often. In dry weather peas should be soaked in soft water five or six hours before planting, and if ground is very dry it should be watered in the hills.

RADISH.—Early Frame, (Wood's,) Scarlet Short-top, Long Salmon, Scarlet Turnip, White Turnip, Black Spanish, Rose Olive Shaped.

Radishes should not be sown in the open air, sooner than the middle of May. They require a deep sandy soil, that has been well cultivated and manured the previous year.

RHUBARB.—Scarlet, Giant, Myat's Victoria.

Sow in drills an inch deep. Thin out to six inches apart. In the Fall, trench a piece of ground and manure it well; then transplant the young plants into it, three feet apart each way. Cover wit leaves or litter the first winter, and a dressing of coarse manure should be given every fall.

SQUASH.—Acorn, Canada Crookneck, Winter Boston, Custard Marrow, Early Scollop, Summer Boston, Vegetable Marrow, Hubbard, (Winter.)

Plant in hills, as cucumbers and melons—the bush three or four feet apart, and the running kinds from six to nine.

SPINACH.—Round, Prickly.

Spinach is a useful vegetable, and very hardy. Seed sown in the month of September will stand during the winter, and come in for early greens in the spring. For summer use, seed of a round spinach may be sown from May to July. It requires a rich soil. Sow in drills one foot apart.

SALSIFY OR VEGETABLE OYSTER.

Salsify—is an excellent vegetable. The roots, when properly cooked, resemble oysters in flavor. The seed may be sown from the first of April to the middle of May. They require the same kind of soil and cultivation as directed for carrots.

TURNIP FOR GARDEN CULTURE.—Early White Stone, Early Yellow Maltese, Golden Ball, Early Snow Ball, Orange Jelly, Yellow Alteringham.

Sow from the middle of May to the middle of August.

Facts to be Remembered.

To take time by the forelock in everything which relates to gardening, and never omit what ought and can be done to-day, till to-morrow. It is hard to catch up in gardening when once behind.

To choose the best seeds to be had, and if possible to obtain them from responsible seedsmen.

Never to buy *cheap seeds*, because they cost less. They may be the *dearest* in the end.

To select the best implements, brand them with your name and never let them get *rusty*.

To stir the soil often during drought to prepare it more readily to receive and retain moisture from the atmosphere, and to prevent the plant from being stunted in growth.

Never to work the ground when it is wet and heavy. It renders it compact and lumpy during the whole season.

To perform everything in the best manner, and to complete one operation before commencing another.

Never to suffer weeds to encumber the growing crop, or to go to seed; nor allow any sort of trash to remain in the alleys or plots to mar the neat and clean appearance of the garden.

"Plough thorough and deep, while sluggards sleep,
And you shall have corn to sell or to keep."
Poor Richard.

FLOWERS.—The body and the spirits are alike improved by the cultivation of the garden. It offers an enjoyment for which no one is too high or too low. More grows in the cottar's plot than flowers: the cultivation of pansies may tend to his heart's ease; the bed of the thyme may speed a dull hour; and kind thoughts spring up while watering the clump of forget-me-nots.—Everywhere the heart of man blesses flowers: the child seeks them in the hedges; the old man rests, in their culture and study, soothing recreation and delight; Pagan and Christian have used them in their rites; flowers deck the bride, and are strewn on the grave. In every country they smile around us; to every grade they offer enjoyment; they give additional beauty to the royal palace; they lovingly shroud the decaying in. Babylon had its hanging gardens; Greece, roses and lilies—

"*Lilia mista Rosis;*"

and Rome its box-trees cut into figures of animals, ships, and letters; to say nothing of its violets and crocuses. Our first parents, indeed, came into the world in a garden, and Milton makes Eve say, as amongst her griefs:—

"O Flowers,

yearly visitation and my last adornment, which I had bred up with tender hand from the first opening bud, and gave ye names, who shall rear ye to the sun, or rank our tribes, and water from the ambrosial fount?"
Builder.—

ASHES FOR "CLUB-FEET" IN CABBAGES.—A correspondent of the New-England Farmer has succeeded in raising fine cabbages, on old garden soil, where for sometime they have failed from "club-feet," by the use of wood-ashes.—When setting the plants, half a pint of wood-ashes as placed in each hill, and immediately in contact with the roots of the plants. Every one succeeded.

ERRANT BUSHES.—It is said that an application of air-slacked lime, in early spring, around errant bushes, preserves the foliage from the attack of the insect, which occasions the unhealthy and diseased appearance of curl in the veins.

INSTINCT OF PLANTS.—Hoare, in his treatise on the vine gives a striking exemplification of the instinct of plants. A bone was placed in the young dry clay of a vine border. The vine sent a leading, or tap-root, directly through the

clay the main root threw out fibres, but when it reached the bone it entirely covered it by degrees with the most delicate and minute fibres, like lace, each one sucking at a pore in the bone, like a litter of pigs at their dam as she lies down on the sunny side of the farm-yard. On this luscious morsel of a marrow bone would the vine continue to feed as long as any nutriment remained to be extracted. What wonderful analogies there are running through the various forms of animal and vegetable creation, to stimulate curiosity, to gratify research, and, finally, to lead our contemplations from nature, in a feeling of reverence, "up to nature's God."

As to the vine spoken of by Hoare, it is worthy of remark that the root went no farther than the bone, which it seemed to have literally smelt out, as would a hungry dog, in passing.

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

(Continued from page 190.)

LENNOX.

COUNTY SOCIETY.—One hundred and twenty-three members; amount of subscriptions, \$123; balance from previous year, \$37.93; deposited by townships, \$128.50; government grant, \$439.20; total received, \$728.63; paid for copies of Agriculturist, \$56; paid township branches, \$389; paid treasurer of local committee, Provincial Exhibition, at Kingston, \$250, expenses, \$31.87; balance in hand, \$176.

TOWNSHIP BRANCHES.

NORTH FREDERICKSBURGH.—Forty six members; subscriptions, \$50; balance from 1858, \$1.35; share of grant, \$90; total received, \$141.35. Paid premiums, \$90.75; expenses, 26.40; balance in hand, \$24.20.

SOUTH FREDERICKSBURGH.—Forty six members; amount of subscriptions, \$45.75; share of grant \$59; total received, \$104.75. Paid for Agricultural Journals, \$45.75; balance in treasurer's hands, \$54.

RICHMOND.—Thirty nine members; amount of subscriptions, \$69; balance from previous year, \$3.92; share of grant, \$111.50; total received, \$184.42. Paid in premiums, \$144.75; expenses, \$24.72; balance in hand, \$14.95.

LINCOLN.

COUNTY SOCIETY.—Two hundred and fifteen members; subscriptions, \$216; balance from previous year, \$188.38; deposited by

township societies, \$458; government grant, \$599.96; grant from County Council, \$150, special subscriptions and admission fees, \$32; total receipts, \$1644.34. Paid Township branches, \$817.70; premiums at fall and spring shows, \$537.25; expenses, \$85.23; balance in treasurer's hands, \$204.16.

TOWNSHIP BRANCHES.

CLINTON.—Seventy-three members; amount of subscriptions, entry fees, &c., \$125; share of grant, \$73; total received, \$198. Paid in premiums, \$176.25; expenses \$21.75.

GAINSBOROUGH.—Fifty-two members; subscriptions, \$52; grant \$40.87; total receipts, \$92.87. Paid in premiums, \$74.63; expenses, \$13.66; balance in hand, \$4.03.

GRANTHAM.—One hundred and sixty nine members; amount of subscriptions, \$173; balance from 1858, \$92.46; public grant, \$157; grant from Township Council, \$40; admissions, \$12; total received, \$474.46. Paid in premiums, \$456; incidental expenses, \$40; balance \$21.54.

LOUTH.—Fifty-two members; amount of subscriptions, \$53; balance from 1858, \$25.7; share of public grant, \$55.70; grant from Township Council, \$20; total received, \$131.27. Amount paid in premiums, \$102.13; expenses, \$14.25; balance in hand, \$14.89.

NIAGARA.

ELECTORAL DIVISION SOCIETY.—Ninety six members; amount of subscriptions 1858, \$140; do. 1859, \$120; government grant 1858, \$360; do. 1859, \$216; grant from Lincoln County Council, \$50, total received, \$886. Amount paid in premiums, \$378.25; expenses, \$195.04; balance in hand, \$312.71.

Extracts from Reports.

The Directors feel it a pleasing duty to be able to congratulate the Society upon the admirable displays made by the members, as well at the floral, fruit, and vegetable show held on the ninth day of July last, as at the subsequent general exhibitions held on the 20th September.

These shows were far superior, as well in the number of the entries, as in the quality and character of most of the articles exhibited, to anything ever before witnessed in this vicinity, and this fact is indicative of the existence of a spirit of emulation which deserves to be carefully fostered, for it not merely augurs well for the future prosperity of

the society, but serves to show that industry and enterprise are rapidly realizing the important fact, with all its beneficial consequences, that the Niagara electoral division is indeed the Garden of Upper Canada.

The superiority of our position, arising from advantages of soil and climate, have been most strikingly demonstrated during the past year. It was observed during the preceding winter, that the thermometrical observations recorded at Toronto, and other points to the northward and westward, showed the mercury at 10 to 15 degrees lower than it sunk with us at the same times, and while the frosts of last spring and the early summer in other parts of Upper Canada totally destroyed most of the fruit crops, the damage they caused in this division was so trifling as to be hardly worth mentioning. The beneficial results were experienced in the large quantities of peaches, plums, grapes, pears and apples, exported at good prices to Toronto, Montreal and other markets in Canada, some portion to the markets of the United States, and some to the Province of New Brunswick, and some even to Great Britain itself. Adding the quantity required for home use to the exports, a total of 30,000 barrels would show the fruit crop of this Division.

From the experience of one of the members of your Society, it seems probable that providing the Grand Trunk Railway and Montreal Steamers can arrange their freight tariff during the fruit season, so as to convey the products of our orchards from Toronto & Liverpool at a rate not exceeding a dollar and a half per barrel, our fruit-growers may look to Great Britain as their highest remunerating market.

From the experience of other members of the Society, it is demonstrated that grapes can be grown here for manufacture into wine on any scale of extent which may be considered desirable, and that the wine produced, in the hands of men versed in the processes of manufacture, will vie in quality with the best of imported articles.

The Directors feel it their duty to impart upon the members the benefits fairly to be anticipated from increasing the cultivation of marketable fruits, selecting the best sorts and most prolific bearers, and adapting the varieties to the most congenial soils; and they would also ask that experiments may be continued for the destruction of the curculio, &c.

for the extirpation of the disease which, under the name of "Black Knot," has so extensively affected plum trees of nearly all varieties, the results of such experiments, if serviceable, to be reported to the Secretary.

To the extension of the fruit crop, and to the cultivation of a greater variety of grains and roots than used to be the practice in former years, must we look for a mitigation of such a fearful calamity as we have suffered under for the four past years, through the depredations of our great staple, wheat, by the ravages of the midge.

By the last census return, this Division stood at the head of the county of Lincoln municipalities in the production of this grain. The annual production of the Township alone being reported at 62,970 bushels. In 1856 this crop was to a great extent destroyed by the insect; the farmers hoped the evil would pass away with the year, sowed their usual quantity of fall wheat, but only to find the destruction still more complete in 1857. In 1858 new crops were resorted to, and the injury and loss were less extensive; and in 1859, by strenuous exertions on the part of the farmers, blessed by Providence, great changes for the better have been effected, and farmers have ventured generally to sow a few acres of fall wheat each; the varieties selected being the Mediterranean, the improved sea stem, and the Kentucky white. The money loss sustained by this Division through the wheat midge alone, during the four past years, cannot be much less than 150,000 dollars, while the depreciation in real estate, through this and other causes, during the same periods, by far exceeds the sum stated, if men in all stations do not exert themselves in all possible ways to produce a better state of things, individual industry and exertions will be in vain. The community can only hope for better times so long as land will sell for more than 2½, while money produces but 20 per cent. per annum.

During the past year, spring wheat (the few seems to be the only variety which can be depended on in this Division) gave a fair average yield, and of good quality. Oats and barley, Indian corn, rye and chick-wheat, were all fair crops, and probably somewhat above the average. Hay was a short crop, but the price has made up for the deficiency in quantity. All green crops, potatoes, turnips, carrots, mangel wurzel, onions, and beans—were abundant, and although

the rot caused considerable damage among some varieties of potatoes, it did not prove so very injurious as was at one time anticipated. Frequent changes in the seed of this valuable root are strongly recommended.

From some experiments which the Directors have noticed, they see no reason why hops and tobacco may not be profitably cultivated, the soils in some portions of the Division being well suited to those plants.

It remains for the Directors to advert to the result of the experiments in the cultivation of hemp, and of the varieties of potatoes forwarded for distribution among the members of this Society by the Board of Agriculture, both of which topics were referred to in the last Annual Report.

With regard to the growth of hemp, the Directors cannot as yet speak with any certainty, little more having been accomplished during the year, than acquiring some practical experience, and obtaining a supply of reliable seed for next year, samples of which, together with the plant in its raw state, were exhibited at the general show, and attracted much attention. It is satisfactory to be assured that the gentlemen who have commenced experiments are determined to continue them until satisfied of the expediency of cultivating that particular plant.

The various samples of potatoes received from the Board were distributed among some of the members of the Society, who report the result as follows:

Mr. Gage J. Miller planted five varieties, none of which did very well, in consequence of the blight striking them, but seedling No. 2 did the best. He will try them again next year.

Mr. F. G. Nash reports as follows: Planted a quarter of a peck each, of five varieties—of seedling No. 1, the produce was three pecks, and it proved a rather poor potato; seedling No. 2 produced five pecks, quality good; "Lane's red" produced 4½ pecks, also of good quality; "Orkney red" produced 8 pecks, rather small, but a good boiler; Sussex white produced 5 pecks, but is a poor boiler.

Mr. F. M. Whitlaw reports—seedling No. 1, not worth cultivating; No. 2, a good bearer, and an excellent potato; Red Orkney, very prolific, but crop unsatisfactory both as to size and quality; Sussex white promised well, but lost the entire produce by rot, the disease affecting this more than any other variety grown in the same neighborhood.

Of sixteen varieties planted by your late President, his Honor Judge Campbell, no direct statement can be submitted. A memorandum has been obtained, showing that an accurate account had been kept, and the products stored away; possibly these may be had for further trial next spring.

An attempt has been made by a member of the Society to introduce "Winter Oats," this year from imported seed, the result of the experiment will be given next year, and it is hoped that it may prove satisfactory.

EAST MIDDLESEX.

COUNTY SOCIETY.—Two hundred and twenty one members; amount of subscriptions, \$236; balance from previous year, \$196.49; deposited by Township Societies, \$388.25; Government grant, \$479.98; rent of land, \$50; sundries, \$9.50; total received, \$1360.22. Paid township branches, \$675.55; premiums at Spring and Fall Shows, \$379; expenses, \$144.93; balance in Treasurer's hands, \$160.74.

TOWNSHIP BRANCHES.

NORTH DORCHESTER.—Fifty-four members; amount of subscriptions, \$61.50; balance from previous year, \$6.86; share of public grant, \$37.37; sundries, \$3; total receipts, \$108.73. Paid in premiums, \$77.25; expenses, \$12; balance in hand, \$19.48.

LONDON.—One hundred and four members; amount of subscriptions, \$138.40; balance from preceding year, \$10.81; Government grant, \$97.42; total receipts, \$246.63. Paid in premiums at Shows and plowing match, \$171.50; expenses, \$38.25; balance in Treasurer's hands, \$36.88.

WEST MISSOURI.—Sixty-three members; amount of subscriptions, \$68; balance from 1858, \$31.85; Government grant, \$71.04; sundries, \$3; total received, \$173.89. Paid in premiums, \$104.76; expenses, \$20; balance in hand, \$49.13.

WESTMINSTER.—One hundred and eight members; subscriptions, \$114.75; grant, \$81.21; total received, \$195.96. Paid in premiums, \$137; expenses, \$31.25; balance in Treasurer's hands, \$27.71.

WEST MIDDLESEX.

COUNTY SOCIETY.—Seventy-eight members; amount of subscriptions, \$87.50; deposited by Townships, \$395.20; Government grant, \$479.98; total received, \$962.

68. Paid township branches, \$682.90; paid in premiums, \$164; expenses, \$59.82; balance in Treasurer's hands, \$55.96.

Extracts from Report.

The west riding of Middlesex is traversed by the forty-third parallel of north latitude, and is formed by nine Townships, viz.:—Adelaide, Carradoc, Delaware, Ekfrid, Lobo, Mosa, Metcalfe and East and West Williams. It contains a population of about 40,000 souls. Four-fifths of the inhabitants of West Middlesex are engaged in the cultivation of the soil, which embraces almost every variety known in Canada, the prevailing description being clay of various degrees of stiffness.

West Middlesex contains, besides the ordinary varieties of timber common in Western Canada, black walnut, cherry, oak, pine, and rock elm; the latter variety is now available for the Quebec market, furnishing a new source of wealth. Staves, squared oak timber, walnut, cherry and pine lumber are valuable for exportation, and an increasing trade in these articles has been effected since the completion of the Grand Trunk and Great Western railways, both of which road run through the riding, and have proved a great value and advantage to its inhabitants. In this their first report, your Board considers it necessary to give a brief description of the several townships within the Society's limits.

ADELAIDE

Contains 45,137 acres; its settlement commenced in 1832; it has now over 56 names on the Assessment Roll, and a population of nearly 5,000 souls. The prevailing soil is stiff clay; only about 3,000 acres are sandy. The river Sydenham (or Bear creek runs through the south east—a part of the township, and the whole is well watered and heavily timbered with beech, maple, oak, birch, elm, bass and iron wood, some cherry, and a small quantity of pine. About one third of the land in Adelaide is cleared and under cultivation, and a graded road runs through its centre, six miles of which gravelled; the concession and side roads are good and improved in proportion to the date of settlement of the township. Almost every crop except hay was a partial failure in 1858 and in the spring of 1859 the County Middlesex loaned the inhabitants of Adelaide through its Township Municipality, \$2.50

purchase seed grain, which step has proved beneficial, adding much to the yield of the township, which without such aid could not have produced as much crop as was harvested in 1859.

This township usually produces good fall wheat, rye, spring wheat, barley, peas, oats, or buckwheat and root crops, but is not all adapted to corn or potatoes, excepting the sandy portions. The crop of spring wheat in Adelaide the past year was an average of twenty bushels of "Fife" and sixteen bushels of "Morden" wheat per acre, these are the two kinds of spring wheat usually sown. The crops of peas, oats, barley, flax and turnips were remarkably good in 1859, and much above the average of former years; the fall wheat, fall rye, corn and fruit crop were severely damaged, and in many instances entirely destroyed, by the frosts of the 5th and 11th of June. A frost the last week in August injured the corn and late sown buckwheat. This township has grist and saw mills, and a carding and fling establishment. Its surplus produce finds a ready market at Strathroy, an incorporated village which formerly formed a part of the township; the prices of produce in 1859, and thus far in 1860, have been remunerative to the producer.

CARRADOC

A large township containing 62,503 acres, most of which is sandy, requiring clover, manure, and a good system of husbandry to obtain remunerative returns. Some portions of Carradoc situate south of the "long road," and in the valley of the river Thames (which river forms a part of the boundary of this township, are composed of sandy and gravelly soils which are as productive as any portion of Middlesex.

The township has good roads, grist and saw mills, and a great variety of valuable timber. The Sarnia branch and main line of the Great Western Railway runs through Carradoc, creating good markets at Mount Hope, (a central point and station on the line of the Great Western Railway,) also at Strathroy, on the northern limit of the township. There is a portion (say 10,000 acres) of Carradoc swampy, and too low for cultivation: a portion of its best land at Muncey Town is reserved for and in the occupation of Indians, many of whom are successful farmers, raising average crops of wheat, corn, oats, peas, and root crops.

This Township suffered with Adelaide by the June and August frosts. With the exception of fall wheat, rye, corn, hay and fruits, the crops of Carradoc in 1859 were above the average of former years.

DELAWARE

Is the smallest township in the Riding, containing 22,403 acres, most of which is good land and well suited to all kinds of agriculture. It has good gravelled roads, good water power, good meadow land, oak, walnut, pine and other valuable timber, and a flourishing branch Agricultural Society. Its crops in 1859 were equal to those produced on the same quantity of cleared land in any other township of West Middlesex. An extensive and valuable flourishing mill, for both merchant and country work, has been erected of stone and brick in Delaware, during the past year by the present Mayor of Toronto, and is an ornament and an acquisition to this township. A system of underdraining has been commenced which has proved beneficial and promises a good return for the outlay.

EKFRID.

Is a flat and level township containing 51,952 acres, one fourth of which is wet and swampy and requires draining before it can be brought into tillage; its prevailing soil is a stiff clay, with some very good land for farming purposes. This township has been much improved since the construction of the Great Western Railway, which runs through and drains a portion of it, and provides a good market for its timber and agricultural productions, but it is deficient in good roads. A branch Agricultural Society is now in course of formation. Ekfrid is well adapted for grazing and had good crops in 1859.

LOBO

Is one of the best agricultural townships in the Riding, and contains 46,843 acres, with a population of about 7,000 souls. There is very little waste land in Lobo; one half of the township is cleared and under a good state of cultivation; its prevailing soils are clay and limestone gravel of great fertility. The land is gently rolling and in most parts easily drained. Lobo is well settled, has good gravel and other good roads, grist and saw mills, carding and fulling machines, and foundry, is well watered by various spring streams and by the river Sydenham which flows

through it. This township contains many thrifty and wealthy farmers who were formerly residents of the Niagara district. Lobo has some valuable live stock; its crop of 1859, except hay, corn, fruit, fall wheat and rye, (which were injured by frost) was above the average.

MOSA

Is a well-settled township containing 46,486 acres, with a population of 7,000 souls; it has about as much sandy loam as clay soil and is generally well adapted to agricultural purposes. There is a branch agricultural society. The June and August frost did less damage in Mosa than other townships of the riding; the crops of 1859 were good.

METCALFE

Is a small Township containing 37,156 acres with an enterprising population, and the most flourishing agricultural society in the Riding. The prevailing quality of soil is clay, heavily timbered, producing Black Walnut trees from six to seven feet in diameter; a sale of thirty-five Black Walnut trees was effected in this township in January 1860 for \$200, the trees were from two feet to eight feet in diameter.

This township is rapidly improving, has produced great spring crops in 1859 which were more than an average—several farmers in Metcalfe have turned their attention to the culture of Root crops, especially the swedish turnip with which they fatten sheep and horned cattle for market; this system of husbandry has thus far proved a decided success, and much more profitable than grain culture, as will appear by examples hereto annexed.

WILLIAMS.

This was the largest township in west Middlesex, and contained 74,340 acres, but by a recent act of the Legislature it has been divided into two municipalities, East and west Williams. The soil of these townships is very good, chiefly clay, heavily timbered with every variety of timber common in Canada. The River aux Sable runs through these townships furnishing an abundance of water power and building stone, with pine, walnut, oak, cherry, and valuable timber grown along its banks. The Grand Trunk Railway from St. Mary's to Port Sarnia runs through the northern part of these townships, which have therefore made more progress in settlement and land clearing recently, than any other township within the limits of this

society. The agricultural society for Williams now falls within the limits of East Williams. These townships are well supplied with grist and saw mills, as well as carding and fulling mills.

The general character of the soil of the Electoral division of West Middlesex, over the territory of which this society extends is clay, but there are besides, various soils differing in their adaptation to the various crops. The average value of land, as ascertained by actual sales in 1859, is much below that of 1856, when improved farms sold readily for thirty dollars per acre, while farms can now be bought for twenty dollars per acre, and in some instances (where the owners are in debt and sued) at a lower price for cash, say fifteen dollars per acre for well improved farms in good localities.

The prevailing system of culture in West Middlesex is, for fall wheat a naked fall-plowed three times before sown; and for Spring wheat fall plowing is mostly adopted. The best crops of Spring wheat and Barley are raised after a hoed crop of the previous year. Too much attention has been paid raising wheat, to the neglect of other grain and a proper system of rotation of crops, without which the yield of wheat will diminish. When the wheat crop of 1858 failed to a great extent from the ravages of the rust and weevil, severe pressure a great distress were caused among the inhabitants of the Riding, and in 1859 but a small quantity of fall wheat was sown compared with 1858. The frosts of 5th and 11th June almost totally destroyed the fall wheat, fall rye, hay, and fruit crop of West Middlesex; but if, as we hope, these frosts have also destroyed the weevil, your Board can say whether they will have proved advantageous or detrimental to the permanent interest of the farmer. The average yield of various crops for the past season in the electoral limits has been, as near as the Board can ascertain, as follows:—

Fall Wheat, 3; Fall Rye, 1; Morden Spring Wheat, 16; Five Spring Wheat, 20; Oats, 35; Peas, 30; Barley, 30; Buck wheat, Flax, 20; Potatoes, 150; Mangel Wurzel, 200; Turnips, 500 bushels; Hay, 500; Carrots, 1000 bushels per acre.

Labor has been plentiful; wages of field hands ten dollars per month and board for mechanics, one dollar per day without board.

The June frosts were more severe in 1859 than any former year since the settlement of West Middlesex.

CATTLE.—A marked improvement has taken place in the breeding of cattle, sheep and pigs, being the result of the policy pursued by most of the Township Branch Agricultural Societies; which has been—to import full blood male animals of the best breeds, such as Durhams, Devons, and Ayrshire bulls and Leicester, South Down and Merino Rams,—Berkshire, Yorkshire, and Field Boars. Many of the grade animals are now equal, if not superior, to the thorough breeds from which they were produced. There are no extensive sheep or dairy farms in West Middlesex, nevertheless every farmer pays some attention to these branches of husbandry. A large quantity of Butter has been exported from this county the past season, which was of good quality, and sold at from twelve to sixteen cents per pound; the samples of Butter exhibited at the society's show were numerous, and of superior quality; there has been but little cheese made in this district.

The number of sheep in West Middlesex is limited by the large amount of uncleared land, but the quality is good and the clip an average of four pounds per head. The price of sheep is now double what it was a few years ago; the greater part of the clip of 1859 was sold to dealers at twenty-four to twenty-eight cents per pound. The manufacturers can work up the wool cheaper and better than the farmer, who now sells the greater portion of wool or exchanges it for cloth or blankets.

AND DRAINING.—The prevailing system is by means of open drains. A system of sub-draining has been practised by the President of this society and a farmer in the same township which has proved cheap and effectual; this is by placing logs or poles parallel to each other about four inches apart with another log on top, the whole covered with a layer of straw and placed from one to three feet below the surface. Several farms have been thoroughly drained in this manner at an expense of ten to twelve dollars per acre; this will last from ten to twenty years, while proper tile drains would cost twenty dollars per acre. The Member for West Middlesex, A. P. McDonald, Esq., is draining extensively at Glencoe.

ROOT CROPS.—Have been extensively cultivated in West Middlesex in 1859, and several farmers, who have grown from 6,600 to 12,000 bushels of Turnips, are now feeding horned cattle and sheep for market; this system of farming is not only very profitable but it leaves the land in good order for any kind of grain crop. The turnip crop of the past year has averaged fully five hundred bushels per acre. Before dismissing the subject of Root crops your Board would urge the importance of this branch of farm tillage, because besides the profit to be derived from the cultivation of Roots, it is less exhausting to the soil than grain crops. The turnip during its growth is constantly shedding its leaves, and the usual mode of gathering this crop is to cut off the top and tap root and leave the same on the field, thereby enriching the soil. Sheep farming and cattle feeding (which should accompany Root culture) are deemed by your Board wise and profitable additions to our present system of farming, and will obviate the evils of an entire dependence upon grain crops.

FARM IMPLEMENTS.—Good tools are necessary in order to perform good work, and always economise time. Implements for farming have been much improved since the settlement of this part of Canada. The township ploughing matches have a tendency to develop the quality of the various ploughs now in use and a preference is given to the Bingham, Morley, and Canadian Clipper ploughs, which cost about fourteen dollars, and do as good work, with as light a draught, as the more expensive iron ploughs. In land free from stumps the double harrow, with thirty teeth, is in general use, and in new and stumpy land the heavy triangular drag is the most effective and safe. Reapers and Mowers are gradually coming into use where the state of the farms will permit. Threshing is done by machines which clean as well as thresh the grain. Seed drills are not in general use, but are required, and drills that would drill in manure as well as seed would prove advantageous.

There are several nurseries within the riding, and from these as good fruit trees can be procured as those imported from other counties or from the United States, and at a less cost.

There is as yet no horticultural society or Mechanics' Institute in West Middlesex. Those farmers who support agricultural So-

cieties, and attend and exhibit at the annual show fairs, are among the most prosperous, intelligent and thrifty of our number, yet it is to be deplored that in a Riding purely agricultural so few take an interest in and support these societies. The following example proves what can be accomplished by an intelligent and industrious farmer:—The farm contains 100 acres, 65 of which are now cleared, and 60 under cultivation; this farm was purchased by the present proprietor in 1848 for four hundred and twenty-five dollars, or four and a quarter dollars per acre, with a clearing thereon of six acres. One third of the purchase money was paid at the time of purchase, the balance to be paid in three years. The purchaser commenced operations in 1849—the balance has been paid, the farm cleared, fenced, stocked; and a good brick house and frame barn have been erected from the produce of the farm, besides supporting the family of the owner. The labour employed for the first three years was that of the owner and his wife; a boy was employed after that up to 1859, in which year the farm was worked by the owner and a hired man. The produce in 1859 was as follows:—

From 8 acres, 6,000 bushels turnips.
 From 8 acres of peas, 36 large waggon loads; from these 20 hogs have been fatted, which made 3,600 lbs. pork, besides ten store hogs fed, and a sufficient quantity remained to feed the same until first of April, 1860.

From 10 acres Morden spring wheat, 150 bsls.
 From 5 acres oats, at 40 bushels per acre, 200 bushels.

From 4 acres barley, at 35 bushels per acre, 140 bushels. From ½ acre potatoes, 150 bsls.
 From 12 acres meadow, 25 loads hay, 15 tons.

The meadow was timothy and clover. The frost killed much of the timothy, making the principal yield clover.

This farmer has raised turnips and fed sheep and cattle for market for the past three years with good success, making thereby more profit than farmers who depend on grain crops.

The value of the produce of this farm in 1859 was—

6,000 bushels turnips at 8 cts.....	\$480
240 " peas " 50 cts.....	120
150 " wheat " 90 cts.....	135
200 " oats " 25 cts.....	50
140 " barley " 60 cts.....	84
150 " potatoes " 25 cts.....	37
15 tons hay.....	150
	<hr/>
	\$1,056

And the outlay was—

9 month's wages of hired man.....	\$90
9 months board of ditto.....	60
Seed.....	90
Threshing.....	30
	<hr/>
	\$270

Leaving a balance of..... 780

for the owner's labour, and the work and feed of a pair of horses and one yoke of oxen without taking into account the wool, mutton, butter, eggs, or increase in stock.

Another view of the value of this fare would be this—

Present value of farm..... \$2,500

Its present stock, consisting of—

1 yoke oxen.....	\$7
Waggon and sleigh.....	7
1 pair horses.....	14
Farm tools.....	8
23 sheep.....	8
14 cattle.....	14
10 hogs.....	8
7 cattle up to fat, at \$30 each.....	210
	<hr/>
	\$324

Less cost of farm..... 4

Leaving an annual increase of \$283, over and above the support of the owner's family, the past ten years.

The three adjoining farmers are all engaged in the culture of roots and feeding cattle, with equal success; two of them purchased cattle in October last, which they sold in January and February for nearly double first cost, after feeding them for less than three months upon straw and turnips. A dozen head of cattle were sold for \$1,000 one of these farmers—the other bought a head of cattle in October for two hundred and eighty five dollars, and sold them in January for six hundred dollars.

The cost of producing the undermentioned crops in 1859 has been nearly as follows:
 Fall wheat, per acre, \$12 50; grain straw worth only the harvesting; loss per \$12 50.
 Spring wheat, \$10; produce, 20 bushels 90 cts., \$18; net profit, \$8.
 Peas, \$6 75; yield, 30 bushels, at 40 \$12; net profit, \$5 25.

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Oats, \$6; yield, 40 bushels, at 25 cts., \$10; net profit, \$4.

Turnips, \$18; yield, 500 bushels, at 8 cts., \$40; net profit, \$22.

Carrots, \$38; yield, 1,000 bushels at 20 cts., \$200; net profit, \$162.

The produce and prices of the year 1859 would seem to vary nearly according to the foregoing figures; from these it will be seen that root culture is the most profitable kind of husbandry; but farmers that cultivate a variety of crops and put them in in good order and in proper time, usually get from the whole a fair remuneration for labor and seed. Notwithstanding the almost entire failure in 1859 of fruit, hay, corn, fall wheat, rye, and late sown buckwheat, the abundance of other crops has made the crop of that year average in value that of 1857, and far exceed that of 1858 in West Middlesex.

The prosperity of Canada depends almost wholly upon the success of her agriculture. Her commercial and manufacturing interests are influenced by and dependent upon our agricultural success, and the essentials to agricultural prosperity are economy and uninterfered and well-directed industry.

The native born adults form the most valuable portion of the population of any country, and it should be our policy to prevent these from wandering off where good land is more plenty and cheap, or where hard labor is better rewarded. By economy and industry we may overcome temporary calamities, but when the young and vigorous, the surprising, intelligent and initiated portion of our population abandon the country in which they were reared and which they are best qualified to develop, to seek homes in the Western States, the loss is irreparable. It is too true, that too many of this class of population are annually emigrating to the west, thus depriving Canada of that labor and industry which creates capital. Our Board are of opinion that a wholesome Homestead Law, giving an exemption from liability for debt, of the team and implements of a farmer, necessary to prosecute his vocation as a husbandman, would to a good extent encourage settlement and prevent emigration. There is no valid reason why the necessary implements of a farmer should not be protected as well as the tools of the mechanic. At the commencement, and during the first settlement of any district, while land is being cleared, credit is indispensable among

farmers. Another evil affecting farmers is the expensive and unnecessary law costs they are compelled to pay when a failure of crops or other misfortune occurs.

Although a Homestead Law and law costs are political questions, yet they are so identified with the present condition of our agricultural interests, that your Board see no good reason why agricultural societies should be silent on this subject, as the remedy is in the hands of the farmers when they record their votes.

Your Board are of opinion that the collection laws might be so simplified and cheapened as to benefit all classes of the community except lawyers, while a good Homestead Law would confer a lasting benefit on the agriculturists without injury to traders or others.

Miscellaneous.

THE MICROSCOPE.—With the help of his microscope, man can enter into a world unknown to the ignorant, and altogether invisible to the unassisted eye. In every plant and flower which adorns the field, in every leaf of the forest, in the seeds, prickles, and down of all vegetables, he perceives beauties and harmonies, and exquisite contrivances, of which, without this instrument, he would have no conception. In every scale of a haddock, he perceives a beautiful piece of net-work, admirably contrived and arranged and in the scale of the sole, a still more diversified structure, which no art could imitate, terminated with pointed spikes, and formed with admirable regularity. Where nothing but a speck of moldiness appears to the naked eye, he beholds a forest of mushrooms with long stalks, and with leaves and blossoms distinctly visible. In the eyes of a common fly, where others can see only two small protuberances, he perceives several thousands of beautiful transparent globes, rounded and polished, placed with the utmost regularity in rows, crossing each other in a kind of lattice work, and forming the most admirable piece of mechanism the eye can contemplate. The small dust that covers the wings of moths and butterflies, he perceives to consist of an infinite multitude of feathers of various forms not much unlike the feathers of birds, and adorned with the most bright and vivid colors. In an animal so small that the naked eye can scarcely distinguish it as a visible point, he perceives a head, mouth, eyes, legs, joints, bristles, hair, and other animal parts and functions, as nicely formed and adjusted, and endowed with as much vivacity, agility, and intelligence as the larger animals. In the tail of a small fish or the foot of a frog, he can perceive the variegated

branchings of the veins and arteries, and the blood circulating through them with amazing velocity. In a drop of stagnant water he perceives thousands of living beings of various shapes and sizes beautifully formed, and swimming with wanton vivacity, like fishes in the midst of the ocean. In short by this instrument he perceives that the whole earth is full of animation, and that there is not a single tree, plant, or flower, and scarcely a drop of water, that is not teeming with life and peopled with its peculiar inhabitants. He thus enters, as it were, into a new world, invisible to the naked eyes, where every object in the animal, vegetable, and mineral kingdoms, presents a new and interesting aspect, and unfolds beauties, harmonies, contrasts, and exquisite contrivances, altogether inconceivable by the ignorant and unreflecting mind.—*Dick.*

Recent experiments in Germany show that when the thickness of ice is an inch and a half, it will just bear the weight of a single man; when about three inches and a half, it will bear detachments of infantry with their ranks rather wide apart; with a thickness of four and four-tenth inches, eight pounders can be conveyed over it on sledges; five and two-tenth inches will bear 12 pounders; eight inches will bear 24 pounders; and a thickness of twelve inches will bear almost any weight.

THE CHAMOIS HUNTER AND THE FLOWER—A chamois hunter's life is regarded as the most enviable that can fall to the lot of man; and the daring climber, the skillful stalker, and the sure shot receives due appreciation on all sides. Among the most daring deeds of his life is the obtaining of the "Edelweis," (*Gnaphalium Leontopodium*) a flower met with only on the highest mountains in certain parts of Tyrol and Batavia. It is much valued for the snowy purity of its color, as well as on account of the difficulty of getting it. The very name "nobles purity," has a charm about it, and, strangely enough, it always grows in a spot only to be reached with the utmost peril. You will see a tuft of its beautifully white flowers overhanging a precipice, or waving on a perpendicular wall of rock to be approached but by a ledge, where a chamois could hardly stand.—But it is this very difficulty of acquisition which gives the flower so peculiar a value, and impels many a jager to brave the danger, that he may get a posy of edelweis for the hat or breast of his ladye love; and often has such an one fallen over the rocks just as he had reached it, and been found dead with the flower of such fatal beauty still held firmly in his hand.

THE DINNER-HOUR IN OLDEN TIMES.—Two o'clock was, in this country, the ancient hour of dining, and continued so in the University of Cambridge even to the reign of Edward VI., as appears from a very remarkable passage in a

sermon of Thomas Lever, at Paul's Cross, on the 14th of December, 1550. About the middle of Queen Elizabeth's reign the dining hour was somewhat later. 'With us,' says the author of the *Description of England*, in the preface of of Holliushet, 'the nobilitie, gentry, and students do ordinarily go to dinner at eleven before noone, and to supper at five, or between five and six in the afternoon. The merchants dine and sup se'dome before twelve at noone and six at night, especially at London. The husbandmen dine also at high-noone, as they call it, and sup at seven or eight; but out of the terme, in our universities the scholars dine at ten.' Such was the custom till the middle of the seventeenth century, and even in the middle of the last the colleges all dined at twelve.—*Murk Lane Express.*

THE LEECH AS A WEATHER-GLASS—The following observations on a leech were made by a gentleman who kept one several years for the above purpose:—"A phial of water containing a leech was kept in the lower frame of a chamber window sash, so that when I looked in the morning I could know what would be the weather on the following day. If the weather proves serene and beautiful, the leech lies motionless at the bottom of the glass, and rolled together in a spiral form. If it rains before or after noon, it is found to have crept up to the top of its lodging, and remains till the weather is settled. If we are to have wind, the prisoner gallops through its limpid habitacle with amazing swiftness, and seldom rests till he begins to blow hard. If a remarkable storm of thunder and rain is to succeed, for some day before, it lodges almost continually out of the water, and discovers uneasiness in violent throbbing and convulsive motions. In the frost, especially clear weather, it lies at the bottom; and in snow, as in rainy weather, it pitches its dwelling upon the very mouth of the phial. The leech was kept in an 8oz. phial, about three-fourths filled with water. In the summer the water was changed once a week, and in the winter once a fortnight."

HYDROPHOBIA IN THE DOG—How the nature of the dog can be so utterly charged as to charge its bite with deadly venom, or how it that the moist saliva of the rabid animal should communicate the disease with other beings, at present but a mystery. There seems to be an actual infusion of the dog nature into the animal which is bitten by a rabid dog, or by one of the creatures which has been inoculated by the bite of one of these terrible beings. It is evident that the virus is resident in the saliva, because the malady has been communicated by the touch of the dog's tongue upon a wound without the infliction of a bite from its teeth. It is equally evident that the poisonous property belongs not to the saliva, but to the infuse-

which is conducted by its means. In some strange fashion the spirit of the angry dog seems to be infused into the victim of its bite; and it is well known that even when an angry dog has in the heat of passion inflicted a wound, the result has been very similar to hydrophobia, though the animal was not affected with that disease. Ordinarily, the bite of a dog, such as the playful bite of a puppy, though sufficiently painful, carries no danger with it; but if the animal has only been touched with this malady, its bite is but too frequently fatal. This death-dealing influence has been proved to remain in the saliva for four-and-twenty hours after the animal's death. Perhaps there may be something of electricity in the fatal influence, which requires a fluid conductor, for if the teeth of the animal have been wiped dry by passing through the clothing of its intended victim, no evil result follows.—*Routledge's Illustrated Natural History; by the Rev. J. G. Wood.*

EXTRAORDINARY EFFECT OF THE STING OF THE HOXEE-BEE.—About two years ago the farm-servant of Mr. Waldron, of Up Lambourne, in Berkshire, while working in his master's garden, was stung by a bee in the back of the head. The sting was immediately followed by all the symptoms attendant on snake poison; the pulsation of the heart nearly ceased, and the man's life was only saved by the copious administration of brandy. In August last, two years after this occurrence, the man received his master's orders to dig some potatoes in the same garden, adjacent to the same bee-hive whence the insect came, and to his fellow-servants he expressed his fears that he should be stung again. In obedience to his orders, however, he commenced the appointed task; but ere he had finished the labour, a bee again stung him on the back of the head. The result was similar; the system immediately, and even to a greater degree, succumbed to the insect poison, and in less than twenty minutes the man was dead. My friend, Mr. Hiller, who is a medical practitioner in that vicinity, afforded me the above information; and the death of the servant was so immediate that, though sent for to attend him, he was unable to reach the spot in time.—*GRANTLEY N. BERKELEY, in The Field.*

THE ORDEAL OF WATER.—The ordeal of fire and water was frequently resorted to by the heathens, in the absence of direct proof. In the latter ordeal the accused was lowered into a well, holding his head under water. At the very moment a strong man shot an arrow as far as it could go, and another ran to pick it up. If the accused could remain under water till the arrow was brought back, which was signalized by the pulling of a rope, he was declared innocent; but if he raised his head a moment before that, he was pronounced guilty.—*Narrative of a Residence at the Court of Meer Ali Moorad; by David Archer Longley.*

STEEL SPRINGS.—For the last six months, Messrs. James Jeffries & Sons, the well-known spring manufacturers, of Philadelphia, have adopted a new mode of securing the leaves of their springs together. No hole is made through the leaves, nor is any bolt used. Two notches are made in each edge of the two top and two bottom leaves, these notches being made where they will be covered by the band which, when shrunk on, is indented, by means of a punch, into each notch. The band is thus indented at four points on each side, or at eight places in all, and has so firm a hold upon the leaves that loosening would be impossible. The top and bottom leaves being thus held firmly by the band, the intermediate leaves are held firmly in place by the studs, punched in the ordinary manner, at their ends. The metal taken out of the top and bottom leaves in making the notches is not one half that which would be removed for a bolt hole, while the intermediate leaves are left of the full width and strength. Springs thus secured together can never work loose, and there is no extra part which, like a bolt, can break or come off.—*Scientific American.*

COLD FROM DAMP CLOTHES.—If the clothes which cover the body are damp, the moisture which they contain has a tendency to evaporate by the heat communicated to it by the body.—The heat absorbed in the evaporation of the moisture contained in the clothes must be, in part, supplied by the body, and will have a tendency to reduce the temperature of the body in an undue degree, and thereby to produce cold. The effect of violent labor or exercise is to cause the body to generate heat much faster than it would do in a state of rest. Hence we see why, when the clothes have been rendered wet by rain or perspiration, the taking of cold may be prevented by keeping the body in a state of exercise or labour till the clothes can be changed or till they dry on the person; for in this case the heat carried off by the moisture in evaporating is amply supplied by the redundant heat generated by labor or exercise.

GARNET CHILI POTATOS.

THE Subscriber has on hand upwards of a hundred bushels of this new and superior variety of potato to sell for seed.

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Address, R. R. Bown, Brantford.

N. B. Full blooded cow stock taken in exchange, if desired.

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BREAD AND BREAD MAKING.—The subject of our present article on household science is one of the most important that can come under our notice, and will therefore require a careful consideration at our hands. Before entering on the subject of bread making, it is essential to investigate the chemical characters of the various substances that compose wheaten flour ; a rough analysis of flour may be made by the aid of a basin of water and a peice of muslin. If a small quantity of flour is tied up in a muslin rag and then well washed and kneaded in water, a milky liquid is obtained, and a remarkably tough, elastic substance remains in the rag ; this latter is termed gluten, from its peculiarly glutinous character when moist, though, when dried, it becomes of the consistence of horn.—Gluten is the flesh-forming or nutritive ingredient in the flour, partaking much of the nature of animal than of vegetable food. The milky liquid on being allowed to stand, deposits a fine white insoluble powder, which is starch, and remains dissolved a certain amount of gum, sugar, albumen, and other soluble ingredients. When wheaten flour is mixed with water and yeast, so as to form dough, and then allowed to stand at rest for some time, it undergoes the process of fermentation, the sugar which it contains in small quantities is converted, as in the ordinary cases of fermenting liquids, into spirit and carbonic acid gas ; the latter, owing to the tough, glutinous character of the dough, cannot escape : hence the dough rises or swells, assuming a spongy character, which greatly contributes to the excellency of the bread. The plan usually followed in preparing ordinary home-made bread is to place the required quantity of flour in a pan, and to pour into the centre the requisite amount of yeast along with a proportion of warm water ; sufficient flour is then stirred into the mixture to make a thin batter, which is dusted over with dry flour, the whole is allowed to stand in a warm place until the batter swells and cracks the flower strewed above it, the whole is then kneaded up with a sufficient amount of warm water, and thus formed into a tough dough, which is allowed to rise, and when sufficiently light is made into loaves and baked.

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