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THE CANADA FARMER

Vol. II. No. 12

TORONTO, CANADA, DECEMBER 15, 1870.

NEW SERIES.

The Field.

Barn-yard Management.

In the course of many visits we have paid to farmers throughout the country, one of the most noticeable defects to be found, even amongst those who may be fairly considered intelligent and progressive men, is the want of any proper system of managing their barn-yards. It does not seem to occur to them that the making and saving of manure is the main point in any system of husbandry, looking forward to a steady amelioration and improvement of the productive capacity of their farms, be they large or small.

Some have their yards trodden into quagmires of mud, for want of some absorbent material; while others locate them on a hill-side, from which every rain storm washes away all the richest and best qualities of the manure into some ditch or creek. Some again do their best apparently to save all the manure they can, yet allow it to lose much of its strength and value through being dispersed over a large extent of surface in the yard.

We propose to give a few general rules to regulate management of barn-yards.

First—The yard should be so located and constructed that none of the urine or salts in the manure can be washed away.

Second—It should be entirely cleaned out, and every particle of manure be applied to the soil before the stock are to occupy it for the winter, and again commence the work of making their own food into plant food.

Third—The bottom of the yard must be made hard and solid enough to prevent the liquid elements of the manure from leaching away into the soil on which it is located.

Fourth—The entire bottom should be filled up with muck or dry loam, to act as an absorbent of the liquids; over this should be placed a layer of straw several inches in depth.

Fifth—A mixen should be formed, if possible, under a shed; to it should be carried

all the droppings from the stables, byres, pigsties, etc., to be thoroughly incorporated together, and the straw and droppings of the yard mixed in as often as they can be got partially worked up by the treading of the stock. This mixen should be so managed that the manure, while being made, will ferment, yet not rapidly, so as not to become decomposed till near the time for applying it to the soil. This fermentation can be controlled by keeping the mixen moist, by adding water when too dry, and not allowing an excess of straw to get mixed into the manure.

Sixth—The entire yard, including the layer of muck or loam at the bottom, should be cleaned out and added to the mixen at least once every three months, and a fresh supply of muck or other absorbent applied to the yard and covered with straw.

By a proper course of management the amount of manure made can easily be doubled, and the yard kept sufficiently clean and dry for the comfort of the stock that are turned into it during the day time, when loosened from their stalls. It is better to keep adding fresh layers of straw, a little at a time, as the surface of the yard gets wet and dirty, than to put on a large bulk at once that will take all winter to be worked up, and then be of small value for want of composting.

To get water enough for use in the mixen, and also to wash out the floors of the stalls and byres once in a while, a cistern should be provided in the yard, to which all rain-fall on the roofs of the various buildings adjoining the yard can be conveyed by pipes, and afterwards pumped out as required to be thrown on the mixen, or used for watering the stock, if the supply is sufficient for both purposes.

This making of a mixen will cause some extra work to the farmer and his hands, but the labour bestowed upon it will be more than amply repaid in the increased value of the larger quantity and better quality of the manure manufactured by means of it. The object of having the mixen under cover is to prevent the too rapid evaporation by

the sun of its best constituents, during the warm bright days of spring and early summer, before the land for root crops, to which most of the manure is usually applied, is ready to receive it. The trampling of stock on the mixen tends rather to improve it, by making it more solid and better mixed; hence it may be open to the access of stock, but they should not be allowed to lie on it.

A Backwoods Farm.

During the time that some of us were making potash, the rest were busily and constantly engaged in

LOGGING.

Here is almost the most important part of clearing a new farm. The work must go on continuously from day to day. Four rollers and one driver ought to log an acre a day, or say, unless hindered by bad weather, twenty-four acres each month. We always did this on good, dry, hard wood land, where the burn had been perfect; and subsequently, when we jobbed out five or ten acres to some hard-working young fellows, they logged nearly eight acres in one week; but the timber was hard wood, and no brush or chip whatever, and no large elm or swamp timber predominated. Where this was not the case, and the land was wet and covered with swamp timber, and consequently the burn not so good, and often very bad, half an acre would be good work to get through in a day. Where this is the case, then the trouble begins, picking and piling, chips and brush, until it seems as if you would never get through.

The last fifty acre piece that we logged was accidentally set on fire by a neighbour, before it was half ready to burn. The fire ran through it without burning one quarter of the brush, and it required twice the time to finish the logging; in fact, it was not finished until the following season, and by that time the piece that remained unlogged was covered with Canada thistles, which seem indigenous to our land, they spring up

everywhere, when a new fallow is left a summer uncropped; and to this day that piece feels the neglect, as the thistles are most abundant, whilst in those portions that were cropped the first year and seeded down at once, no thistles whatever have appeared.

We first tried logging with ordinary cattle, but the attempt soon convinced me of its entire uselessness. Such a job of logging as we had to do required the best team that could be had. I gave it up after a week's trial, and left the farm for parts unknown, determined not to return until I had procured a first-rate yoke of oxen,—smart, but very heavy, and not older than between seven and eight. These I succeeded in finding. They were eight years old, very heavy, each weighing at least 1,600 or 1,700 lbs., nearly 5 feet 6 inches high, and in fine condition; they girthed 7 feet 8 inches. Splendid animals they were, and we logged nearly 120 acres of land with those oxen that summer. Of course we fed them like horses, and had an accident happened, either of them would have been good beef. I have often seen those oxen break a new yoke at one jump, when attached to too heavy a log. After breaking three or four yokes I am convinced they understood the trick of doing it, and did it on purpose to be allowed the necessary rest, while we were making a new one. Our four rollers and driver, with one man to "chunk up" and burn, made short work of clearing an acre; twenty or twenty-four acres a month made a great show, and this was the result of first-class men and a crack team.

LOGGING BEES.

During the first years of our clearing up the farm, many of our neighbours made logging bees, and we were always asked, but never went. I set my face altogether against logging bees. Raising bees may be borne, and possibly are requisite, but bees for anything else are miserable things—a regular waste of time. For, if you get your neighbours to come to your bees, you must go to theirs, no matter how important it may be that you should not leave home; go you must. There is absolutely no saving by bee labour, at any rate. If you get fifty men to help you one day, you must go fifty days to help them, and often some one will get you to go twice, and occasionally more, to their once coming. And you may add fifty days in addition almost lost by it, as you always get racing, and are, consequently, over-worked and often strained, and seldom do anything worth while the next day after a bee but rest and recruit. We know whiskey is at the bottom of this, and any quantity of whiskey is always drunk at bees in a new neighbourhood, whilst clearing up the land. Not that this sort of labour requires whiskey more than any other, but such is the general custom. And not as long as logging bees last will the people listen to temperance doctrines. No sooner, however, is

the logging all done and farming regularly begun, than farmers all at once attend temperance lectures, and they find the benefit of them you may be sure. And this is the principal cause of the great improvement in almost any neighbourhood directly the land attains the name of "Old Cleared Farms."

SPRING WHEAT.

The next year we sowed about sixty acres of spring wheat, and as the land was in first-rate order we certainly expected a first-rate crop also. All went well until the 12th of July, when the wheat was just "shot out," and on the night previous there occurred in our locality a most untimely hard frost, so much so, as to freeze water quite over, as some pieces of thin ice were found and brought into the house next morning. This is most unusual, but I distinctly recollect this frost occurred on the 12th, and that it was a holiday with some of our men who were Orangemen, and the records in the day book prove the fact as well. The effect was to prevent the grain ever filling in the upper parts of the ear, and at harvest about nine bushels an acre was the crop instead of at least thirty. Fortunately our means could stand the loss; had it been otherwise it might have ruined us. We were not one jot discouraged by this loss; wheat was high in price that year, and as expenses were about paid we were not as badly off as we might have been. Meantime our stock of cattle and colts increased.

RAISING COLTS AND CATTLE.

We had bought two or three brood mares, and a reasonably good entire horse, and we were thus enabled to breed colts without any extra expense, and nothing paid better on our farm for years than this branch. For about ten years we had only two accidents that ended fatally to the young foals. One was shot for a deer, and the other was mired in a ditch. We always worked the mare as long as we could before foaling, but not afterwards, if we could possibly avoid it. We considered that with care the mare was uninjured by such treatment before foaling, but that when worked afterwards the colt suffered.

The horned stock also increased fast, and now numbered over twenty-five head, all raised without any expense that could be well reckoned as such. They all increased at about the rate of \$10 a year for three years, and the quality was good, as we never could bear to see the poor half-starved miserable animals such as usually are to be found about a backwoods farm. The cause of poor stock in such places is chiefly due to the miserable quality of some little runt of a bull; a wretched beast, that it would pay the settlement generally if some one of their number would shoot it, and pass round the hat to collect the value for the owner. Laws against the running of such animals at large are now generally pretty strictly observed, and in such cases the owners of the brutes

are at once notified through the pound-keeper that the obnoxious animals are impounded.

GROWING BARLEY.

We held that year a great consultation as to the heavy loss arising from the failure of so much wheat two seasons following, and next year we determined to sow upwards of sixty acres of barley. Seed was very high, and we anticipated great returns, but unfortunately a remarkably dry season occurred that year, and many fields of oats and barley all over the country failed to grow more than from eight to twelve inches high. Our return at harvest was about three times our seed. Nothing daunted we determined to try fall wheat next, and therefore having well fallowed about twenty-five acres of good land the previous year, we sowed fall wheat on it and prepared about thirty acres more of fallow for spring wheat, the year following.

The weather was beautiful the next year, about April and May, and, contrary to advice, we ploughed the land twice for wheat, and got it sowed in splendid order. The dry weather continued, and our extra care did all the mischief. We soon found that the second ploughing had so loosened the soil that the wheat plant began, about the middle of June, to look miserably yellow and lean. This was to be attributed to having the soil too loose, especially when combined with dry weather. Had we had our usual June rains the soil would have settled hard and firm; but the dry weather finished what the loose soil had begun, and at harvest nine bushels an acre was our crop of spring wheat. The midge attacked the fall wheat, and we only harvested twelve bushels an acre of this.

We had seeded down a large quantity of the land this year and determined to graze cattle instead of growing wheat, until the stumps were rotten; and this year we put in only about thirty-five acres of wheat, fifteen of fall, and about twenty of spring. The fall wheat at harvest yielded thirty-five bushels to the acre, and the spring about twenty or twenty-two, and we almost regretted seeding down so much, but we nevertheless determined to seed down more, and go into cattle more extensively, and then await the rotting out of the stumps and results of draining to complete our farming operations.

BEST ROTATION FOR NEW LAND.

From all our farming experience, I am convinced that, under all circumstances, the best course to follow with new land is to get the first crop of wheat, and then seed down directly and keep the land in grass for at least seven years afterwards, or until the stumps are completely rotten and all loose. Then to collect all the small stumps, roots and rubbish, and set fire with these appliances to the large old undecayed stumps, most carefully tending the fires, never neglecting them to do other work, but steadily working amongst them all the time they are alight, constantly "chunking" up and forcing. By

this means two men can very well attend to and burn out twenty-five to thirty acres each week, provided the weather has been quite dry and the wind blows pretty fresh each day. You would hardly believe how complete a clearance can be made of hard wood stumps by this means. Last year we had a twenty-five acre field in just the right state, and one man in three days burnt almost every stump out of it. But never, under any circumstances, allow the half-and-half plan of setting a few stumps on fire whilst you are ploughing in the field. They will not be attended to or kept going, and the consequence will be that the stumps will almost all be half burned and all the dry and decayed part consumed, whilst the remainder will be quite sound and preserved by the fire from further decay for some years longer; and moreover stumps of roots trouble and annoy you for a long time.

Farming, like all branches of business, must be done right, and with capital, and to the best advantage; and if you grow grass with a good stock to eat it, you suffer; and if for want of stock you grow grain when it ought not to be grown, you suffer. Many in their wisdom would say it served you right, but I know better. Farmers, until they get forehanded, must live, and must grow what their capital enables them to produce, or rather the want of it forces them to grow, and generally such farming is more the misfortune than the fault of the farmer.

C.

Beet Root and Beet Root Sugar

No. VIII.

This subject is engaging the attention of English farmers, and from the experimental and scientific class it has passed into the hands of some of the best and most successful farmers in England, who are now growing sugar beet by hundreds of acres, and with very satisfactory results.

To show that in previous articles there has been no exaggeration respecting the produce both of the root and the sugar, the reader is requested to note the following extract from a speech made before the Chamber of Agriculture at Cirencester, in England, and which is taken from the *Agricultural Gazette*. After a lecture had been delivered on the subject by Professor Church, of the Royal Agricultural College, and the usual discussion arose, Mr. Edmund Ruck, one of the best and most successful farmers in England, stated to the following effect:

"In consequence of the several articles on the subject of beet root growing which have been going the round of the British press, he (Mr. Ruck) went to Lavenham, where Mr. Duncan, the great sugar refiner of London has erected some works for the manufacture of beet root sugar. He found there a very expensive and extensive set of buildings and machinery. Mr. Duncan had

been giving the farmers of that district one pound per ton for beet, delivered at the manufactory, and the farmers took back the pulp at 13s. per ton. The crops raised ran from sixteen to twenty-four tons per acre." [I have only reckoned on ten tons per acre in Canada.] "In the third week of April last he (Mr. Ruck) went to France, with the object of examining their mode of manufacturing, and enquiring as to the profits derived from it. He found that a ton of beet would yield twenty gallons of spirit, and that the pulp would pay for the expenses of manufacture and the interest of the money employed. This spirit would sell in England at two shillings per gallon (over and above the amount of the duty), so that there is a margin of 2s. per gallon, or £2 per ton.

"In most establishments on a large scale in France, both sugar and spirit are made, and Douai is the great sugar market of France. He was surprised to find that good land was sold generally at £100 per acre in France; but in within five miles of a manufactory, then the price rose to from £135 to £140 per acre. It was not unusual to cart beet seven miles to a manufactory, and if sent by boat on a canal it was sometimes taken not less than thirty miles. He found that beet had in some cases been grown for fifteen years in succession, and a yield of thirty tons per acre would give, at £1 per ton, £30 per acre to the farmer, and an equal sum to the manufacturers. His hearers must bear in mind that the pulp will pay all expenses as well as interest on the capital employed in manufacturing. There are two kinds of beet principally planted, viz., the Colet Rose, a red beet (but not the one usually planted in gardens for salad), and the White Silesian, the last named yielding the greatest percentage of sugar, but only about two-thirds the weight per acre of the former. Great attention was required not to allow their beet to grow coarse, and the only safe way to prevent this is to have the plants very thick in the ground, say in drills sixteen inches wide, with the plants cut out at eight inches apart. The three principal systems of manufacture are the Champonois, Le Plé, and the Colette. The last much resembled cider making here (in England), on a very large scale. In the Le Plé system you take out the saccharine matter (sugar) by applications of hot water. The extraction of the sugar and the spirit from the roots was too elaborate a process for him to enter into. The value of the pulp per ton varies very little in the two systems, but that from the Colette will keep any number of years, if properly stored, and the pressed pulp and "cossettes" from the Le Plé system will keep for a year or two. * * * Mr. Ruck said that it had been proved to his satisfaction from analysis of beet grown abroad and those grown in England, that no country had a better soil or climate than England for growing them profitably. The idea that a succession of crops of beet being

taken off the land is injurious to it, was in his opinion a complete delusion."

Now the foregoing evidence, coming from Mr. Ruck, cannot be too highly valued. He and his family farm most extensively and successfully; they have raised large quantities of sugar beet, and it was only a few weeks ago that they exhibited their crops of beet (among other crops) to a committee of the first agriculturists in England, who were highly gratified with them, and who in the speeches which the members of the committee made after the entertainment which followed the exhibition and examination of the Messrs. Ruck's farm, were very complimentary to those gentlemen on the results of their labours.

It will thus be seen that in the previous articles given on this subject I have carefully kept *under the mark*, and have not by any means given a flattering statement of the profits which may be relied on from the growth of beet root for sugar in Canada.

VECTIS.

Leached Ashes as a Fertilizer.

An exchange reports the remarks of Mr. Quimby at a meeting of the Rochester Farmers' Club, as follows: "Leached ashes are good for all crops—for corn in the hill, and especially valuable as top dressing for wheat and clover fields, and meadows generally. During the past three years he had drawn 10,000 bushels on his farm, which he spread on land at the rate of 200 to 300 bushels per acre. He covered forty acres in this way, and meant to ash the entire farm. They had doubled his wheat crop and wonderfully increased his crop of grasses, especially clover. Land which had been run down too much to seed with clover, produced heavy crops when manured with leached ashes. He got a good catch of clover where he applied leached ashes last year on his wheat and rye, while the balance was a failure. He could see a great difference in the growing wheat where the land was manured with ashes and where it was not."

Turnips vs. Wheat.

In one of my wanderings, a year since, during a leisure time, I chanced to receive an invitation to spend a few days with a friend to the north of Guelph, and was told that the farmers in that locality were far ahead of many other sections of the country in the growth of turnips and fattening stock. I could not at that time leave home, but this autumn, having some spare time, and also some business in that locality, I availed myself of the invitation to pay my promised visit. One great attraction was that my friend Mr. S. himself was a great lover of grade stock, and farmed 190 acres of cleared land, and grew large quantities of turnips, with which he not only fed the growing cattle, but also fattened about ten

head each year; and as he had boasted a little of his success in the culture of turnips and feeding them to stock, I thought I should derive many useful hints from him and his experience.

The stage put me down at a cross road about four miles from his house, and I soon put myself on the otherside of that distance. I met with a hearty welcome, and next morning we examined the stock and turnips. There were thirty head of very handsome two and three year olds, all sired by a thoroughbred bull, and a fine dairy of sixteen cows.

The two ten-acre fields of turnips, the growth of that year, were alone well worth the trouble of inspection. There were, I was assured, at least 750 bushels per acre, and each acre was destined to feed one bullock, and afford an abundance for a proportion of the living stock beside. The plan pursued was to fallow the land the previous year, and manure in September, leaving it well ridged up and drained. Early in spring, as soon as the first crop of weeds started, the cultivator was used freely, harrowing followed, and the land was again cultivated and again harrowed as the weeds sprouted. By the twelfth of June, the seed was drilled in, and 1½ to 2 pounds an acre was sown—enough, as my friend said, for the fly and himself. The rows were twenty inches from centre to centre, and the plants were left about twelve inches apart in the rows. Their growth was most rapid by this course of cultivation, and a peculiar little cultivator or gang-plough, reversible in its action on the land, was passed at intervals between the rows. A most novel harrow was also used, made of a plank full of spikes. There was one great secret of success—never to allow the weeds to gain head. The cultivating and harrowing between the rows was soon done, but the hoeing was a more serious job.

The turnips were twice hoed *in the row*, the first time without much care except to reduce the young weeds, the second time more carefully, to thin out and single the young plants. Mr S. told me that he should like much to take a contract to raise any quantity of Swede turnips at four pence per bushel, delivered on the field in heaps. I could not think that this would pay, but he assured me that if the turnips were consumed on the farm, the value of the manure thus made would of itself pay him a small profit towards the expense of the turnip crop.

The figures given me were as follows, premising that the fallow had to be made at any rate, whatever crop was sown, and the manure for the turnips hauled out, supposing he were going to sow spring wheat. Winter wheat had not been as certain in its results for some years past as it formerly was—not even when new land was sown. He accounted for this by depreciated seed; in fact there was no other satisfactory way of doing

so, and the comparison was therefore made between the turnip crop and one of spring wheat, premising, as above, that the land was prepared for either turnips or spring wheat.

The account would stand thus:—
Dr.

To seed wheat, 1½ bushels at \$1..	\$1 50
Sowing, 25c.; harrowing, 50c..	75
Once cultivating	50
Cradling and binding, with board	1 50
Hauling ..	75
Threshing	1 00

	\$6 00

Rent of land ..	2 00

	\$8 00
	Cr.

By 15 bushels of wheat at \$1 ..	\$15 00
Value of straw as feed	2 00

	\$17 00

Turnip crop—Dr.

To seed, 2 lbs. at 30c ..	60
Twice cultivating at 50c ..	1 00
Twice harrowing at 50c.....	1 00
Drilling ..	1 00
Twice cultivating at 50c ..	1 00
Twice hoeing at \$1.....	2 00
Digging, pitting, or hauling home, at 20c. per load.....	4 60
Cost of feeding covered by value of manure.	

	\$11 20

Cr.
By 750 bushels turnips at 6c

Showing a vast preponderance in favour of growing turnips at 6c., instead of spring wheat at \$1, when only getting 15 bushels an acre; and this is about the average crop all over the province.

These calculations led me to enquire Mr S.'s opinion as to the practicability of growing sugar beet at \$4 a ton, or 10c. a bushel, cash, when delivered at the factory. He answered unequivocally that he would readily undertake the growth of 100 acres at that price, provided the delivery could be effected without hauling more than from one to two miles. I afterwards obtained a similar opinion from two or three practical turnip growing farmers. The chief objection made to the comparative advantages of growing sugar beet when hauled off the farms, instead of turnips consumed on the place, was the absence of the large quantity of manure made by the feeding of turnips to the cattle. One man who farms 225 acres of land informed me that he had grown as high as twenty acres of turnips a year, and fully corroborated the foregoing statement, and, as additional statistical facts, added, that all the farmers to the north of Guelph, about Elora, and still further northward, had for some years depended almost entirely on the growth of turnips and fattening cattle; but he considered it paid better to consume at least a bushel a week of chopped peas, or its equivalent in other grain, to each head of cattle fed. The manure was still better,

and the cattle fed much quicker. His figures were as follows:—

To purchase of steer, four years old	\$30 00
Three months' feed of grain at 1 bushel per week at 6c ..	7 20
200 bushels turnips at 6c ..	12 00
Straw <i>ab libitum</i> .	

	\$49 20

His steers averaged, when fat, 1,300 lbs. each, and he obtained \$5 to \$5 25 per 100 pounds for them, live weight, and amounting to about \$70 each, showing a good profit on the transaction, besides the manure. No hay was fed, but straw substituted. In the manure he considered himself repaid for his labour of feeding by this article alone. He assured me that he had kept separate the manure obtained from ten head of cattle, and that during the three months they were stall-fed he had hauled out thirty loads of the best manure. Of course, the cattle were liberally supplied with bedding. This was applied to a fallow where barley was grown, and the manure was carefully distributed over nearly three acres of the land. The proceeds of the three acres so sparsely manured was measured and compared with the yield of the same quantity of the same field, but unmanured, and resulted in an increase of twenty-eight bushels of barley, which at 80 cents, the price obtained, made the manure absolutely worth, from these ten cattle, less the cost of hauling to the field, \$22 40, or nearly \$2 25 to each beast fattened.

I thought the value very low stated, as certainly the effect of the manure would be felt in several subsequent crops, and I should have been willing to place it at double the value he gave me on this account alone.

Manure—Gypsum.

"Gypsum," "Sulphate of Lime," or, as it is generally known, "Plaster of Paris," is used greatly, and with usually beneficial results, by the majority of our Canadian farmers. The fertilizing powers of this manure upon certain crops and on certain soils, have been very favourably reported upon by many eminent American and British agriculturists.

The name Plaster of Paris was given when gypsum first came into general notoriety, from the fact that large beds were found and worked in the hill of Montmartre, near Paris.

The analysis of gypsum shows it to contain, of

	Parts
Pure calcareous earth or lime, about	
	30 or 33
Sulphuric acid ..	32 " 43
Crystallized water ..	38 " 24

	100 100

Its dissolution in water, owing to the presence of a large proportion of sulphuric

acid, is a process of slow accomplishment, requiring from 450 to 500 times its own weight of water. Its purity varies in different beds, and hence chemists have not well agreed in their respective analytical reports. A good test of its purity is obtained thus: Put the ground powder in an iron pot alone, over the fire; when it becomes heated it will give out a strong sulphureous smell, accompanied by a rapid bubbling; if this ebullition is brisk and the substance will admit of a straw being thrust with ease to the bottom, it may be considered pure.

Traces of the discovery of gypsum are discerned in the writings of the ancients; but not until the last centuries were its properties generally known in Europe. At that time some experiments of its use were reported on by eminent German agriculturists to the Economical Society of Berne, in Switzerland, when it rapidly spread over that country, France, and many other parts of Europe. It was, however, in America that its merits became most generally recognized. Indeed, it was exported to America in large quantities, and from the Delaware was conveyed as much as 150 miles by land carriage, until discovered in the State of New York.

The stone, when ground to powder, produces from 20 to 25 bushels per ton.

Experiments were made in England of the relative values of plaster simply ground and when calcined. It was thought that by burning much of the water contained might be expelled, and thus the proportionate weight be greatly reduced. The water cannot, however, be expelled from the sulphuric acid except by the most violent heat, and thus the attempt was found practically useless, and was consequently abandoned; also, experiments upon the use of plaster when calcined proved that there was an almost imperceptible difference between its effects when burned and when simply ground.

Upon our light and sandy soils the effect of gypsum seems to be most rapid and lasting, and in Canada I find that the farmers on the lighter soils apply it more generally than those on the clay lands. Upon wet land this manure has little or no effect. The growth of young clover is very materially quickened by a good top-dressing of plaster, and its benefits are more particularly observable in its application to all leguminous plants. This manure, like lime, is a stimulant. The caution contained in the last article on manures as to the evil effect of a too oft repeated application of lime, apply with more or less force to this manure also.

I have seen it used on fall wheat with various results. No doubt, it stimulates and starts a young wheat crop, but it also gives the young plant an unnatural push, which weakens its strength, and thus materially reduces its power of standing a long and severe winter. Its application in the spring

on winter wheat I believe to be of great benefit. Not only does it push forward and revivify the young wheat plant after its long torpor, but it is upon the ground for the benefit of the clover crop.

Its exact means of action upon the growing plant yet remains clouded in much doubt and uncertainty. It is very generally supposed that its effect is due to its power of attaching moisture to the plant upon which it rests. Sir Humphrey Davy, however, contradicts this, for he says that even allowing gypsum to have a great attraction for water, yet the same substance, owing to the large proportion of sulphuric acid, also retains its moisture most strongly, and therefore would give it off very slowly indeed to the leaves and roots of plants with which it may be brought into contact. Moreover, this great chemist denies the fact that gypsum has a strong attraction for water, and gives the following experiment in support of such denial: 1½ ounces of gypsum were exposed for three foggy nights to the air, and on the third night being weighed carefully, it was found that the increase was not quite half a grain.

It has also been urged that, when applied to clover just before rain, its effects were not perceptible. No doubt this has been owing simply to the fact that the rain has washed it off the plants into the ground, where its effects upon the plant by the root would not be so observable, because not so rapid; and yet it is well known that that part of the field upon which it has been spread invariably retains the dew for some time longer in the morning than those parts upon which gypsum has not been laid.

I think that even with these contradictory reports and opinions before us, we may, at any rate, be certain that its benefits are great upon many crops—wheat, spring grain, corn, turnips; but more especially upon clover and the grasses. For my own part, I consider that in this very power of retaining moisture consists the great value of gypsum as a top-dressing in this country.

When all other sources from which moisture may be drawn fail the plant, the gypsum is giving out its moisture, very slowly it is true, but in sufficient quantities to keep the plant supplied and growing from dew to dew and from rain to rain. In England, where they do not often suffer from a too dry atmosphere, the opinions of farmers upon the use of gypsum are very varied, and it does not seem to have anything like a proportionate value as it has upon this our dryer continent.

At one of the regular meetings of the Ancaster Farmers' Club, last winter, when speaking to the subject of plaster, brought forward in an able essay by a gentleman of this locality, although some difference of opinion appeared to exist as to the time of application and the immediate action of this manure, yet the immense benefit to be de-

rived from a generous use of gypsum on many crops, and more especially upon clover, was most cordially endorsed, and proved by reports of different experiments by the majority of our most successful farmers.

Ancaster.

C. E. W.

Growing Green Crops for Soiling.

Some intelligent enterprising people in that part of the County of Oxford near the Township of Dereham, have for some time past been growing Indian corn, sown broadcast, for the purpose of soiling dairy stock, when the fervid heats of summer cause the grass and pasture to run short. About the middle of May they sow on the richest land they have, three bushels of corn to the acre, broadcast. The growth is so rapid and rank on rich land that no hoeing is required, and the corn soon takes the destruction of all seeds into its own hands. The stalks are allowed to attain a growth of about $\frac{5}{8}$ of an inch in diameter, and from four to six feet high. The cattle are then plentifully supplied with them, cut and carried to their yards. They thrive wonderfully well on this food, and rather increase than decrease their milk, even when taken from good pastures, especially when the ear begins to form, at which time the cows become quite fat and the milk affords butter of the richest yellow colour. Until the ears begin to form the butter made from green corn stalks is rather white, though very sweet and palatable.

This feed is continued until fall rain has caused a fresh growth of grass. The remaining corn, that has by this time become rather old and stalky, is cut with a mowing machine and cured like hay; after which it is carefully stacked away, in small parcels, so as to avoid much heating, and forms the very best quality of fodder.

The part of Canada here alluded to, is probably favoured with a peculiar climate, and well adapted to the growth of corn fodder. The soil also is a rich sandy or clay loam, certainly one of the best soils for the above purpose; but many localities would find it very much to their advantage to follow this course also, especially where late autumnal frosts are likely to prevent corn from maturing.

The inhabitants of Durham claim that this course of husbandry is better fitted for their country than that of growing turnips, and costs much less, especially as turnips are not generally a success with them. Many sorts of corn have been tried, from the early white Canadian flint to the tall American horse-tooth; but the latter grows too rankly and too soon attains a strong woody substance in the stalk. The medium-sized, but early, varieties are the best liked. That kind called "ever-green," or sweet late corn would, I think, answer remarkably well, as it is greatly addicted to suckering, so much so as usually to throw two or three suckers to one stalk.

The corn of this variety would not probably ripen, but the immense quantity of young green succulent sprouts would, I think, amply compensate for this want. One great advantage attending this course of husbandry is the great quantity of the richest kind of manure thus formed. Of course the yard or stables where the cattle are fed, are always well littered with straw, and the result is soon shown on the farm.

My informant states that the quantity of green corn thus grown on an acre is enormous, and the cost (except for seed) very little. Some months since I travelled on the railway with a cattle and corn farmer from the State of Maine, and he described a very similar course pursued in that State by himself and his neighbours, who depend altogether on raising cattle and making butter for the city of Boston market. He always milked fifty to seventy-five cows, I bought in early spring from Canada and elsewhere, and when winter came on they were always, with few exceptions, driven off to other markets for fattening purposes. Vast herds of these cows go to New York, and are fattened on distillery slop. This food when fed hot is very stimulating, and cows that only gave in the month of November, on farm-feed, say half a gallon of milk daily, when put on distillery slop and warmly housed, at once often raise their quantity to two gallons a day, and being strippers, the milk is exceedingly rich.

Wintering over such cows does not seem profitable with the farmers in the State of Maine, who prefer buying in the spring, and selling in the fall; and I am credibly informed that the extra condition in which the animals are in the fall, on the before-mentioned food, principally formed of green corn, enables them to bring almost as much, as strippers, as they cost when fresh calved. C.

Drying Roots.

A new patented process of preparing roots for cattle feeding, by which it is claimed that they are doubled in value at a small cost, has been brought out in England. The principle of the process consists mainly in drying out a portion of the water contained in the roots, and so rendering them more concentrated, while the heat used in the process (the mode of applying which makes the patent) partially cooks the roots, and so makes them more easily digestible. By thus getting rid of a portion of matter (water) of which there is an excess beyond the actual needs of digestion, the roots are rendered much more valuable to feed to fattening animals, as being less bulky in weight, while more concentrated in substance, more can be consumed by the animal in a given time, and so the process of feeding rendered shorter, without the necessity of using expensive foods, such as meal or oil cake, to quicken the process of fattening.

The thing could easily be tried here, on a small scale at first, and if found successful and profitable, those of our farmers who make the fattening of cattle or sheep during winter a part of their routine, could easily enlarge upon the primitive method we propose to give, which is nothing else than to try the baking of a few bushels at a time in one of those brick bake ovens so often found on Canadian farms.

The roots need not be subjected to great heat, but put in after the batch of bread is out, and left in till the oven cools, keeping the door shut, but allowing egress by the chimney to the vapour evolved. A slight blackening of the roots, provided they are not burnt, would not hurt them. All the valuable flesh and fat-forming elements in the roots would still remain, as does the starch and gluten in the loaf after being baked. It is said that in the experiments tried in England it was found stock would eat greedily of dried mangels and turnips, and fatten much more rapidly than on the raw roots.

Waste of Forests

There has been, with very few exceptions, a wanton waste of the forest resources, not only of our own country, but of the entire world. Man has come to regard his early cradle, the forest, as an enemy, instead of as a benefactor. In England the prudent care of our forefathers to watch the growth of our forest trees - to secure a perennial supply of oak for our ships, as well as of yew for our bows, is altogether forgotten. The forest rights of the Crown over a district that has been wooded since the time of Julius Caesar, the forest of Epping, have been so purposely neglected, that it has needed the very unmistakable expression of public feeling to elicit from the Solicitor-General anything more than a joke upon wolves and bears. The 100,000 acres of forest, under the administration of the Woods and Forests, has been so admirably managed, as to arrive at the result of a rental at the rate of three shillings and six pence per acre. The wooden walls of Old England are now so much an affair of the past that it may be said that we only regard timber as necessary to ornamental landscape, or as a material for lucifer matches. It is in this country and its dependencies, and in those of our American descendants, that the laws of Nature as to the clothing of the earth with timber have been the most persistently broken. But we are far from being alone in our folly. To whatever part of the world we turn we see indications that waste and destruction bring their own vengeance in their train. Of the effects produced upon climate by the denudation of the soil there is no room for doubt. To a certain extent the influence of human labour in the thinning of forests is beneficial, but the limits between culture and destruction are rarely maintained. The

increased aridity of Palestine, of Spain, and of the South of France is well known. In the former case it has been partly caused by the cutting down of the olive, a barbarous incident of warfare, merely forbidden by ancient law. In the last-named country it has been the need of fuel that has led to the denudation of so many districts, and the double evil has ensued, first, that the humidity of the climate has been reduced to a formidable extent, and secondly, that when rain does fall, in any unusual proportions, the absence of the great natural absorbing power of forest districts allows the entire product of the rainfall to be discharged at once by the natural drainage, thus causing those floods which have proved so formidable in their ravages within the last few years. The denudation of the forests of England is by no means a new grief. More than two hundred years ago Mr. Evelyn complained of the rapid extirpation, "root and branch, of all those goodly forests and woods which our more prudent ancestors left standing for the ornament and service of their country." On the confiscation of the Church lands in 1536 immense forests were cut down, and during the civil war that commenced a century later many Royal forests, as well as private woods, were entirely swept away. In France there yet exist 2,700,000 acres of State forest, earning a gross revenue of £1,710,000, and a net revenue of £1,240,000 per annum. Bavaria contains nearly 2,000,000 acres of forest; Prussia, upwards of 5,000,000; Austria no less than 13,000,000 acres, realizing an annual export value of £3,000,000 sterling. In France and Germany exist schools of forestry in connection with the service of the State, and men of a superior class of intelligence are carefully trained in these establishments for the scientific management of this important part of the national property.—*Bühler*.

Gentleman Farming

Very pleasant to talk about. Why don't one hear of gentlemen printers, gentlemen merchants, gentlemen doctors, and gentlemen everything else? The great popular mistake of those who talk of gentlemanly farming is, that they suppose the practical farmer to be a boor of necessity, and that his calling is a vulgar one, unfit for an educated mind, yet when sublimated by intelligence, education and rational associations may be made respectable! "Gentleman" farming is a rank humbug, as any other profession or trade would be, followed in the same fashion—that is, by hanging out a sign, furnishing the shop, store or office with its stock-in-trade, and then leave it to the clerks and shop boys to take care of, while the principal goes about talking politics, or spending his time in the bar-room, or fooling it away in other nonsense.—*Boston Cultivator*.

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Stock Department.

Preparing Cattle for Fattening.

This is an excellent manure; but, as in many other cases, one must know how to use it. It is: First—Good for all fruit trees; then, for meadows over-run with moss, and for clover. In the kitchen garden, reserve it for the onions. For other vegetables it is more hurtful than useful. Use it with moderation. In small quantities, root produces good results; in large, it deorganizes the plants, burns and cauterizes them, eating both leaves and roots. On a rainy day, give your soil a weak dose; prudence says, mingle earth and mud with it. Above all, do not make use of it in hot and dry weather. — *La Gazette des Com. agric.*

RANK WHEAT.—A correspondent wishes to know "what is considered the best treatment for fall wheat too advanced for the season." Turning on sheep to feed on the too rank growth is sometimes practised with good results.

SECURING FENCE POSTS.—By nailing a strip of board on each side of the post at the lower end, sagging and heaving may be prevented. The edges of the boards should come even with the bottom end of the post, and project a few inches each side, being crosswise of the fence line. The projection need not be more than two or three inches on a side, and the strips not more than four inches wide, yet wider would be better.

POTATOES ON THE MANITOU ISLANDS.—Some of the finest potatoes that we have seen this season were grown on the Manitou Islands, in Lake Michigan, at something over 45 degrees north latitude. Parties whom we saw on the islands stated that they often let the potatoes stay in the ground all winter without digging, as the great fall of snow there in the latter part of the fall prevented them from freezing. It is also quite common there to plant potatoes in the fall that are wanted early the next season. The Colorado beetle has not yet reached this paradise of potato raisers.

When board fences become old, and the boards begin to come off, nail upright facing strips upon them against each post, and the boards will be held to their place, and the fence will stand several years longer. Always set a post fence over a ditch, or near a good drainage, and the post will always remain dry, and will last many years longer than those standing in wet subsoil.

In the top-dressing of meadows with compost, we are adding to the soil, raising it and inviting the roots of the grass upward, thus thickening the sod. This is the most precious of manures—this thick mat of roots and compost. It will prolong the meadows, and add to the production of grain when ploughed. On a gravelly soil this compost will be improved if one of the principal ingredients is clay.

That loss instead of gain results in many instances, from the process of feeding cattle for the butcher, especially by small farmers and those who do not make a regular practice of fattening beasts for sale, and consequently have not acquired the practical knowledge the regular feeder finds so necessary to ensure success in the process of fattening cattle, is but too true. Much of this is due to the want of good breeding, and an adaptability to feed well, in the beasts themselves, but more of it to the want of proper preparation of the animals before they are put up to fatten.

How often do we see a miserable half-starved bovine without a particle of flesh on its bones, but what muscles will hold its frame together, and having a hard unyielding skin covered with dirt and scurf, put up to be fed for the butcher on dry hay, to which a few roots and perhaps some grain is grudgingly added. Such a beast will take months of time and a large consumption of food to bring it up to the point at which the process of laying on fat will commence; or, if highly fed on corn meal or other rich food, will put on a layer of fat just under the skin, with scarcely any flesh between that and the bones, and so be worth but little more after feeding up, than it would fetch as a store beast. Then again there are thousands of beasts put up to feed for the butcher before they have attained an age at which they can be profitably fed. Such animals, though they may be made passable enough to suit the wants of the drover or low class butcher, can only be sold at a low price and attain but small weights, while, had they been kept on till they had attained their full growth, they might be made to vie with the best and command double or treble the price.

Cattle intended to be winter-fed for the butcher should have reached maturity as regards the development of their muscular and digestive systems. With common stock this is rarely the case till they are full five years old. In thrifty, well kept, grade Short-horns, Herefords, or Devons, the animals will be ready to fatten at three years old, and then acquire fat readily on less food than common stock at double the age. Herein lies the great advantage of an admixture of thorough-bred blood into our herds, and it should be the aim of every farmer in the land to employ thorough-bred sires as much as possible.

To get the animals in a proper condition to be fed up, they must have the run of such good pasture in the summer and fall before being put up as will bring them into the stalls full of flesh well laid on at every valuable point. This done, the process of feeding

in order to lay on fat at the right point, and in the proper manner, becomes both profitable and takes but a moderate length of time, and such an animal, well managed, will bring in much more per pound live weight than one of equal size fed in the ordinary way.

Breeding Cows for the Dairy.

So great is the demand, and so insufficient the supply, of really good milch cows, that it is a wonder that more attention is not paid to the matter of breeding them exclusively. The dairymen themselves cannot well raise their own calves, as they require all the milk of their cows for the manufacture of cheese; but they can at least do something towards the improvement of this class of stock, by using only first-class bulls of pure blood, either short-horn or Ayrshire, to run with their cows during the summer. This would greatly enhance their value when they are sold off in the fall, and those who purchased in order to keep till their calves were dropped and old enough to be fed by hand, would be more likely to raise and well care for the heifer calves, from the certainty that they would prove valuable as milkers in the future. Grade cows with a strong infusion of good blood in them, always command fair prices, and usually prove better milkers and better feeders, as well as finer and larger animals, than those of purely native stock. Two crosses of short-horn blood followed by a cross of Ayrshire make the most profitable dairy stock that can be had, without at the same time going to the heavy expense of keeping a herd of thorough-breds. If some of our best farmers, in those districts that are as yet not given to cheese making, would go into the business of breeding cows for the dairy, we think they would find it exceedingly profitable.

If good grade heifers with one or two crosses of short-horn blood of a milking strain can be had, they would form a good foundation for a herd, and by using a short-horn bull to them and afterwards an Ayrshire bull to their progeny, animals could be obtained that would combine the large size and good feeding properties of the short-horn, to which the Ayrshire cross would add the adaptability for producing milk in quantity. The short-horn blood should be stuck to, giving a cross of Ayrshire only after two or three of the short-horns have been put in.

If large well-made heifers of native stock, from good milking dams, can be had, the use of the short-horn blood will soon bring their progeny into better size or form, and then a cross of Ayrshire might be added. It is now proved that the capability of a cow to secrete milk depends greatly upon her being a large feeder and good digester, and these qualities are best obtained by using short-horn blood to cross with. Large heavy cows are the best milk producers, though they may not

give the largest proportion of butter. The diminutive Channel Island cows or the Devon are undoubtedly the best butter producers, yet they are not as profitable for general dairying as the larger short-horn or Ayrshire grades. It must not be overlooked that large heavy cows can be made most out of as beef, when their best days as milkers are passed.

By a judicious course of breeding, taking care to feed well, so as to bring the young heifers early to maturity and ready for the pail at three years old, more money can be made than one would suppose. Such animals readily command any price in reason. We have seen some sold this fall at prices ranging from \$100 to \$160 each. The actual cost of breeding and keeping such animals till three years old would be but little more than that of raising native stock; the principal item being the purchase and keep of a pure-bred bull, of sufficiently good pedigree to impress the high qualities of his blood upon the stock to which he is used. He must be of undoubted purity of blood, and from a milking tribe, otherwise the effort to breed a high class of cows would result in failure.

The matter of breeding stock exclusively for the dairy is one well worthy of consideration, and we are inclined to think that those who would undertake to start and establish herds with that view, would find it not only profitable, but also feel a sense of pride and satisfaction in witnessing the success of their efforts to obtain a high name that would of itself bring buyers to their doors ready to pay such prices as only really good animals can or ought to command.

Working Milk Cows

In reference to a question on this subject to which we have already briefly replied, we may add that we have never seen milking cows worked, and doubt there being any profit in doing so, and could not recommend our correspondent to try the experiment as one having a reasonable chance of success, even when taking into account the probably increased quantity and quality of the milk which may probably arise, provided extra grain food was given in great abundance.

A gentleman from the Isle of Wight, England, says that, many years since, and before he left home, he had often seen a miserly old farmer, who occupied, as tenant, a few acres of land, doing his farm work with a cow and a donkey harnessed together; and often, when ploughing with this most novel team, he had no other driver than his daughter, who was provided with a trace whereby she assisted in difficult or hard spots. Thousands have seen this curious exhibition of combined labour, and the daughter—an old maid of about 45—did not seem to feel any decided objection to do her part.

This family lived just opposite, and within two stones' throw of the cottage of the famous Dairyman's Daughter, whose life has

so conspicuously figured in numberless tracts.

Almost all the members of this woman's family worked at intervals for our informant, and consequently he had many opportunities of seeing the above extraordinary team at work, but no good ever appeared to have resulted therefrom.

Stock Need the Best of Care Now.

We believe that, as a rule, stock receive the shabbiest treatment of the year during the late fall and early winter. And this is the very period when they should have the best care. Every farmer knows that it is "half the battle" to bring his stock through to steady foddering in good condition. If a flock of sheep comes to the barn in December, pinched and scrawny, it will leave the barn in the spring thinned in numbers, with wool loose and ready to be pulled off by the first bramble it touches, and thus depreciated more than the cost of its wintering. If the cows come to the stable and foddering, pinched and thin, by reason of frost-bitten pastures and heavy milking, the owner need not be surprised if half of them lose their calves or their lives during the winter. In fact, may not the treatment of the cows during the late fall and early winter, be one of the chief causes of the growing frequency of abortions in dairy districts? The dairyman is anxious to make his cows pay him all they will. He has good excuse for being greedy, we admit. Even the consumers of butter and cheese, who are accustomed to complain so loudly of the high prices of those articles, must acknowledge it, too, after reading the exhibit of their cost, made at the last meeting of the Central New York Farmers' Club. Yes, the dairyman is in no danger of getting suddenly rich, even if successful in getting the largest possible yield from his cows. But many of the devices that he resorts to, for compassing that end, are crying examples of mistaken economy. They are suggested by his greed rather than his good sense, and result too frequently, as measures adopted by greed generally do, in killing the hen that lays the golden egg. He thinks there is no need of foddering his cows until the pastures are covered with snow, and the shivering animals stand lowing about the barn. As long as they will roam over the pastures, picking at the frozen and immature tufts of grass, he thinks they are doing well enough. They shrink in their mess badly, but he feeds them with apples, or pumpkins, or leaves from his root crops, and they regain their usual flow of milk. Now they are certainly well enough. But he forgets that he is burning the candle at both ends, that he is trying to "eat his cake and keep it, too," though he is temporarily succeeding. When he comes to stable his cows for the winter they are lean and weak. Pretty soon, some of them begin to abort. He thinks they need

heartier food. He gives them a little meal, in addition to his best hay; for he has now fed out all the "odds and ends"—the poor corn-feeder and the worst straw. But this sudden change in the diet only aggravates the difficulty. It makes his cows feverish, but not healthy and strong. Still more abort, or, if they escape this, and drop their calves alive, they fall victims to milk-fever, black-leg, pleuro-pneumonia, or some other of the many ills that badly treated cows become heirs to. He is perplexed. He can see no reason why his herd should be so afflicted; and he very philosophically concludes it is his "luck," when there is no "luck" about it; only carelessness and "mistaken economy."

Of course, we do not mean to assert that cows, with the best of care, will escape all diseases and mishaps; nor do we wish to put forth the theory that abortion is attributable only to improper feeding in the fall, or at any other time. But we do believe and assert that every farmer loses ten times as much as he gains by scrimping his cows during the last of the fall and the first of the winter, or by leaving them to shift for themselves. As soon as the cold rains of November come on, they should be stabled every night and given a light foddering of good hay or cornstalks every morning. Never should they be allowed to sleep out after snow begins falling, or left to the pickings of frozen pastures. Cabbage leaves, leaves of root crops, apples and pumpkins may be profitably fed, if other food is also given to sustain and build up the muscular system. But milk-secreting food, when given in excess, weakens the animal and often causes her serious injury.—*Utica Herald*.

On Pig Breeding and Feeding.

Some of the most prominent breeders of swine at the south-west had a discussion recently, at the meeting of the St. Louis Farmers' Club, on the subject of breeding and feeding swine. The qualities and adaptability of several different breeds were thoroughly discussed, and the general conclusion seemed to be that the Berkshire was in every way the most profitable breed, and the most to be depended on. Medium-sized animals seemed to obtain the preference. The Poland and Magic found many friends, but it was admitted that they were not yet sufficiently established to rank as a pure breed, and that a cross of the Berkshire, the Chester White, or any other kind of pig common to that section, upon them, produced a better and more profitable animal to feed than anything else that had yet been tried.

In answer to the question as to how the Berkshire itself in its purity had proved successful as a feeder, it was said that the breed had as yet been too valuable to use for crossing on other stock to be made into pork,

but that some would be fed this fall to test the matter. Those that were now being fed were estimated by their owner to go seven hundred pounds each dressed. They give a larger weight for their size than any other breed. The crosses obtained by using Berkshire boars to sows of other breeds were remarkably thrifty, and easily kept. The Berkshires were admitted to be good breeders and excellent nurses, seldom if ever destroying their offspring, while the Essex were said to be very uncertain as breeders and nurses, and the other large breeds of the south-west were much given to destroying their young.

It was stated that corn should not be fed to young pigs, and that even fattening hogs did better upon a mixture of oats and corn, or several kinds of grain together, than on corn alone.

Scalding the feed seemed to be considered preferable to grinding it, and feeding often, not less than five times a day, better than giving the animal large quantities at a time.

One fact strongly in favour of the Berkshires came out, namely, that they were exempt from that scourge of pig-breeders of the West, hog cholera, as also were the Essex. These fixed breeds were said to have a higher vitality and better constitutions to resist unfavourable climatic influences than those of a less fixed type. Added to this, they were eminently a grazing breed, and will grow fat on clover alone, where a common pig would starve for want of grain or animal food. As one speaker said, "they did not know what grain was," to which an advocate of the Chester Whites replied, "Starve them to it."

The Selection of Breeding Stock.

It is somewhat singular that, while the country abounds with well bred animals of every kind, horses, cattle, sheep and pigs, there is yet such a superabundance of wretched breeds to be met with in every direction. To a certain extent bad land accounts for a portion of this, inducing weakness even in animals of good blood, and whose form under more favourable conditions would be all that could be desired, the proof being that, when removed to kindlier pastures, if done before they become stunted, they rapidly fill up and become useful stock, healthier and hardier probably than others reared under more favourable conditions. Those who farm poor land are also more or less indifferent as to the necessity of procuring good blood, believing that the common breeds are hardier, and as in the case of milch cows give a greater return on poor pastures than better bred animals could possibly do. Bad land, however, does not account for all the poor stock to be met with, on the contrary, a considerable proportion of it comes from land of average quality, and which is quite capable of carrying animals of much greater weight and value than many of those that

are found upon it. The great natural law that "like begets like" seems in such cases to be entirely overlooked, animals of both sexes continuing to be bred from that are totally unfit to be used for reproductive purposes. A farmer doing this betrays a want of attention and indifference to the furtherance of his own interests highly reprehensible, and if his stock is extensive he must in the long run suffer severely. Using male animals of mixed blood is a most prolific source of impurity, and of course actual pecuniary loss, whether in the herd or flock. Deterioration may not be immediately noticeable, but when a certain point has been reached, improvement must stop; and in the progeny of cross-bred animals there must, and always will be, found a number of weaknesses not worth the trouble of rearing.

Whatever the class or character of the dams, the continued use of sires of a distinct breed, capable of transmitting a family likeness, should constantly be persisted in; the man who does so finding his stock of various breeds of animals yearly increasing in value, the receipts correspondingly raised, and the occupants of his pastures, stables or stalls, wonderfully improved in appearance.

Whether they attend to it or not, we find most men admitting the influence of a well-bred sire on the character and quality of the future offspring; but, strange to say, comparatively little stress is laid upon the influence for good which is exerted by the dam on her young, when she herself is of good quality and well descended. When both parents are good, progress is rapid; and by holding over for breeders only the young of the best animals much time is saved, and the required amount of perfection is reached in a very limited number of years. Once looked to, this point will ever after be considered one of the most vital importance, and will on no account whatever be neglected or overlooked. To any one conversant with stock in large numbers, the influence of the mother is strikingly apparent in certain members of each class, their produce year after year exceeding in value that of every other animal of the same kind, and when sold brings proportionately more money. Thus, for instance, a cow will sometimes breed calves for a succession of years exactly the same colour, form and general character, no matter if the sire is changed each year; and her progeny again will transmit to their own offspring the same characteristics. But in an improved degree, if the necessary measures have been attended to with this view. Families are thus founded, and men intelligent enough to profit by improving a good strain which have come in their way—it may be quite accidentally in the first instance—have gained for themselves a name and acquired fortunes. To breed from females which have proved themselves indifferent nurses, and whose progeny, however handsome they themselves may be, are always amongst the culls of the flock or herd,

is very short-sighted policy, and detracts very materially from the prosperity of those who will not take the trouble of marking all such animals, and getting rid of them on the first favourable opportunity. Hardiness, by which general term a great deal of meaning is expressed, should never be lost sight of by the breeder, but on the contrary carefully attended to, as it is a quality of the utmost consequence, enabling them to withstand the vicissitudes of the weather, to keep up condition at periods when the greatest foresight cannot prevent a scarcity of food, to be always in good health, and to be able to breed animals of sound, healthy and hardy constitutions. —*Mark Lane L. pass.*

Weaning Pigs

Some farmers wean the pigs a few hours after birth, and turn the sow at once to the boar. The best mode, however, is to turn the boar into the hog-yard about a week after parturition, at which time the sow should be removed a few hours daily from her young. It does not injure either the sow or her pigs, if she takes the boar while suckling; but some sows will not do so until the drying of their milk.

The age at which pigs may be weaned to the greatest advantage, is when they are about eight or ten weeks old; many, however, wean them as early as six weeks, but they seldom turn out as well. They should not be taken from the sow at once but gradually weaned. At first they should be removed from her a certain number of hours each day, and accustomed to be impelled by hunger to eat from the trough; then they may be turned out for an hour without her, and afterwards shut up, while she also is turned out by herself. Subsequently, they must only be allowed to suck a certain number of times in the twenty-four hours; perhaps six times at first, then four, three, and at last only once, and meanwhile they must be proportionately better and more plentifully fed, and the mother's diet in a like manner diminished. Some advise that the whole litter should be weaned at once; this is best, unless one or two of the pigs are much weaker and smaller than the others; in such case, if the sow remains in tolerable condition, the feeble ones might be suffered to suck for a week longer, but this should be the exception, and not the general rule.

Pigs are more easily weaned than almost any other animal, because they learn to feed sooner; but attention must, nevertheless, be paid to them, if they are to grow up strong healthy animals. Their styes must be warm, dry, clean, well-ventilated, and weather-tight. They should have the run of a grass meadow or enclosure for an hour or two every fine day in spring and summer, or be turned into the farm-yard among the cattle in the winter, as fresh air and exercise tend to prevent them from becoming rickety and crooked in the legs.

The most nutritious and succulent food that circumstances will permit should be furnished them. Newly-weaned pigs require five or six meals in the twenty-four hours.—In about ten days one may be omitted; in another week, a second; and then they should do with three regular meals each day. A little sulphur mingled with the food, or a small quantity of Epsom or Glauber salts dissolved in the water, will frequently prove beneficial. A plentiful supply of clear, cold water should always be within their reach; the food left in the trough after the animals have finished eating, should be removed, and the trough thoroughly rinsed out before any more is put into it. Strict attention should also be paid to cleanliness. The boars and sows should be kept apart from the period of weaning.—*National Live Stock Journal.*

Canadian Horses for the Cavalry.

To those who are fond of sneering at our Canadian breed of horses (and of whom there are not a few in Canada), the following public testimony, borne by a man whom the *Mark Lane Express* styles "one who has evidently much experience of the countries of which he speaks" may be some answer:—"As regards the merits of the horses as troopers, in the year 1842 I saw a considerable number of these animals that came home in the 1st Dragoon Guards and the 7th Hussars from Canada. I rode a great many of them, and I say unhesitatingly that they were the best troop horses I ever rode in England—up to great weight, very shapely, and fine free goers, with splendid action. They were bought for about £25 each."

The Value of Straw as Fodder.

In the remarks we have made regarding the value of dry corn fodder, it was stated that it has been put in mows with wheat straw in our barns, and that the straw and corn "butts" have been consumed together by our herd of cows, causing a copious and well-sustained flow of milk during the winter months. These remarks have led to many inquiries from our farmer readers with regard to the nutritive value of wheat and other kinds of straw. It is certain that straw has been under-estimated in this country by grain-raisers, and that a source of profit has been to a considerable extent lost from this circumstance. One hundred parts of wheat straw, as produced under ordinary conditions in this country, contain:—

Water.....	13.33
Oil, etc.....	1.74
Albumen, etc.....	1.28
Sugar, mucilage, extractive matters, etc.....	4.26
Digestible fibre.....	19.40
Soluble inorganic matter.....	1.13
Insoluble proteine compounds.....	1.65
Woody fibre.....	54.13
Insoluble inorganic matter.....	3.08
	100.00

It will be seen that wheat straw contains about 30 per cent. of assimilable food, or food capable of nourishing animals. It contains as much albumen and proteine compounds as the ordinary run of hay. Woody fibre is, however, largely in excess, and there is a far less quantity of sugar, mucilage, etc., than in the hay of our meadows. The kind of straw which approaches nearest to good upland hay is oat straw cut before it is ripe. The order in which the different kinds of straw stand relatively, as regards nutritive value, may be presented thus:—

- Oat straw,
- Barley straw,
- Wheat straw,
- Rye straw.

Unquestionably it will be for the interest of farmers in most sections to diminish the amount of straw used for litter and increase its use for fodder. In many of the Northern States rye straw is of equal value with the best quality of timothy, as it is used largely for bedding horses in towns and cities. Of course, where straw commands such high prices, and is of such ready sale, it would be abused to feed it to animals.

We must not be understood in these remarks as holding to the view that any kind of straw can supersede the use of good hay and grain, but rather that it contains a sufficient amount of the elements of nutrition to make it a valuable substitute for these usually more costly products.—*Boston Journal of Chemistry.*

Captain Gunter, says *Bell's Weekly Messenger*, has suffered a great loss in the death of a young bull, Fourth Duke of Wetherby, by Third Duke of Wharfedale, from Duchess 92, the beautiful cow which Mr. M. H. Cochrane vainly tried to buy for 2000 guineas.

Mr. Bruere has sold to Mr. Cochrane, for 500 guineas, the Shorthorn cow Star Queen. She was at the time of sale in calf to Sir Windsor Broughton (27507), the son of Prince of the Realm (22627) and Windsor's Queen by Windsor (14013).

Several thorough-bred cattle of the Durham, Devon, and Ayrshire breeds, as well as other live stock, were purchased at the late Provincial Exhibition for Nova Scotia, under authority of the Agricultural Bureau of that Province.

MUSTY OATS.—A South Carolina correspondent of the *Farmer and Artizan*, after reporting the loss of a horse, supposed to result from eating musty oats, says: "I am certain more horses die in the South from eating damaged oats than from all other causes. As the oats are cut rather green, and often with many green weeds among them, it is very difficult to keep them from moulding, more or less in the centre. Many animals die from this cause, which are supposed to have had blind staggers, as in the case of mine. Another horse recently died near me in the same way, after being fed on oats mostly sound, but some of the bundles musty in the middle."

The raising of Cashmere goats for their wool has become an established pursuit in Nebraska. One gentleman has a flock of 200, and his success in raising them has induced many others to adopt the breeding of that valuable stock as a regular pursuit.

DEATH OF CATTLE BY SMUT.—A correspondent of the *Black Earth (Wis.) Advertiser* says:—"For the benefit of those who avail themselves of the usual benefits of corn fodder as feed for stock, I wish to state through your paper, that Mr. Timothy Lee, of Dazomanie, lost by death, on the 12th instant, one cow and two heifers from a cause that at first appeared quite mysterious, but on examination of the stomach, smut and corn were found in such an abundance that it was no longer a mystery, and the conclusion was that they died from the effects of a poison generally known as corn smut. The smut was eaten on the hill where the corn had been husked, except such ears as contained that excrement which Mr. Lee considered worthless and harmless."

VARIETY OF FOOD FOR HOGS.—In an experiment detailed in *Deitz's Farm Journal*, where hogs were fed on cooked potatoes and oats, by the iodine test, the excrement showed that a large portion of starch was passing off undigested. By the addition of a small amount of peas to the feed, the iodine test showed that all the starch was appropriated to the animal economy. Experience has demonstrated that a variety of food is essential to the perfect development of animals. When hogs are fed for any length of time on the same food they become "glutted," and the addition of even a single article of food to what they have been accustomed to, shows a marked improvement. If they are fed on corn they should have pumpkins or potatoes; access to grass should be allowed them when they do not have a variety of food.

CUT FEED FOR HORSES.—An accurate farmer has furnished the *Country Gentleman* a statement of his experiments with feeding cut feed and meal to his horses, accompanied with weighing and measuring. He cuts oat straw about an inch long with a raw-hide cylinder machine, and this chopped straw is then treated with corn meal bran, and mixed in about equal quantities as to weight, so that each horse has about a bushel of cut feed, and three quarts of the meal and bran, twice in each day. Sometimes hay is cut instead of oat straw, or both are mixed. It is found that 200 lbs. per week of this mixture of corn meal and bran, added to the cut feed, will keep a pair of working horses in the best condition. This, he is satisfied from experiment, is less than two-thirds the cost of keeping them on uncut dry hay and whole grain. The corn meal alone is not so good for horses as when diluted with bran. An excellent meal is made of ground oats. The fodder is cut by horse power on stormy or spare days, and stored in large bins, so as to furnish always a surplus on hand.

Veterinary Department.

Castration in Horses.

We are frequently asked the question what is the safest time to perform the operation of castration. As to the season, there is a considerable difference of opinion, but from our own experience we prefer the months of May or June, and consider that the operation is most successful in yearlings. There are various methods of performing the operation. In olden times the function of the testicle was destroyed by pressure, or by removing part of the seminal duct (*vas deferens*), and also by the barbarous practice of tearing out the glands. These methods, however, have been long abandoned, and the operation is now usually performed in a more surgical and scientific manner.

The common methods of performing castration on this continent are by compression either with or without caustic; by cauterization or the firing iron; by ligature; and by torsion. In aged horses, before operating, it is advisable to prepare the subject by feeding for a day or two on bran mashes, and giving very little bulky food. By having the bowels comparatively empty there is less danger in throwing the horse and securing him, and in all cases, immediately before operating, the scrotum should be carefully examined with the view of detecting hernia or rupture, because, if hernia existed, and an incision were made through the serous coat of the testicle (*tunica vaginalis*), the imprisoned bowel would at once protrude, and might defy all efforts to return it.

After examination for hernia, the horse should be thrown and secured upon his back, with the hind legs pulled forward, and firmly attached. It is advisable to secure him firmly, as by doing so it will prevent struggling, and at the same time the operation can be more easily performed. The testicle should then be taken hold of with the left hand, and an incision made through the scrotum parallel with its division or *raphe*, exposing the testicle, which must be drawn carefully out for a little distance; but on no account use any violence. If the caustic clams are to be used, the *cremaster* muscle should be detached, and the clam placed upon the cord and firmly secured. The testicle may then be removed, and in the course of thirty-six hours thereafter the clams may also be taken off. The grooves in the clams are usually filled with a caustic paste formed of corrosive sublimate, flour and water. Compression alone will have the desired effect, but the vascular communication is destroyed more rapidly with the aid of the caustic.

In Britain the operation is usually performed with the aid of the firing iron. An incision is made through the scrotum, and

the testicle pulled out, and a large temporary clam applied around the cord; the testicle is removed, either with the knife or iron. We prefer the former. The end of the spermatic artery is seared by the cautery, the clams are removed, and the operation is over.

When the ligature is used, the operation is performed in the same manner as by the iron, with the exception that the end of the spermatic artery is taken hold of with a pair of forceps, and a ligature is applied and then the clams removed. Of these three methods of operating we prefer the cautery or firing iron.

Obscure Lameness in Horses.

Most horsemen have at some time or other experienced the annoyance of having a journey interrupted by the sudden occurrence of lameness in an animal which, up to the time, had done good service without showing any signs of unsoundness. Not less annoying than the accident itself is the mystery which attends the cause of defective action. The horse may be as lame as if he had broken his leg, but no signs of injury are apparent; and under the circumstances all sorts of gloomy speculations are indulged in by the owner. The animal must have been unsound before, and the disease is now becoming manifest. This idea naturally occurs to the mind if the horse has not been long in the owner's possession, and the one solitary gleam of comfort which he feels under the disagreeable circumstances of his position is associated with his determination to return the brute at the earliest opportunity. If the horse is an old servant, and there is no chance of falling back upon an unsoundness of long standing, the rider concludes that something has given way, perhaps in the foot or the shoulder, or, if the hind leg is affected, that a joint has slipped. It is consoling to reflect that none of these serious evils is usually present in the instances of sudden attacks of severe lameness to which we have alluded.

Extensive injury to important structures does sometimes occur without an apparently adequate cause, and we have several times referred to such injuries as compound fractures of bones of the extremities from the concussion resulting from unconscious movements; fractures of the bones of the back and ruptures of muscles during violent efforts to rise from the ground, sprain and even rupture of tendon and ligament during rapid movements; but in all these cases the nature of the mischief is in some degree apparent. The injured part is tender to the touch, heat and swelling soon appear, and there is seldom much difficulty in deciding at once as to the seat of the disease. Lameness, equally as severe as that which arises from sprain of tendon or muscle, often happens independently of these injuries; and to such cases

the term "obscure lameness" is fairly applicable. Now and then the recovery from the lameness is as sudden as the attack. This fact was particularly well exemplified some time ago in the case of a gray pony, which, while being quietly ridden along a level road at a foot pace, became all at once so lame that the rider dismounted and examined the limb—the near fore one—in expectation of finding some severe injury in the shape of fracture or dislocation. Nothing, however, could be discovered at the time to explain the lameness. The pony was, with much difficulty, taken to a forge about a quarter of a mile distant, and the shoe was removed. No injury, however, was detected in the foot, and a second careful examination of the limb did not lead to the detection of the slightest sign of tenderness, heat, or swelling in any part. Treatment was of course out of the question, as no disease was apparent; and the animal was therefore left to his fate till the next day, when, if we remember correctly, he was found to be sound, or nearly so; at any rate, he was at work again in a day or two after the occurrence which has just been narrated.

Sudden and severe lameness often arises without the action even of those common causes which are in operation while an animal is at work, such as concussion, sprain, treading on stones or other projecting bodies. A horse may be left in the stable at night in good health, and in the morning may be found incapable of moving over in the box or stall. In such cases the hind extremities are most commonly affected, a circumstance which is suggestive of the nature of the accident that caused the lameness. When a horse is made to rise suddenly from the recumbent position, it is very common for one hind leg to slip backward for some distance, in consequence of the foot missing its hold upon the floor of the stable. Perhaps in ninety-nine cases out of every hundred no harm results, the animal gets up and moves with his usual freedom; but in the hundredth instance sprain of muscle or ligament is caused, and the horse is suddenly reduced to an almost helpless state from an injury which, unless the accident was observed, can only be surmised to have occurred.

From the position of the structures which are affected, the immense mass of muscle which exists in the hindquarters, and the depth at which the joints are placed, it is nearly impossible to effectively manipulate the parts, and it is only by careful observation of the animal's action, and his behaviour while the parts are being examined, that any opinion of the situation of the injury can be formed.

In reasoning upon the probable causes of those obscure cases of lameness which are unaccompanied by distinctive symptoms, we constantly ignore the very valuable teachings of our own experience in reference to accidents which happen to ourselves or to our

neighbours. A man steps freely off his own doorstep in the morning, and, without any warning, finds his ankle suddenly twisted on one side. For a few minutes he suffers intense pain, and, if he moves at all, his action is of a character which in a horse would be called "dead lame." After a time the intense pain subsides, but for some hours, perhaps for some days, the individual limps a little even in the accustomed walk; a run he dares not dream of attempting. In comparing defective action in horses with the same or similar condition in men, it must be remembered that the lameness which is shown in the walk must be very severe indeed in a horse; and lame men never as a rule try a trot, not being impelled thereto by the sound of a whip in the rear. In these accidents occurring to men, there is often considerable difficulty in detecting symptoms of injury; the painful ankle is perhaps not very susceptible to the influence of pressure; the most careful inspection fails to discover the slightest signs of inflammation, and the surgeon, if left to his own resources, would often be as much puzzled as the veterinarian; but, as it is, the human patient settles the whole difficulty at once by the use of his tongue, doing with a word more than the horse can do by his action at various paces performed under compulsion, and at the cost of considerable suffering to himself.

A vivid recollection of the numerous trifling accidents which cause temporary lameness in ourselves would often assist our conclusions when we are seeking to detect the cause of sudden and obscure lameness in horses; and there is no doubt that in many cases we should hit upon a solution of the mystery, notwithstanding the absence of definite evidence. Horses are in the habit—some of them regularly—of striking one leg with the opposite hoof, and many sudden attacks of temporary lameness are due to this cause; an accidental change in the position of the legs during progression may expose a sensitive part of a limb to a blow from the hoof or shoe of the opposite leg. Over the most prominent part of the fetlock-joint a large sentient nerve passes, and a slight bruise on this part would cause intense pain without leaving any marks of the accident.

Sudden slips may occur while the horse is going, and considerable pain may be thus inflicted, although nothing of an unusual kind may have been noticed in the horse's movements.

Violent concussion may affect the structures of the foot, or some of the joints, fetlocks or hocks, for example, without producing any external derangement at the time, and probably not at any subsequent period of the duration of lameness. Cases have recently occurred of horses becoming suddenly lame, and remaining lame for weeks, without at any time showing symptoms of active disease.

Treatment of obscure lameness, in the

first instance, should be merely expectant in its character, the object being to wait for development of symptoms: with this view, the common practice is to give a dose of physic, lessen the quantity of food, and put the animal in a loose box for a day or two. By the time the purgative has ceased to act the animal may be sound again, or so far improved as to justify a continuance of the rest for a few days longer. If the lameness continues, or becomes more severe than it was at first, it is obvious that something more than a slight injury or temporary derangement exists, and the nature of the mischief must be ascertained before any further treatment is attempted; and it is far better to take advantage of the highest professional skill and experience that can be obtained than to grope in the dark, and perhaps lose a valuable animal that might have been saved by timely care.

Carrots for Horses

To the Editor.

SIR,—I grew a large quantity of carrots the present season for the purpose of feeding my horses with them. A day or two ago, however, I was told that they were unwholesome for horses if fed to them regularly as a substitute for grain, and that they should only be given occasionally. I have also been feeding them turnips. I have long believed both carrots and turnips good for horses when moderately, though regularly, fed to them with hay. Will you please enlighten me on the subject?

HORSEMAN.

REPLY—Carrots, when given in moderate quantities, once or twice a day, along with an allowance of grain, are found beneficial, principally by assisting the proper digestion of more nutritious food. We have known horses, not doing heavy work, kept in good condition on carrots and hay; but if the roots are given in large quantities to horses that are working hard, they would be deficient in nutriment and might have an injurious effect.

Rheumatism in Sheep.

This disease consists in a peculiar inflammation of the muscles of the body, very frequently causing considerable pain when they are called into action. It is usually caused by exposure to cold, and sometimes shifts from one foot to another, occasionally degenerating into a slow or chronic form, and attacking the sinews, ligaments and joints, as well as the muscles. The neck and loins are the parts most frequently attacked, either separately or combined. The former affection causes the head to be crossed in a bent position, and the latter produces considerable stiffness and weakness of the loins.

The treatment should consist in removing the animal to a comfortable place, giving an active purgative, such as two ounces of epsom salts dissolved in warm water, with a drachm of ginger and half an ounce of spirits of nitrous ether. A stimulant, such as hartshorn and oil, or opodeldoc, should be well rubbed over the affected part; and if the disease assumes a chronic form, a seton should be inserted near the part.

The Dairy.

Winter Treatment of Milch Cows.

The great increase in the manufacture and consumption of cheese within the past few years renders dairy farming a more certain and profitable branch of husbandry than grain-growing, especially in those sections where grass and water are sufficiently abundant, and the soil adapted to carry pasturage of a high quality. But the man who keeps a number of cows through the summer for the sake of the profit to be made out of their milk rarely raises enough of hay and roots to enable him to keep them over the winter, and as a consequence sells off the larger portion as soon as the cheesemaking season ends, replacing them by others when grass again comes in. Most of these cows sold off in this manner, in autumn, are bought up at low prices by farmers who have a surplus stock of hay and roots to feed out, and who expect to make a profit in three ways out of their investment; namely, first, by making manure for their farms; second, by the sale of the calves obtained from the cows; and lastly, by the increased value of the cows themselves, when ready in spring to be again resold to the dairymen.

Now, if the cows are well fed and taken care of, their increased value in spring would alone amply repay the cost of keep, added to which they would produce more and richer manure, and their calves, being strong, healthy, and full of flesh, would command a high price from the butcher, and if heifers got by a thoroughbred bull, would be of much greater value to raise and afterwards sell to the dairymen.

We are not advocates of the practice of keeping cows that are to calve in spring at the milk-pail during the previous winter. Our own experience has taught us that the small amount of butter to be obtained at great trouble and cost from such cows during the winter season, even though it bring a high price, is the most unprofitable production of the farm.

What is gained by making butter in winter for sale is more than lost by the increased cost of keep and loss of strength and condition of the cow. Her food ought rather to go towards developing the calf, and if she is not made to bear the additional strain upon her of giving milk at the same time, a moderate amount of food will keep her in thrifty and healthy condition. The aim should be to keep all the milch cows through the winter well housed, and so fed that they come out in spring at calving time fleshy but not fat, and with clean smooth hides, free from lice or scurf.

The brush and comb should be freely used, and the animals kept warm and clean, with plenty of straw to lie on.

The wintering of cows in the straw yard, as too often practised in Canada, is a most barbarous custom, and a mistaken economy, generally resulting not only in suffering to the animals, but also in direct loss to the farmer, as his profits, if any, are not to be compared with what he can obtain by liberal feeding and treatment.

No good farmer will keep more stock than he can find abundance of food, shelter and care for, and he who does will usually suffer loss. Generous keep and care are always well repaid, both in the increased value of the animals and the manure obtained from them, as well as a feeling of pride and satisfaction to the farmer at seeing his animals always thrifty and healthy.

Good hay, with a large admixture of clover in it, and the addition of half a bushel of roots per day, is the best feed for cows in winter. If roots are not to be had they should get a mess of cut straw and chopped rye or peas, mixed together and steamed or boiled. This may be allowed to stand till slightly fermented before using. The cows should have a feed of them at least every other day. We do not think exclusive feeding on soft or cooked feed is advisable, as it has a tendency to soften their gums and cause them to suffer a loss of teeth, especially in those that are past their prime as regards age.

Winter Dairying.

When a farmer resides near enough to a city or town to make it profitable to keep cows in milk through the winter season, and has the proper facilities for doing so, he should endeavour to make it a point to have only good cows and feed them well.

The mode of feeding to be adopted will in a great measure depend on whether it is designed to sell the milk, or to sell the butter produced from it only. In the former case the main object is to obtain a large flow of milk without regard to its richness. To do this, the cows need to be fed to a large extent upon food containing a considerable proportion of liquid elements, to which bran must form the chief addition. The hay or straw used should be cut and pulped with turnips or beets or mangels. The usual proportion of bran in this case is four pounds per cow each day, given at night.

If the pulped mixture can be fermented before feeding to the cows, they will give a larger yield of milk, with no taste of the turnip, than if fed unfermented. If the roots can be cleaned or boiled they will be still better and go further.

Where butter making is an object, roots are to be avoided, and good sweet hay given, with the addition of three pounds per day of peas, oat, or barley meal to each cow, given raw, or if the hay is cut, which is better, the cut hay should be moistened with water, and the meal mixed into it. Unless some

food rich in nitrogen is given to milch cows, it is but a troublesome and unprofitable undertaking to attempt to make good butter from their milk during the winter season.

Cheese Factories in Europe.

The factory system of cheese-making is steadily progressing abroad, not only in Great Britain, but also in other European countries. A recent article in the *London Field* states that up to the date of October 10th one hundred tons of cheese had been made at the two factories established in Derbyshire, and twenty-two tons had been sold at an average of over 80 shillings per cwt. The article says, in continuation:—

“From what we can gather, only a very few of the prime farm dairies have touched that figure. One point worthy of being recorded is the fact that in the whole make of the two factories there has not been one cracked or unsaleable cheese. A day or two after the Derby factory was opened, an experienced farmer and cheesemaker, on looking at the first day's make, remarked that he would like to bring his glass and pipe, and sit quietly and see that cheese tumble to pieces, pointing to one rather larger than the rest. That same cheese was sent to London on the 9th of September, and our friend might have been still enjoying his pipe and glass, without seeing any outward change in its appearance. The factory system may be slow in taking root on English soil, but that it will eventually do so, to the exclusion of all others, is highly probable. Once fairly established, the farmer will as soon think of returning to the flail and the reaping hook, or the pillion and panniers, as of returning to make cheese in the farm kitchen.”

The writer proceeds to state that a Russian gentleman has lately visited these factories, and spent six weeks in familiarizing himself with their operation. He has taken back with him to Russia all the necessary plans, and will commence operations there on the American system next spring. Another, from Denmark, is now investigating the subject, with the prospect of doing the same thing in that country.

Right and Wrong Way to Milk.

The *Irish Farmers' Gazette* publishes the following from Prof. Dick, of the Edinburgh Veterinary College, on the manner of milking:—

“The operation of milking is performed differently in various parts of the country. In some the dairy-maid dips her hand into a little milk, and by successively stripping the teat between her fingers and thumb unloads the udder. This plan, however, is attended with the disadvantage of irritating more or less the teat, and rendering it liable to cracks and chops, which are followed by in-

flammation extending to the rest of the quarter. This accounts for the disease occurring more frequently among the cows under the charge of one milker than it does in those under the charge of another; and as this practice is more common in some parts of the country than in others, it also accounts for the disease being more common in these parts. This plan of milking, where the irritation is not sufficient to excite the extent of inflammation to which I have alluded, frequently produces a horny thickening of the teat, a consequence of the cracks and chops which renders it more difficult to milk than when in its natural state, and, at the same time, predisposes to inflammation when any cause occurs to set it up.

These effects may be, and are, almost entirely avoided, by the most scientific plan of milking adopted in other parts of the country, where, instead of drawing down or stripping the teat between the thumb and fingers, as I have stated, the dairy-maid follows more closely the principles which instinct has taught the calf. She first takes a slight hold of the teats with her hand, by which she merely encircles it, then lifts her hand up so as to press the body of the udder upwards, by which the milk escapes into the teat; or if, as is generally the case when some hours have elapsed between milking-times, the teat is full, she grasps the teat close to its origin with her thumb and fore-finger, so as to prevent the milk which is in the teat from escaping upwards; then, making the rest of the fingers to close from above downwards in succession, forces out what milk may be contained in the teat through the opening of it. The hand is again pressed up and closed as before, and the milk drawn easily and freely, without the tugging and wrenching inflicted by clumsy milkers.”

Blankets on Milk Cans.

Mr. Gardner B. Weeks, of New York, has addressed a communication to the *Massachusetts Ploughman*, condemning the practice, which has been advocated by some, of covering milk cans that are to be taken to the factory with thick woollen blankets or buffalo robes, with a view of keeping out the heat of the sun. In his article he says:—

“That the cans should be protected from the sun's rays, I admit; but it should be done in the way of a raised awning, or other appliance lifted above the cans. If a thick blanket or robe be laid directly over a can of milk from which the animal or natural heat has never been removed, and the milk then drawn any considerable distance to the factory, it will ordinarily so far injure the milk that it will sour in a few hours.

“I have had just this experience the present season at my creamery. Milk brought from a farm three miles distant from the factory caused trouble to the cheesemaker day after day by souring prematurely. On in-

quiry I found that the driver of the milk team had lately adopted the habit of throwing a buffalo robe over his cans as a protection from the sunshine. As a consequence, this milk soured before morning, and soured all the milk in the vat into which it was put; this, too, notwithstanding a large stream of cold water—52 degrees—was passing around the vat all night. On directing the removal of the robe as a covering, the trouble ceased at once, and has not recurred. This quite accords with similar experience which I have had in years before.

"In the cold part of the season, even in frosty weather, when milk is drawn but once daily, I have had the night's milk very much injured, sometimes quite soured, because the dairyman had placed the can cover closely upon the warm milk, and then set the can in a closed room or shed where the cool night air could not strike it. The can should have been placed under cover to keep out rain, etc., but in an airy place, and the cover should not have been put on at all.

"Whether there is, or is not, as much importance attaching to the "odour" question respecting freshly drawn milk as some contend, it is clear to my mind that milk must have access to pure air in order that it may be kept in good condition, even for a few hours.

"Frequent stirring of the milk in the can with the dipper, while the milking is being done, and up to the time the cans start for the factory, will do much towards reducing the temperature by aerifying the mass of milk.

"If milk is in any way thoroughly cooled—say to 60 or 65 degrees—then by all means let the advice of your correspondent be followed and the milk covered. In default of this cooling, let the can be protected by a raised awning which will allow free play to the wind. If neither can nor will be done, let the can go without any protection other than the usual tin cover."

The Largest Dairy in the World.

In his notes on the Pacific coast, Mr. X. A. Willard, of the *Rural New Yorker*, gives an account of what he calls "the largest butter dairy in the world." It is situated at Point Reyes, in Marion county, California. The ranch has a coast range of fifty miles, and contains seventy-five thousand acres. He states that about 3,000 cows are in milk on the estate, and they are divided up into twenty-one dairies, averaging about one hundred and fifty cows to each. The proprietors commenced improving their stock about the year 1858, by crossing common Eastern cows with two thorough-bred Shorthorn bulls of good milking family, brought from Vermont at a cost of \$10,000. One of the Vermont bulls was an exceedingly fine one, and his stock proved to be excellent milkers. A year or two after, twenty-two head of Devon cat-

tle were purchased and introduced among the herds. This breed did not prove satisfactory, and it was discarded, and in 1865 they commenced again with Shorthorns, raising annually one-fifth of the calves from the best cows. In this way the stock has been improved so that a good flow of milk is obtained.

After remarking that the ranch at Point Reyes was broken up into numerous hills and valleys, some of the hills almost approaching the dignity of mountains, Mr. Willard mentions the following to show that the size of the stock may be influenced by the surface of the country. He says: "This uneven surface, requiring climbing of hills and descent into valleys in quest of food, has had a strongly marked influence on the size and form of the stock. The animals are quite small for Shorthorns, and apparently more active than is usual with that breed, showing, in a very marked degree, what a controlling influence the surface of a country has in moulding the form of animals. The stock we found universally in fine condition as to flesh, and in every respect appeared to be in vigorous health; but the smallness in size was a point of interest to us, as showing how animals bred for several generations in a hilly country gradually adapt themselves to the surface over which they are compelled to travel in quest of food."—*Newport (Vt.) Express*.

Roots for Milch Cows.

In a recent number of the *Mark Lane Express* we find a statement from an English writer on the comparative value of mangels, carrots and turnips, for the production of milk. He regards both the carrot and mangel as inferior to the turnip, when quality of milk is sought—that is, milk abounding in cream. He says:—

"Although mangel-wurzel enables cows to give a large supply of milk, it is of a poorer quality than when they are turnip-fed, and not nearly so productive of cream. The butter made from it has also a slightly acrid taste, not so powerful as that of turnips, perhaps, but much more difficult wholly to remove or even to obviate to a passable degree. The thinness of the milk, when wholly mangel-fed, and this unpleasant taste, make it imperative to feed with bran, grains, crushed corn, or a portion of cake, during the whole time this root is being used with milch cows.

"Farm horses eat it with great apparent relish, and thrive well upon it; and by its use a moderate saving in oats can be effected. When grated and mixed with chopped hay, a very agreeable and appetizing mess is formed, both filling and nourishing, and highly conducive to the health of the animals. If grating is objected to on the score of extra trouble, the whole roots thrown into the feeding box with the cut hay do al-

most equally well, the saliva of the horse and abundant sap of the root itself moistening the chaff abundantly.

"In giving carrots to milch cows, the only recommendation they have is the absence of all unpleasant taste in the butter, as the milk is neither so abundant in quantity nor so rich in quality as that obtained in turnip feeding."

He remarks further that, some years ago, a series of experiments was instituted with different roots, the whole extending over a period of about four months, and the conclusion arrived at, after such a lengthened trial, was exactly that which is here recorded. But as a feed for farm horses they are recommended, as they save corn and give a fine gloss to the skin, besides keeping the animals in good condition. From 14 to 21 pounds in a single feed are a liberal allowance; anything over that being apt to affect the kidneys and induce excessive staling.

We understand that X. A. Willard has an engagement to deliver a series of lectures at Cornell University, this winter, on dairy farming.

Milch cows should be kept in good, not fat condition, and a few weeks before calving should be scrimped in their food. This especially with good milkers. By lessening the amount of blood in the cow there will be less milk secreted, and less straining or inflammation of the bag. The milk fever may thus to a great extent be avoided.

KEEP MILKING.—The practice of milking but once each day, says *Hearth and Home*, where cows give but little, late in the year, is a bad one. They shrink much faster, and if young, the habit of not "holding out" is formed, to the owner's subsequent cost. They should be milked, as long as they are milked at all, twice each day.

X. A. Willard gives it as his opinion that hundreds of thousands of pounds of cheese have been lost during the last summer by the lack of attention to the temperature of curing rooms. He believes progress has been made during the past few years in this department, but much remains to be accomplished, and the principal improvement must lie in securing a proper and uniform temperature of the cheese while curing.

COLOURING BUTTER AND CHEESE.—This was the subject of a paper recently read by Hon. H. Lewis, before the Little Falls Farmers' Club, and of a discussion which as usual followed the opening paper. Mr. Lewis was strongly opposed to the use of any artificial colouring, and presented a report by Professor Caldwell, showing that several samples of annatto submitted to him for analysis contained poisonous matter, chiefly salts of copper. Mr. Willard contended that pure annatto was not injurious, and that the fancy of consumers required the addition of some colouring adjunct, and justified its use by the manufacturer. A new article, under the name of anattoine, was now being introduced, which he believed to be perfectly harmless.

Entomology.

The Grape-vine Flea-beetle.

(*Haltica chalybea*, Illiger.)

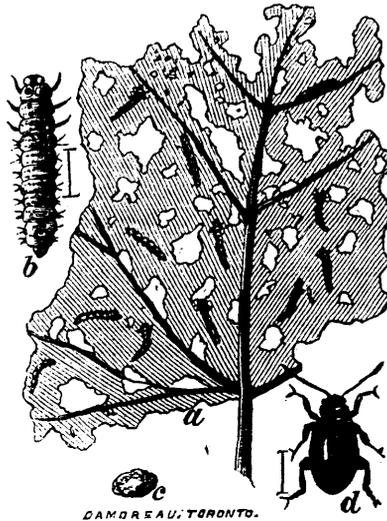
Is there a grape-grower in the United States who does not know, to his sorrow, what the Grape-vine Flea-beetle is? Hardly one! And yet how few ever connect it with its disgusting little shiny brown larvæ, which generally prove still more injurious than the beetle, by riddling the leaves in the middle of summer.

The Grape-vine Flea-beetle often goes by the cognomen of "Steel-blue Beetle," and is even dubbed "Thrips" by some vineyardists. The latter term, as most of our readers are well aware, is entirely inapplicable.* The former name is not sufficiently characteristic, because the colour varies from steel-blue to metallic-green and purple, and because there are many other flea-beetles to which it would equally apply.

The Grape-vine Flea-beetle is found in all parts of the United States and in the Canadas, and it habitually feeds on the Alder (*Alnus serrulata*), as well as upon the wild and cultivated Grape-vine. Its depredations seem first to have been noticed in 1831, by Judge Darling, of Connecticut, and in 1834 Mr. David Thomas, of New York, published an account of it in the 26th volume of Silliman's *American Journal of Science*. Its transformations were, however, unknown till some time after Dr. Harris wrote his excellent work on Injurious Insects, and no figure of the larvæ has been hitherto published.

The beetles hibernate in a torpid state under any shelter which is afforded them in the vineyard, such as the loose bark and crevices of stakes, etc., etc., and they are roused to activity quite early in the spring. The greatest damage is done by them at this early season, for they often bore into and scoop out the unopened bud, and thus blight the grape-grower's bright expectations. As the leaves expand, the little jumping rascals feed on the leaves, and soon pair and deposit their small orange eggs in clusters, very much as in the case of the Colorado potato beetle. These eggs soon hatch into dark-coloured larvæ, which may be found of all sizes during the latter part of May and early part of June. They are generally found on the upper surface of the leaf, which they riddle and devour. When very numerous they devour all but the very largest leaf-ribs, and we have seen the wild vines throughout whole strips of country rendered most unsightly by the utter denudation which these insects had

wrought. The larvæ feed for nearly a month. They then descend from the vine and bury themselves a short distance in the earth, where, after each forming a little earthen cell, they change to pupæ of a deep dull yellow colour, and in about three weeks more issue as beetles. These beetles leave the ground from the middle of June to the middle of July, and, so far as we are aware, do not breed again till the following spring—there being but one brood each year. They subsist on the leaves during the fall, but the damage they inflict is trifling compared to that which they cause in spring.



The accompanying illustration represents this beetle in its various stages, and also the riddled and jagged appearance (a) of the leaf on which they feed. b is a magnified view of the full-grown larva, the natural size being indicated by the hair-line at the side. c represents the small earthen cell of the pupa, and d the mature beetle magnified, the true size shown by the hair-line.

Like all other flea-beetles, this species has very stout, swollen hind thighs. By means of these strong thighs they are enabled to jump about very energetically, and are consequently very difficult to manage during the summer months. In the winter time, however, they can be destroyed in great numbers while hidden in a torpid state in their retreats. Clean culture and general cleanliness in the vineyard will, to a great extent, prevent this insect's increase. Dr. Hull, of Alton, Ills., tells us that they were once so numerous in a small vineyard of his, that in the spring of 1867 he burnt them out by surrounding them with fire, and letting the fire run through the dry grass in the vineyard. "It was a rough remedy, but as his crop was destroyed, he let the beetles follow suit."

The larvæ can be more easily destroyed by an application of dry lime, used with a common sand-blower or bellows. This has been found to be more effectual than either lye or soap-suds, and is withal the safest, as lye, if used too strong, will injure the leaves.

This insect, like so many others, will one year swarm prodigiously, and then again be scarcely noticed; and such changes in numbers depend mainly on conditions of the weather, as we know of no parasite which attacks it. In the spring of 1868, though they were at first out in full force, yet after some subsequent severe and cold weather, they had mostly disappeared. They are apt to be most troublesome where alder abounds in the woods.—*American Entomologist*.

The Poisonous (?) Tomato Worm.

To the Editor.

SIR,—In your issue of 15th October, which a friend has just placed in my hand, I have read your article under the above heading.

No doubt a fair criticism of such a subject falls within the scope of your duties. But I ask, have you a right as a gentleman, however retired within the Editorial *Sanctum Sanctorum*, to make such reflections upon any inhabitant of Dundas as your article contains—without at least first learning either the facts of the case or his habits of life? And this too, after my name had been so freely mentioned in the recent paragraph in the newspapers you refer to. I assure you the paragraph or any newspaper mention of the matter was not of my seeking, or to my liking; nor was it strictly according to the truth of the singular occurrence.

Why your mind revels in pouring "spirits down to keep spirits up" I cannot imagine, because there is no such statement in the paragraph in question, as it only states the application of tobacco steeped in whiskey as a poultice to the wounded parts; and you do not hesitate to add, for sensational writing, another circumstance to such paragraph, namely, "He sent a swift messenger for the doctor," which, however cleverly written, is purely your own invention.

Now, although not so heroic as to thrust the "poisonous spines" of any insect into my fingers, as you say you have done in order to try its powers, yet all my neighbours will inform you—if you care to know—that I am about one of the healthiest and hardest subjects to be affected by poisonous matter, and am in no way inclined to "erysipelas," or to "get my arm into a sling," like your acquaintance you mention. I can assure you I have gone among cholera subjects and mosquitoes, without suffering more than you appear to have done from your experimental exploits in spiny science.

I can also assure you that no one acquainted with me will give you my character as a man accustomed to imbibe too freely; no, not even upon the excuse of the "Venomous beast," as you call the tomato worm.

Now, sir, if you think because you mention no name, that your article is a fair one, you must have forgotten that this tomato worm case has singularly become one of most annoying notoriety, owing to that

* The term *Thrips* is confined to an anomalous group of insects—mostly cannibal, but exceptionally vegetable feeding—of which Halliday made a separate Order (*Trypanoptera*), but which are to-day included in the *Homoptera*, or Whole-winged Bugs, by most authors, though they seem to have close affinities to the *Orthoptera*, and to the *Pseudoneuroptera*.

mighty engine of knowledge, "the Press," and as I have stated above quite against my will and without any act or part or even knowledge, until too late to prevent its publication, in fact, that it was published in the first instance only from information got through my children and their young friends, so far as I can learn.

I am, sir, your obedient servant.

"THE MAN OF DUNDAS."

Dundas, Nov. 23rd, 1870.

NOTE BY THE ENTOMOLOGICAL EDITOR -- From the above communication it appears that we have unintentionally wounded the feelings of "The Man of Dundas," by our recent article on the supposed poisonous Tomato Worm. This we regret very much, as our object was, not in any way to be personal, but to cast as much ridicule as possible upon the popular error of ascribing venomous qualities to this much maligned caterpillar. We have so often endeavoured in the columns of THE CANADA FARMER to disabuse the minds of the people of this country of their terror of this creature, and apparently to so little purpose, that we at once seized upon the little paragraph that went the rounds of the papers respecting the case at Dundas, as a fitting text for another article. We can assure our correspondent that we could have had no reference to his habits or mode of life, since to this hour we do not even know his name, much less are we acquainted with his private character. We merely inferred, both from the account of the case and from the popular and we believe proper treatment in such emergencies, that an unusual dose of spirits had been taken as a remedy. We wish very much that he had preserved the specimen which appears to have so much affected him, and sent it for identification to us or to some other entomologist. We are really most anxious to find out what ground there is, if any, for all the wonderful stories we hear regarding this poor unfortunate insect. For another article on the subject we may refer our readers, and our correspondent in particular, to THE CANADA FARMER for October 15, 1869, page 378.

THE RAPE BUTTERFLY, OUR NEW CABBAGE PEST.—This most destructive insect is fully realizing our prophesies. Salt is the common remedy, but Mr. Quinn, at a late meeting of the N. Y. Institute Farmers' Club, gave his experience as follows:—"I have tried no less than fifteen different powders and decoctions, and find the best result from the application of a mixture composed of twenty parts sulphate of lime, one part carbolic powder, and three or four parts of quicklime. This I sprinkle in small quantities upon the leaves and parts affected, making the application in early morning before the dew is off, or after a shower. Frequent repetition is sometimes necessary."

Correspondence.

Preserving Woodlands.

To the Editor.

SIR, I noticed the other day an excellent suggestion in the address of the President at the late successful Fair at London, viz., that farmers should begin to plant trees for fire-wood, and he suggested the white willow as a good one for that purpose. I fear, however, that in a country like this, where labour is so expensive and the means of farmers so limited, few will act upon his excellent suggestion. But where farmers have a fair proportion of their farms in "bush," they can secure fire-wood for their own use and their descendants for generation after generation. A friend of mine John M. Ball, Esq., of Niagara, has not allowed his cattle, or horses, or sheep, to run in his "bush" for many years past; and he told me recently, that thousand and thousands of young trees are growing up in his bush, to the height of ten and twenty feet, which will replace those trees that will be cut down, when they cease growing, for the use of the house. In this way he expects, and I think with reason, that his "bush" will be continually replenished, as the seeds of the old trees strike root and send up young ones every year.

It is true, Mr. Ball loses a little pasture about the skirts of his "bush," but that loss is nothing to what he gains by keeping his animals out of his bush, who would destroy the young shoots by browsing, if he allowed them, as most farmers do, the run of it. I might say that Mr. Ball mentioned his plan to me several years ago; and when travelling through the country, I have often regretted that the fine wood lots which I passed, and which were evidently growing thinner and thinner every year, had not been treated as Mr. Ball's have been.

I have often thought of writing to the public papers on the subject, but did not like to do so, until I had learned from Mr. Ball how his plan worked. Having now obtained full information on the subject, I feel it my duty to give it to the public; for, though it may be somewhat out of my line to write on such a subject, yet I believe it to be the duty of every patriot to do what he can to benefit his country.

The preservation of timber is well known to have a beneficial climatic influence, by drawing down more rain from the sky, as proved most incontrovertibly by the late very extensive experiments in planting trees, by the Pasha of Egypt; and as we suffer most years from excessive droughts in Ontario, it should be the object of all farmers to secure more moisture by maintaining as great an extent of forest as possible in the country. I trust that those farmers who can do so, will follow the excellent example of Mr. Ball.

T. B. FULLER

Toronto, Oct. 3, 1870

Working Cows

To the Editor.

SIR, A few years ago I read in some agricultural paper of a man who had trained a pair of cows to plough and do other farm work; and so far from spoiling them for dairy purposes, he said they gave more milk than any other two cows he had. Not that the working made them milk better, but the extra care and feed they got on account of the work told on the milk. Would you state, for the information of a reader of your valuable journal, whether in your opinion such a plan would be practicable, and would it be worth while for one near a cheese factory, with a small quantity of arable land, to make the experiment?

J. M.

Bridgewater.

NOTE.—With a small quantity of land, entailing only light work, the experiment might be made; but heavy work would be apt to tell injuriously on the secretion of milk.

The Cattle-fly Disease.

Notwithstanding the investigations that have been made during the past summer into the nature and causes of the so-called "fly disease," by veterinarians and entomologists, there still seems to my mind some doubt on one or two points which require further elucidation. Why, for instance, has the complaint been so much more severe during the past season? If the fly be the sole cause, have we not had the fly from time immemorial, and yet it never gave a tithe of the trouble that we have experienced this year. One thing, however, and that the most important, seems to have been established, and that is the efficacy of tar in various preparations to keep off the pest and heal the sores.

A curious fact in connection with the matter has come under my notice, namely, that these flies which have tormented cattle and horses so during the past summer seem to shun particular places. Cattle kept in dark stables during the day, and turned out to graze in the night, are free in a great measure from the torment, and when soiled during the day in the stable in the dark, and turned out at night, take no harm.

In the township of Bosanquet, at the upper turn of the River Sable, there is a long wooden bridge about twenty feet high above the water, and defended with the usual protection on each side. This bridge, or rather the middle of it, seemed to have an immunity against the attacks of the flies, and the cattle and horses soon found it out. The consequence was that they crowded the bridge, and remained on it during the daytime, until the dung of the animals had accumulated to more than a foot deep, and it seems likely to destroy the timbers by the decay it will induce, for its being nobody's

special business to keep it cleaned off, the final destruction of the bridge by decay seems imminent.

One old mare stuck to the bridge until she was nearly starved, rather than expose herself to the flies on the lower ground, and her owner had not only to drive her to her feed, but to keep her there.

The same observation has been made in regard to other high bridges, the centre of which has, during the fly season, been crowded with cattle, who persistently returned to their station even after they were driven away.

VECTIS.

Beet Sugar Making.

A correspondent from Brighton writes:—"As I intend to establish a sugar beet refinery, I would like to enquire if there is any sugar beet refinery in the Dominion, or in the United States, where I could learn the business of refining."

The only sugar beet factory to which we can direct our correspondent is that at Chatsworth, Illinois, U.S. This, we believe, is the only one that has been in operation, for some years, but we warn our correspondent that there has been more progress made in the knowledge of the various ways of making sugar from beet root, during the last four years, than in any previous ten. Science and chemistry are at work, and have been actively called into operation by the remunerative profits of the business in England, and it is more than probable that any old-fashioned factory may be far behind the age and time. We do not know that there may not be many modern improvements here also, but we have heard that the enterprise as conducted at Chatsworth does not pay; but this may depend, and probably does in part, on the difference between beets grown on prairie land and elsewhere.

TEETH A TEST OF AGE.—"Subscriber" asks, "Is it uncommon for Merino shearling ewes to have four broad teeth? or, in other words, do cases occur in which Merino (or other sheep) have four broad teeth when only one shear?" The number and development of the teeth are among the surest and most constant marks of the age of any animal, but like all other signs, are liable to variation. Some animals grow faster and mature much earlier than the average of the same species, and all writers on the subject refer to exceptional instances in regard to the appearance of the teeth. Randall says, "There is sometimes a variation of a number of months or even a year in the development of the teeth. High kept and rapidly grown sheep acquire their second teeth much earlier."

MUSHROOMS.—J. M. asks "How is a mushroom distinguished from a toadstool? and is there any way of propagating the for-

mer?" The edible mushroom, when it is from eight to twelve hours old, has beautiful pink or flesh-coloured gills—that is, the under side of the crown is of that colour, and has a fresh sweet smell. As it gets older, these gills turn chocolate colour, and finally almost black. The appearance then more nearly approximates to that of some poisonous fungi. But the place of growth may assist in distinguishing them. Mushrooms grow in pastures or meadows, the fungi resembling them in woods, and these have besides an unpleasant sickly odour. The following test is also, we believe, correct. If you sprinkle a little salt on the gills, and they turn yellow soon after, these should not be eaten; if they turn black, they may safely be eaten. Our correspondent will find directions for artificially growing mushrooms in the September and December numbers of the CANADA FARMER for 1869.

WESTERN WHEAT.—A correspondent asks, "Can you or any of your readers inform me whether the Milwaukee or Kansas wheat, now being largely imported by our millers, would be a safe seed for Canadian soil?" We have not seen any of this wheat, but should suppose it was of a very mixed kind, not adapted for seed. Perhaps some of our readers can give information on the matter.

The Canada Farmer.

TORONTO, CANADA, DEC. 15, 1870.

The Volume for 1870

The present number of the CANADA FARMER will complete the second volume of the new series, and the seventh since its commencement in 1864. It has been the aim of all connected with its publication to promote the important objects for which it was established, by taking note of the general progress of agriculture and kindred departments of industry, and by affording to Canadian agriculturists a medium of intercourse with one another, for discussing subjects of common interest, and comparing the results of their experience. Above all, we have endeavoured to impress the farmer with a higher sense of the dignity of his calling, and so to elevate it from a mere mechanical toil to a science, in which there is ample scope for the energies of the mind, as well as the exercise of manual labour and skill. How far these objects have been attained it is for our readers to pronounce. We have reason to be gratified and encouraged by the continued interest manifested, the increasing circulation of the journal, and the evidences of appreciation and approval in the contemporary agricultural press both of this continent and of Great Britain.

In the volume now completed, among other features of interest, special prominence has been given to the cultivation of the Beet

and the manufacture of Beet Sugar, because this industry has not only for many years exerted an ameliorating influence on Continental agriculture, but has been introduced with marked success into Great Britain, where, within the last year or two, immense improvements have been effected in the processes of manufacture, and we are desirous of seeing a fair experiment made in Canada, believing that there is nothing in the character of our soil, or climate, or market, to prevent the success of such an enterprise.

Attention has also been directed to the great progress manifested during the past year in the improvement of live stock, particularly in the breed of Short-horn cattle. Numerous and valuable importations have been made, a large proportion of intelligent farmers are practically recognizing the value of pure blood, and the number of choice herds and flocks now owned by Canadian breeders, cannot fail to raise the general character of live stock throughout the country.

In the coming year we shall keep these and other subjects of like importance steadily in view; and no pains will be spared to render the CANADA FARMER acceptable to our subscribers. We cordially invite their co-operation, and hope to number among them many new friends.

The terms for Agricultural Societies and Clubs, as published elsewhere in the prospectus for 1871, will continue on the same liberal scale as heretofore.

Farmers' Clubs.

Now that the long winter evenings are coming, and the farmer, having shorter working hours, can give time and attention to the endeavors to gain or impart information in regard to matters connected with his calling, every effort should be made to organize and keep up a Farmers' Club in each ward of a township, or each considerable village having a good farming country adjoining it. The school-room of the ward would be a good place at which to meet. If that cannot be had, let the members take turns in gathering at each others' houses once or twice a week. We have already given in times past an outline of the mode of proceedings to be adopted in organizing and carrying out a farmers' club, and in fact, they may as well be made as free from rules and regulations as possible, so that each one will feel under no restraint, but be at liberty to come forward and speak on whatever topic is brought under discussion by the one who is in the chair for the evening. Don't talk all at once, or keep up a general conversation in quiet corners with one another, but let everything that is said be directed towards the general enlightenment of the club, and be listened to with respect; and when one speaker has sat down, a short interval may occur for general discussion before the next is called on to address the meet-

ing on the subject brought forward. Such a club can be made of great benefit to a neighbourhood in many ways. Among others, they can put each other on their guard against any patent right swindler, and tricksters of every sort who may come into the neighbourhood, and who often succeed in their designs through falsely using the name of one neighbour to another as having purchased, or subscribed for their worthless trash. They can also gain much information from one another's experience in growing new sorts of grain, breeding and feeding stock, and the practical working of implements of husbandry of different patterns. When the club becomes large and influential it may prove both useful and desirable to have a secretary to report discussions, and forward notes of the most important ones to the local paper of the district, or the agricultural press.

Let the thing be tried, and persevered in, and by means of so simple and inexpensive a course of procedure, it will be found that a vast amount of practically useful information might be given to the country.

Re-organizing Farm Life.

One of the very best and most practical addresses ever delivered was given by Prof. A. A. Hopkins, of Rochester, N. Y., before the people at the Western New York Fair. From it we make a few somewhat lengthy extracts which ought to be read and acted upon by every farmer throughout the land.

"Farmers' homes are boarding-houses for hired help, and Farmers' wives are almost bond-women. The larger the farm, the worse the servitude."

"Look about you, everywhere, and see if the facts do not corroborate this statement. 'Boarding-houses for hired help' accurately describes the generality of farmers' homes. On a farm of two hundred acres, more or less, there are usually two or three labourers by the month, and as many more by the day, perhaps, in the busiest season. These, as a rule, board with their employer. That his wife is almost a bond-woman follows, as a matter of course.

"How can she well be otherwise? From March to December any way—very likely the whole year round—there is the hired help tying her at home. Her good man goes off the farm every day nearly—to the mill or the post-office—and feels a lessening of the burden in social intercourse with his fellows; she labours on, day in and day out, week in and week out, fortunate even if she get to church on a Sunday; the hardest worked person in the whole family; the one whose labour is never done; the one whose toil has smallest compensation.

"There is no sadder picture anywhere than some farmers' wives I have seen. The look of weariness on their faces is eloquent of sighs—sighs for a happy girlhood gone, for a life

with somewhat in it sweeter than drudgery. Do they complain? Rarely, to their husbands. They are good wives, as the term goes; they accept their burden, and bear it bravely as they may, with no loud-voiced lamentings.

"We whose work is for the public, and whose duty it is to help right every wrong, get letters from them, sometimes, that are full of the heartache. They write to us what they seldom give utterance to otherwise—their discouragement, almost their despair.

"They tell us how, in the years intervening since their marriage morn, Toil and his twin-brother Care have held them captive continually; how their husbands, by constant contact with the outer world, have grown into a broader life, while theirs has narrowed down to the kitchen's confines; how they feel themselves becoming a less and less fraction of the married unit, instead of keeping even growth with their companions; how they long for a wider outreach, and a nobler, more satisfying life.

"And these are not the women whose desired broadening of being takes in the pulpit, the platform, or the polls. Their aspirations are not of that character, at all. What they do wish, what their patient long-suffering should entitle them to, is such a reorganization of the home-life as will give them some leisure for personal comfort, personal culture, and personal growth.

"'Is it possible?' comes the question. It is proved so, in many instances. 'I have always boarded my help until the present season,' said a farmer to me early this summer, 'but I shall never do it again. I built a tenant house yonder,' and he pointed to a neat little domicile twenty rods from his own, 'and it has paid its cost already in the added privacy and quiet it has enabled me to enjoy, and in the great lessening of work for the women folks.'

"Tenant houses will pay their cost always—will pay it directly, in dollars and cents, in the long run; will pay it indirectly, in the manner my friend indicated, within the first year. Every farm, large enough to require help the season through, should possess one.

"It is not quite clear to me that woman's millenium is coming through the ballot, but I am morally certain that something very like a millenium will come to many women by the general erection of homes for hired help. The good time is coming, ladies; you must call upon your husbands to fix the date!

"I preach the sweet gospel of Hope to every troubled matron who, like Martha of old, is cumbered with much serving, and bid her take heart again. There is to be somewhat besides 'eternal dishwashing' in your future—somewhat besides the never-ending round of washing, baking, churning, ironing, mending, and the like. It may not be the suffrage—I almost hope it will not, for your sake, and for our sakes, to whom Ruth is

the sweetest type of womanhood, and who would have you remain a Ruth for ever—but it will be a somewhat better than suffrage, be that never so good. It will keep the light in your eyes and the love in your hearts, and under its kindly influence you shall grow younger, as the years go on, until, a happy girl once more, you sit beside your Boaz on life's harvest eve, glad with abundant gleaming, grateful for your being and its fruits, your home a pleasant foretaste of that heaven beyond the twilight.

"Such a reorganization of home-life on the farm as I could wish wrought out would comprehend much more than the building of tenant houses. While that might be the initial step in many cases, the work would extend further by far, and would touch very nearly the home's centre."

Diseases of the American Horse.

A new work, under this title, has been issued by R. McClure, V.S. It is a small octavo of over 400 pages, and contains in concise form a large amount of valuable information on the nature and treatment of equine ailments. There is also a short account of cattle diseases, and a brief notice of some of the more common disorders affecting sheep. The arrangement of the subject is novel, the various topics being taken up in alphabetical order, without any regard to their relations. We do not admire this feature of the work. An index of reference would have served all the useful purposes of such an allocation, without violating all the mutual bearings of diseases and their organs. The author is, however, well acquainted with his subject, and fully qualified to give instruction. The descriptions and directions are plain and brief, and the treatment recommended sound and practical. The work is published by John E. Potter & Co., Philadelphia.

Constitution and Bylaws of a Farmers' Club

We have often received applications from Secretaries of Agricultural Societies and others, to furnish some guide or instructions for framing the rules of a farmers' club, and have replied to such correspondents that no special rules were necessary, that the organization was of the simplest, and that the circumstances of the locality would suggest the most feasible methods of carrying on the institution. The following specimen of the rules of a Farmers' Club actually in operation may, however, be of service to those about to form such a society. There is nothing worthy of note about them, and each club will make modifications from any set form to suit all its own requirements; and we publish these only because we have so often been consulted on the subject, and the fol-

lowing simple form may be a guide to the inexperienced in such matters:—

CONSTITUTION.

I. This organization shall be known as the Farmers' Club.

II. Its object shall be the improvement of the members in the theory and practice of agriculture, and the dissemination of knowledge relative to rural and household affairs.

III. Its members shall consist of such persons as shall sign the constitution and by-laws, and pay annually the sum of

IV. Its officers shall consist of a President, (two) Vice-Presidents, Secretary and Treasurer, who shall jointly constitute the Executive Committee, and shall be elected annually.

V. Its meetings shall be held weekly, (fortnightly, or as the case may be), at such places as may be designated by the Club.

VI. This constitution may be amended at any regular meeting by a majority of the members present, said amendment having been proposed at the previous meeting.

BY-LAWS.

I. The President shall preside at all meetings of the Club and Executive Committee, and have power to call special meetings.

II. One of the Vice-Presidents shall perform the duties of the President during his absence.

III. The Secretary shall record the proceedings of the Club and conduct its correspondence.

IV. The Treasurer shall receive all moneys, and pay the same on the written order of the President, countersigned by the Secretary.

Report of the U S. Commissioners of Agriculture for 1869

We have received from the Hon. Horace Capron, Commissioner of Agriculture for the United States, a copy of the report of the Agricultural Department for the year 1869. Though issued somewhat late, the volume nevertheless contains so much matter of permanent interest that it will prove a valuable acquisition to any agricultural library. The compilation presents some features of novelty, as compared with similar reports in previous years, and is in many respects a decided improvement upon them. Besides the general summary of the Commissioner himself, there are other valuable reports from the statistician, the entomologist, the chemist, the botanist, the superintendent of gardens and grounds, and an elaborate paper on agricultural meteorology, by Andre Poty, which will well repay an attentive study. In the place of the usual essays or monographs of former years, the editor, J. R. Dodge, has compiled a number of interesting papers on some of the most important subjects connected with agriculture and horticulture. We may instance Landscape Gardening, Fruits, Seeds, Steam Culture, Beet

Root Sugar, American Dairying, and a number of other equally interesting matters. From some of these valuable articles we hope, at a future time, to draw largely for the information of our Canadian readers. The work is illustrated with a number of engravings, which add to the intrinsic value no less than the attractive appearance of the volume.

Report of the Michigan Board of Agriculture for 1869.

The eighth annual report of the Michigan Board of Agriculture for 1869, a copy of which we have received from the Secretary, Sanford Howard, contains, besides an account of the Michigan State Agricultural Society, a report of the Michigan Agricultural College, and notices of some interesting experiments conducted by this valuable institution, and some admirable essays which have excited prominent attention during the year, such as a paper on wheat and its cultivation by the Hon. Geo. Gibbs, European Agriculture, by Mr. James Howard, the price essay on cheese, by Mr. Arnold, of Ithaca, Prof. or Law's paper on the feeding of cattle, a brief report by Messrs. Baker on cheese dairying, or the factory system, and a paper on long-woolled sheep. There is also appended a report of the Western Michigan Lake Shore Horticultural Association. Altogether, the volume is, as usual, full of valuable instruction of special interest to the agricultural reader.

Artificial Manures.

We notice by the report of the Chemical Committee of the Royal Agricultural Society on Adulterated Manures and Feeding Stuffs which has just come to hand, that the farming public of England is imposed upon to an extent far greater, so far as we can judge, than we in this country are. Professor Voelcker has been analyzing these vile compounds, sold often at high prices, and the composition and utterly worthless quality of some of them would be subject of amusement, were it not a matter of too serious importance to the farmer who buys. A sample of bone manure contained only one per cent. of phosphate of lime and one per cent. of nitrogen. It was made up chiefly of gypsum and some cheap organic refuse, impregnated with sulphuric acid. It cost four and a half pounds sterling per ton, and was worth less than a pound and a half. Other specimens were still worse. Carbonate of lime and lime sand were mixed in largely.

Now genuine bone dust or bone meal contains forty eight per cent. of phosphate of lime, and yields four and a half per cent. of ammonia and no amount of sulphate of lime. All additions of the latter are cheats.

There is also a remarkable falling-off in the quality of recently imported Peruvian guano. It contains much rock or sand. The supply on the Chincha Islands is probably running rather short. The British farmer is terribly imposed upon in the article of commercial manures.

Editorial Notes.

During the first week of November, we visited some of the western counties, along the line of the Great Western Railway. Owing probably to the very mild favourable weather we have enjoyed this autumn, the work of gathering in the root crops had hardly yet commenced, and even in many orchards the apple trees were still loaded with their fruit. The Indian corn crop, so far as we could ascertain, is one of the best ever harvested in Canada, both as regards the quantity and quality, and the stalks have been saved in such excellent condition that with proper after-care they must form quite an item in the way of food for stock to many farmers, which is a matter of consequence owing to the somewhat short hay crop caused by the dryness of the early part of the summer. It will be well for those who have corn stalks on hand to endeavour to make the most of them, by cutting and steaming before feeding out to their cattle. The addition of a little barley or wheat meal to the steamed mess will go a great way towards inducing the stock to eat it all up clean; and corn-stalks, if well saved, are much more nutritious than the best straw that can be had.

A large breadth of winter wheat appears to have been sown, and most of it is not only put into ground that is in capital order for the production of good wheat, but has been sown at an earlier date than usual, and owing to the favourable season the wheat plants appear to be remarkably strong and healthy, and the ground well covered. In fact, in some instances the wheat had attained somewhat too rank a growth and appeared thicker on the ground than there was any necessity for at so early a stage of its growth. With a favourable winter and enough of snow to prevent the destruction of this crop by severe frost, and a dry summer after, we may anticipate that the yield next year will be one of the heaviest ever gathered in Canada. The success of this crop during the past three years, since that once dreaded scourge, the wheat midge, has abated its ravages, has induced our farmers to be more careful in preparing their land, and hopeful of the results of their labours.

A short trip into Michigan showed a wonderful contrast between our neighbours' system of farming and ours. The absence of root crops was most marked, while the presence of so many undrained swamps and almost stagnant rivers showed evident cause for the general prevalence of ague and other malarious diseases that are the bane of the settler in those western wilds. The corn fields seemed, as compared with ours, to be but half cultivated, and several appeared to have a heavier crop of weeds than corn on the ground, the weeds in some instances overtopping the corn in height; and it was a marvel how the farmers there could allow them to ripen such a

heavy crop of foul seeds to spread over the land, and rob it of its riches.

The country over portions of western New York presented an agreeable contrast to the state of things in Michigan. Here we find well-cultivated farms, good buildings, and along the line of New York Central Railroad, for 100 miles eastward of the Falls of Niagara, a fine fruit region, with large orchards well loaded with the finest fruit. The operation of a new cattle law, prohibiting stock from running on the highways, has resulted in some farmers entirely removing their fences from the road-side; and as one consequence of the highways being no longer kept in order by the grazing of stock, they were fast becoming overgrown with weeds, which seemed to be allowed to ripen their seeds unchecked, and so form the nucleus for distributing foul weeds over the fields. This might be easily avoided, if it were made compulsory to destroy them before they blossomed, or by seeding down the road-sides to clover or timothy, and allowing the farmers to cut it as hay. It will come to this in time, when they find out the evil of the other course of allowing them to become the nursery for weeds. On the whole, wherever we went, we saw evidences of improvement in the system of cultivating the soil. Much of this is due to the introduction of better and labour-saving machinery on the farms; but still more, we think, to the wide circulation of agricultural journals, inducing more thoughtful care in the management of farms, more attention to the rotation of crops, and a more liberal expenditure of capital in manures and improvements, instead of hoarding it up at small interest in the banks.

The pleasantest experience we enjoyed during our trip was a short visit to Moreton Farm, near Rochester, N. Y., the residence of Joseph Harris, well known as the writer of "Walks and Talks" in the *American Agriculturist*. Six years ago he purchased at a cheap rate 285 acres of the poorest and most worn-out farm in Western New York. By means of under-draining and good cultivation he has brought this farm to be one of the richest and most productive in the state. It was originally covered with stones and boulders, the soil being naturally good, but in a sadly neglected condition. The boulders have been blasted out, the stones gathered up and made to do work as fences, there being already many dry stone walls built on the farm. The finest crops of clover, corn, and wheat are raised, and what was once a desert now blooms as a rose. This has all been accomplished more by good management, than any lavish expenditure of capital for artificial manures or high farming. Under-draining, deep ploughing, and growing clover to be fed off by sheep, have been the principal means used. Mr. Harris's flock of Cotswold sheep are of the finest quality as regards their wool we have ever seen. The lambs of this year are especially so, and they are being bred with the object of getting

sheep that shall yield a fleece of the softest and finest combing wool it is possible to obtain. They are not kept up to the high condition of flesh our breeders usually admire, consequently do not attain heavy weights, but they are thrifty and healthy. The Essex pigs on the farm are the finest we ever saw of the breed, and some cross-bred spring pigs, by an Essex boar from a Berkshire sow, seem remarkable specimens of porcine thrift and beauty. They will go over 300lbs each by Christmas. Does the farm pay? Mr. Harris pays high wages, but gets the best men that can be had, and is quite satisfied that the farm not only pays well, but is the best investment he ever made. It has trebled in value since he bought it, and his crops are steadily increasing in yield every year. He has besides set such a good example to his neighbours that they are beginning to stir up and go and do likewise. The story of his doings on this farm, as given in "Walks and Talks," has done more to awaken an interest in the improvement of agriculture in the United States than anything ever yet written.

Notes on the Weather.

The mild Fall weather which characterized the early part of the season has continued throughout the month of November, and judging from one's agreeable impressions of the pleasant temperature, contrasted with the vivid recollections of the cold of last year during the corresponding month, one would be disposed to pronounce the November of the present year as exceptionally mild, if not warm. The records of the Observatory, however, would correct this idea, and show that the month, pleasant as it has been, can only claim an average character as regards temperature. Indeed, the mean has been a trifle below the average of the last thirty years. The amount of rainfall or snow has been less than usual. Very little of the latter, except on one occasion, has fallen in the neighbourhood of Toronto, but in other districts west and east, as well as towards the north, where it would be earlier looked for, there has been a considerable fall and some sleighing. A more favourable season for maturing and harvesting root crops could not have been enjoyed, and we suppose such a thing as a lost turnip crop, from being frozen into the ground or covered with snow, will not be heard of this year in the Province.

The records of the Toronto Observatory already referred to show that the mean temperature of the month has been 36.6, which is 0.1 colder than the average, but 3° 9 warmer than the mean temperature of last November.

The highest temperature was 57° on the 2nd instant, which was also the warmest day, with a mean of 49° 6. The greatest degree of cold occurred on the 22nd, the

mean temperature of which was 27° 4, and the lowest 19° 4.

Rain fell on six days to the total amount of 0.594 inch, being 2.576 less than the 0.594 inches, being 2.576 less than the averages.

The total amount of snow was 3.1 inches, being slightly below the usual quantity, and as much as 7 inches below that of November, 1869. The first snow of the season fell on the 10th of the month.

There have been 5 clear days, 16 partially clouded, and 9 entirely so.

The prevailing winds have been from the west.

THE HORTICULTURIST.—This long established and excellent periodical maintains its reputation as one of the best horticultural authorities in the United States. It is well printed, beautifully illustrated, and full of useful practical instruction. The publisher is H. T. Williams, New York—the price \$2 per annum.

Mr. Gibb, of Compton, has again added to his fine herd of imported Ayrshires. The last arrivals of which we have heard consisted of Lady Avondale, who gained the first prize at the Highland Society show this year; May Bell, also the winner of several prizes; Mary, Miss Meikle, Blooming Daisy, and Heather Bell—all prize winners. Other cattle were on the way when these arrived, and have no doubt before this reached their destination. Mr. Gibb seems determined to introduce the best class of Ayrshires into the country.

HEARTH AND HOME.—This deservedly popular agricultural and family periodical has passed from its late proprietors into the hands of the enterprising publishers, Orange Judd and Company, and is now issued from the office of the *American Agriculturist*. Its price is also reduced from \$4 to \$3 per annum (Am. currency.) It is conducted with spirit, admirably illustrated, and contains, besides agricultural and horticultural matter, a summary of news, popular tales, and other matter of general interest, making it a welcome family paper in rural districts.

TRANSACTIONS OF THE WISCONSIN STATE AGRICULTURAL SOCIETY FOR 1869.—Our acknowledgments are due to the Secretary of the Wisconsin State Agricultural Society for a copy of the report for the year 1869. The volume contains a brief account of the condition and progress of the State and the proceedings of the Society during the year, together with practical papers on agricultural matters by such eminent writers and practical authorities as N. A. Willard, J. D. Webb, and J. B. Lyman on dairy interests; Marshall P. Wilder on horticultural subjects, and others equally eminent on almost every branch of agriculture and rural economy.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Fruit Growing in the West Division of the Ontario District.

From the Report of the Fruit Growers' Association of Ontario for 1869.

The West Division of the Ontario District embraces the Counties of Peel, Wentworth and south part of Halton.

The following varieties of apple are recommended to be planted within this division, viz:—Autumn Strawberry, American Golden Russet, Baldwin, Black Detroit, Cayuga Red Streak or 20 oz. Apple, Colvert, Canada Red, Duchess of Oldenburgh Early Joe, Early Harvest, Esopus Spitzenburg, Early Strawberry, Fall Janetting, Fall Pippin, Fameuse, Gravenstein, Hawthornden, Hubbardston Nonsuch, Holland Pippin, Hawley, Keswick Codlin, Kentish Fillbasket, King of Tompkins' County, Maidens Blush, Melon, Northern Spy, Primate, Pomme Grise, Red Astrachan, Ribston Pippin, Rhode Island Greening, Roxbury Russet, Sweet Bough, St. Lawrence, Swayzie Pomme Grise, Swaar, Seek-no-further Spice Sweeting, Talman Sweet, Wagener, Yellow Bellflower.

The following eleven varieties are recommended as profitable for market in the order given below, viz:—Northern Spy, R. I. Greening, Roxbury Russet, Baldwin, Fameuse or Snow apple, St. Lawrence, American Golden Russet, Red Astrachan, Early Harvest, King of Tompkins' County and Gravenstein.

The following sorts are selected as being the most hardy within this division. They are recommended in the order in which they are named:—Red Astrachan, Duchess of Oldenburgh, St. Lawrence, Kentish Fillbasket, Fameuse, American Golden Russet, Pomme Grise, King of Tompkins' County, Northern Spy and Gravenstein.

Mr. Beatty says the Newton Pippin and Yellow Bellflower have been tried and found too tender, but all the others say "none."

The borer, tent caterpillar and codlin moth are mentioned, but do not seem to have been productive of much injury, except in neglected orchards. Mr. Leslie says, "by having all the fallen fruit picked up two or three times each week and fed to pigs, we have kept this enemy, the codlin moth, so much under as to make the damage done by it very trifling. Some orchards in this neighbourhood have suffered considerably from negligence in this respect." No disease of the tree is mentioned.

Spring is almost unanimously recommended as the best season for transplanting. Mr. Leslie says, "fall and spring are found

equally suitable. Transplanted in the fall they must have a good mulching of long manure. When manure is not convenient, bank up about the tree to the depth of about fifteen inches, which must be removed to the ordinary level soon after the frost is out. This also forms a very good protection against the barking of the trees by mice." Mr. James Heslop says, "trees taken up soon after the fall of the leaf and well heeled in, have made a better growth the next season than when planted late in the spring. The reason is that the wounded root commences to heal over during the winter, and the root is ready to throw out its new fibres immediately on being planted."

With regard to dwarf trees, it seems that dwarf apples, pear and cherry have all been planted within this section, and that with suitable kinds and proper care they succeed well. Mr. Leslie says, all varieties of apple succeed as well dwarfed on the Paradise or Doucain stocks, as when worked on ordinary seedling stocks, and that the effect of dwarfing apples is to produce fruit earlier than from standards, and to make varieties that are tender or partially tender, much more hardy.

For dwarfing cherry trees the mahaleb stock is used. This he considers the best stock upon which to work the cherry, and the dwarf or low-headed form of tree the best for this climate. All varieties of cherry will succeed as well when worked upon the mahaleb as when grown as standards upon the mazzard stocks.

The pear is dwarfed by working it upon the quince stock. The roots of a quince being rather tender, he recommends to give them a heavy mulching in the fall with long manure or to bank the trees with earth, which should be removed in spring. They should have the benefit of good shelter, which remark applies to every kind of fruit tree grown in Canada. Clay loam is the most suitable soil for the dwarf pear. Some varieties of pear do not thrive well on the quince, and Mr. Leslie recommends the following varieties, viz:—Bartlett, Ananas d'Été, Louise Bonne de Jersey, Duchess d'Angouleme, Flemish Beauty, Belle Lucrative, Beurre Gifford, Beurre Diel, Sheldon, Vicar of Winkfield, and White Doyenne; and adds that much finer specimens of fruit can be produced on dwarf pear trees than upon standards.

The following varieties of pear are named as desirable sorts to plant in this division:—Ananas d'Été, Buffam, Bartlett, Belle Lucrative, Beurre Bosc, Beurre Diel, Beurre Clairgeau, Beurre Giffard, Beurre d'Anjou, Beurre d'Aremberg, Beurre Superfin, Duchess d'Angouleme, Doyenne du Comice, Doyenne d'Été, Dearborn's Seedling, Doyenne d'Alencon, Doyenne Gray, Doyenne Boussock, Flemish Beauty, Glout Morceau, Howell, Jargonell, Jaminette, Lawrence, Louise Bonne de Jersey, Maria Louise, Osband's Summer, Ros

tiezer, Swan's Orange, Seckel, Sheldon, Steven's Genessee, Tyson, Vicar of Winkfield, Winter Nelis and White Doyenne.

No varieties of pear are given as being too tender. Mr. Heslop says that the Duchess d'Angouleme has not proved as hardy as could be desired, and there is some reported tenderness of the Columbia and Bartlett, and yet that in some situations they all prove hardy enough for profit.

The following varieties are recommended as most profitable for market in the order in which they are given:—Flemish Beauty, Bartlett, Louise Bonne de Jersey, White Doyenne, Vicar of Winkfield, Buffam, Belle Lucrative, Sheldon, Winter Nelis, Beurre Clairgeau, Doyenne d'Été, Beurre d'Anjou and Brandywine.

Those named as most hardy are Flemish Beauty, Glout Morceau, Vicar of Winkfield, Howell, Belle Lucrative, Sheldon, Winter Nelis, White Doyenne, Tyson, Duchess d'Angouleme, Jaminette, Beurre Giffard, Easter Beurre, and Louise Bonne de Jersey.

There does not seem to be any suffering from disease or insects among the pear trees worthy of note. The pear blight is mentioned as a thing that has, as it were, been barely seen, and so of the slug and the rust on the leaf.

The following varieties of plum are named as succeeding well:—Lombard, Yellow Egg, Washington, Bradshaw, Duane's Purple, Peach Plum, Prince's Yellow Gage, Jefferson, Huling's Superb, Blue Plum, Smith's Orleans, Imperial Gage, Imperial Ottoman, Coe's Golden Drop, Green Gage, Guthrie's Apricot, and Columbia; none are too tender.

The following are recommended for profit, viz:—Lombard, Prince's Yellow Gage, Yellow Egg, Washington, Huling's Superb, Bradshaw, Coe's Golden Drop, and Columbia. The curculio stings the fruit and causes it to fall prematurely. The only disease of the tree is the black knot. Mr. Leslie says, that all the blue and purple varieties become affected by the black knot when they attain a bearing age. The yellow varieties are much less subject to it, but cannot be said to be wholly exempt, with the exception of Prince's Yellow Gage, upon which he has not seen one of these excrescences. No insects attack the trees.

The varieties of cherry that succeed best are the common red or Kentish, Black Tartarian, Elton, Mayduke, Napoleon Bigarreau, Reine Hortense, Black Eagle, Rockport, Bigarreau, Elkhorn, Governor Wood, Late Duke, Yellow Spanish, and Plumstone Morello.

No variety of cherry is named as being too tender, but Mr. Leslie advises that all cherry trees be planted in sheltered situations where trees, buildings or the like will afford them some protection.

The Black Tartarian, Kentish, Mayduke, Black Eagle, Elton, Napoleon Bigarreau, and Rockport Bigarreau are said to be the most profitable for market.

No disease affecting the tree; Mr. Leslie mentions bursting of the bark occasionally by extreme cold weather, which he says can be wholly prevented by growing them with low heads. The insects are the slug on the leaf and the curculio in the fruit.

In the eastern part of this division the peach cannot be grown; in the westerly extremity near Hamilton, Dundas and Ancaster, it can be grown in the open air in dry warm soils and in sheltered localities, yet even here the fruit is now very uncertain, much more so than in former years.

The climate throughout this division is not favourable to the growth of the quince, apricot or nectarine. Like the peach, they can be made to fruit in favourable and sheltered situations or when trained on a wall.

Strawberries will do well. The favourite kind is the Wilson; besides which the Triomphe de Gand, Jucunda, Trollope's Victoria, Agriculturist, Nicanor, Russell's Prolific, Downer's Prolific, Hovey, &c., are named.

All name Wilson as the best for market; two add Triomphe de Gand; and Mr. Leslie adds to these Jucunda, and, for a near market, Downer's Prolific.

The following varieties of raspberries are found to succeed here, viz.:—Franconia, Brinkle's Orange, Red Antwerp, Fastolf, Hornet, Philadelphia, Clarke, Black Cap, Prince of Wales and Fillbasket.

The following sorts are recommended to be planted for market in the following order:—Brinkle's Orange, Franconia, Clarke, Black Cap and Fastolf. Mr. Leslie says he has not seen any better market variety than the Franconia, which proves with him to be vigorous, hardy and productive, and the berry firm and fine flavoured.

The following gooseberries are recommended in the order below:—Houghton, Whitesmith, Crownbob, Warrington Red, Hearts of Oak, Red Ironmonger, and a seedling raised by John Brooking of Dundas, which is very like the Warrington, but has not yet been tested on light or sandy soils.

The English varieties of gooseberries are subject to mildew, especially on light soils. Houghton's seedling, and the before mentioned Brooking's seedling, as far as tried, are not subject to mildew. Mr. Leslie says the Houghton is a very useful and profitable berry, and should be largely grown for market.

Flour of Sulphur is found useful in preventing or mitigating the mildew. Lime, ashes and salt, with a coarse mulch, are also used. High cultivation, thorough pruning, and a strong soil are essential aids.

But few blackberries seem to have been grown. Mr. Leslie says, "the Lawton or New Rochelle is too tender, being killed nearly to the ground every winter; the Wilson, a little hardier, producing a small quantity of good fruit each year; but does much better when protected with a covering during winter. The Kittatinny is the best of all—is the hardiest, killing back but

a few inches—and produces good crops of excellent fruit.

All varieties of currants thrive well. The White Grape, Cherry and Black Naples, are the most popular. There is no disease of the plants. The currant borer does some slight injury by boring through the pith of the stems; and the sawfly worm has done considerable damage by eating off the leaves. Mr. Leslie says these (the sawflies) are rapidly disappearing where pains are taken to kill them with white hellebore.

Some thirty varieties of grapes are mentioned as having been planted; of these only the Rebecca have been found to be too tender. The Clinton, Delaware, Concord, Hartford Prolific and Adirondac, are reported to be perfectly hardy; but Mr. Cooley says that all require protection during the winter. Those that ripen their fruit every year are the Clinton, Delaware, Concord, Hartford Prolific, Adirondac and Allen's Hybrid.

Mr. Leslie mentions a small vineyard of two acres, planted with Clinton, Delaware, and Hartford Prolific; and some foreign vines.

Mr. Burnet says there are some thirty-five acres of vineyards around Hamilton, planted with Delaware, Clinton, Concord, Salem, Iona and Oporto.

There is also a vineyard at Cooksville, probably the largest vineyard in the Province, planted mainly with the Clinton, in which the fruit attains a high degree of perfection.

No diseases of the vine are mentioned, and the insect depredations as yet have not been material.

The soil is of every character, from lign sand to heavy clay, but clay loam predominates. In some parts the subsoil is gravelly, or a shale. The best apples and pears are those grown upon a clay loam with a somewhat porous subsoil. The best grapes are raised on loamy soil with a gravelly or a shale subsoil. Land that is rolling is preferable to that which is flat or low. Gooseberries and plums succeed best on heavy clays, pears on clay loam, apples on clay and sandy loam, cherry and peach on lighter sandy and gravelly soils. The extremes of temperature are ordinarily from fourteen degrees below zero to 95 degrees above, in the shade, though at times it has fallen considerably lower.

Mr. Leslie calls attention to a seedling strawberry on the grounds of Mr. John Cross, Oakville, named by him "Long John" from its peculiar shape. He says "it is a large berry and of good quality. The plant is much more robust and hardy than the Wilson, while its productiveness is fully one-third more, thus placing it at the head of the list for market berries. It has been planted and tested side by side with the Wilson for some years, and has fully borne out these statements. To the enormous productiveness I can bear testimony, having been an astonished witness thereof."

Mr. Leslie also adds that the Transcendant, Golden Beauty, Montreal Beauty crab apples

are the favourites in this locality. A seedling crab with a distinct quite sweet flavour, raised by George Leslie & Son, promises well, the tree being, like all other crabs, very hardy, while the fruit cooks as well as the sour varieties, and requires only a modicum of the sugar.

Storing Winter Apples.

A correspondent of "Laws of Life," who claims to have had extended experience, is decidedly of the opinion that apples keep far better when put into close boxes or barrels, and secluded as much as possible from the air. When thus stored, he says they will come out in spring full and plump as when taken from the tree. Many varieties, as the Talman Sweet, Spitzenburg, and those kinds that are not considered as long keepers and shrivel badly, will do well treated in this way. I have, he continues, found universally, that they keep better to let them lie without picking over. It is much better to pile them into a large bin across the cellar, say six or seven feet high and four or five feet wide, and cover them up tightly, than to lay them on shelves.

I once saw such a bin that a man had kept through the winter. About the first of April he thought he would open the windows on the side of the cellar next the window to let in the air, that they might keep better. I was at his place and he my called attention to the fact. Two windows just over the bin were opened about ten days or two weeks, and the apples exactly opposite the windows about one-third rotted for as much as a foot in depth, and the remaining part on either side were not rotted at all.

Another instance: A neighbour of mine had about five hundred bushels in a pile in a cellar. As they became a little specked he commenced picking them over; when about half done, he got tired and concluded to let them go. When marketed about six weeks after, he found that about one-third of those picked over were not fit for market, while all but about one-twentieth of the others were good. This I have seen in numerous instances. If you wish to try the experiment, make a box as tight as a carpenter can make, and when picking from the orchard fill it and nail it fast. Let it lie in the orchard till it is in danger of freezing; then put it in the cellar. Put the same quantity on shelves for trial. I am pretty sure one experiment will convince.

NOTE BY THE HORTICULTURAL EDITOR.—The most convenient and, at the same time, the best way of handling apples for winter use is to select a cool, dry day, gather the apples carefully by hand into baskets holding about one peck, being careful to put into them only perfectly sound apples. Take dry barrels into the orchard, and place the first basketful into the barrel by hand, afterwards the basket filled with apples may be put into

the barrel and the fruit carefully poured out. This should be done slowly and gently, allowing the apples merely to *roll out*, not *fall* down on to the fruit already in. As each basket is emptied into the barrel give the barrel a shake sufficient to settle the apples snugly and compactly into their places. Fill the barrel in this way even with the top of the staves, leveling with the hand by placing the apples so that there will be as little unoccupied space as possible, then put on the head, pressing it down to its place with the hand screw packer; drive on the hoops tight and nail a small strip to hold the head in place. The barrels, when filled and secured by nailing, should be taken out of the sun, and placed in a shed, open to the north, and remain there until there is danger of the apples freezing, when they should be removed to the cellar, which should be kept cold, barely free from frost, and the barrels opened as the fruit is wanted for use. If no such shed is at hand, let the fruit be stored in the cellar at once.

The American Sweet Chestnut.

We desire to call attention to this very valuable tree, and suggest to our farmers that they should plant it, especially those who have any light soil on their farms, though it thrives exceedingly well on clayey, loamy, gravelly, and rocky soils, indeed anywhere that the ground is not cold and wet.

The farmer should plant this tree because it is a hardy, native tree, thriving well from the shores of Lake Huron to Lake Erie; because it grows rapidly, bears fruit in a very few years—about as soon as most apple trees—which sells at from three to four dollars per bushel; and because the timber is very valuable even now, and is fast becoming more so; and if not available to the planter himself, will be of great value to his children.

Small nursery-grown trees can now be had of our leading nurserymen, which can be transplanted with entire success, and at a cost not exceeding that of apple trees.

The landscape gardener will not fail to see this tree abundantly wherever suitable, for it ranks with the oak, the king of the forest, in landscape gardening. It attains an enormous size, and is almost as remarkable for its longevity. The celebrated chestnut tree at Tortworth, in the county of Gloucester, England, measures nineteen yards in circumference, and is believed to have been standing before the Conquest, 1066.

Downing says of the chestnut that "when old, its huge trunk, wide-spread branches, lofty head and irregular outline, all contribute to render it a picturesque tree of the very first class. In that state, when standing alone with free room to develop itself on every side, like the oak, it gives a character of dignity, majesty and grandeur to the scene, beyond the power of most trees to confer. It is well known that the favourite

tree of *Salvator Rosa*, and one which was most frequently introduced with a singularly happy effect into his wild and picturesque compositions, was the chestnut; sometimes a massy and bold group of its verdure, but oftener an old and storm-ripped giant, half leafless, or a barren trunk coated with a rich verdure of mosses and lichens.

"The chestnut in maturity, like the oak, has a great variety of outlines; and no trees are better fitted than these for the formation of grand groups, heavy masses, or wide outlines of foliage. A higher kind of beauty, with more dignity and variety, can be formed of these two genera of trees when disposed in grand masses, than with any other forest trees of temperate climates; perhaps we may say of any climate."

It is but a very few years since Mr. Robt. N. Ball, of Niagara, planted a few chestnuts, and from these raised some little trees which he transplanted on the lawn, that now not only are an ornament to the grounds, but yield a profusion of nuts. From this it may be seen that the tree is one of rapid growth, and that the planter may reasonably expect to enjoy much of the fruits of his labour in planting the chestnut.

On Melons.

The cultivation of melons has always been a specialty with me, and many are the failures I have made in their production, but during the past two seasons I have hit off what I consider to be the correct plan of growing this really delicious fruit in profusion and perfection for my own table. My plan is as follows:—

About the first of April, having a hotbed in good order, I start the plants in sods turned upside-down, and when the first two leaves after the seed leaves have formed, plant out in a cold frame; this may be done about the middle of the month.

Although the preparation of a cold frame is a very simple affair, yet, as some of your readers may not have had any experience in their construction, I will give them my method:—

Drive four stakes firmly into the ground at a proper distance apart, so that when boards are nailed to them, the end frames of the sashes provided will rest on the boards nailed to these stakes. I use my double windows, which are six feet long, and having nailed twelve feet boards to the stakes, three sashes side by side nearly extend the whole length. The sashes must have a fall of about eight inches to the south, two boards being used for the back, and one for the front. The proper slope can be obtained by sinking the back boards or raising the front as desired before nailing on. The main thing is to have these boards level, so as not to wring the sashes. After getting the sides properly adjusted, cut boards, so as to fill up one end; lay on the sashes, and

fill up the other end with boards in the same manner, driving in the stakes to hold the end boards in their places. Then bank up with earth all round to make the frame tight.

The next thing is to enrich the earth in which the melons are to be grown. To do this, dig out two round holes, two and a half feet across, towards each end of the frame, two spades deep, and fill up with equal parts of sandy loam or rotted sods, and well decomposed manure thoroughly mixed. Put three plants into each *hill*, which should be slightly *depressed*, being at least two inches in the centre below the rest of the soil; this serves to hold the water when applied by the watering-pot. Having set out the plants, as before directed, about the middle of April, keep them moderately cool by giving air, that is, shifting the sashes, if the days are very bright, so as to allow air to pass between them, and watering daily until thoroughly established. (If the plants are grown in a good thick sod they ought not to wilt at all; wilting checks the growth, and should by no means be allowed.) In three or four days the sashes may be kept pretty close; always shut on cloudy days and at night, and in bright weather keep up a heat of from eighty to ninety degrees, watering the plants freely every other evening, and when they begin to run pinch off the main vine, so as to make the plant branch out.

It will be noticed that there are no female flowers on the main vine, and consequently no fruit. The fruit-bearing branches are what are in grape culture called the laterals. In June they will begin to flower, and at the end of that month the runners will fill up the frames. The weather at this season will be at its hottest, and the sashes may be removed, the boards knocked down, and the earth levelled, so as to give free scope to the melons to run. The first week in August, the vines may be stopped by pinching off the ends, as no fruit will set and ripen after that date. Ripe melons may be expected on or before the first of August, and a good supply will be gathered every day for two months.

When the fruit begins to ripen no more water should be applied, and, in fact, unless the weather is quite dry, very little water after the sashes are removed. It will be found that the vines will have done bearing before cold nights and days come round, at which time the melon tastes, in my opinion, more like a very bad turnip than anything else, perfectly devoid of sweetness and flavour.

Results—From two of these frames the youngsters kept count of the fruit gathered, and the produce was ninety-three, chiefly nutmegs and canteloups, of the sweetest and most exquisite quality.

The method practised by some of growing melons in hotbeds is decidedly erroneous.

My experience goes to show that they are entirely lacking in flavour. It will be found highly advantageous, when putting out the young melon plants into the cold frames, to plant out in rows, also from the hotbed, the young tomato plants and some lettuce for early use. The tomatoes will make much stronger, stockier plants in the cold frame than they will with bottom heat, which tends to make them thin and sickly. From tomatoes grown in this way fruit may be gathered about the 20th of July. Of course, when they touch the glass in the cold frame they should be set out in the open ground.

Ottawa.

P. E. BUCKE.

The Twenty-four First-prize Roses

At the great Crystal Palace Rose Show, held last June, where the competition is probably the keenest and the standard of excellence the highest of any place in the world, the collection that received the first prize contained the following names:—

COMTESSE DE CHABRILLANT, a lovely pink colour, very perfect, and beautifully cupped.

MARIE RADY, not known to us, probably has never been bloomed in this Province.

MAURICE BERNARDIN, a rich vermilion rose, of large size, and very fine form.

MARECHAL NIEL, a most beautiful deep yellow tea-scented flower, of large size and and very sweet.

HORACE VERNET, very large, a beautiful velvety purplish red, shaded with dark crimson.

JOHN HOPPER, also large, clear rose colour, with crimson centre.

XAVIER OLIBO is velvety black, shaded with amaranth, large and full.

MARGUERITE DE ST. AMAND is a most abundant bloomer, flowers large, full, of fine form, and a rosy flesh colour.

PRINCESS MARY OF CAMBRIDGE, of a pale rose colour, quite full, and of good form.

LE RHONE, a rich and brilliant vermilion, flowers large and full,

DUKE OF WELLINGTON is a bright velvety red, shaded with blackish maroon, with a fiery red centre.

EDWARD MORREN, also unknown to us.

MADAME NOMAN is pure white, of medium size, but fine form.

MARIE BAUMAN; this is very large, smooth and nicely formed, of a bright carmine colour.

DEVONIENSIS, a tea-scented rose, very large and full, of a light yellow colour, very fine for pot culture.

SENATEUR VAISSE is large, very double, and of a beautiful bright red.

MADAME VIOLET; the flowers are large and full, in colour transparent flesh, shaded with rose.

MADAME CLEMENCE JOIGNEAUX, very large size, the colour red, shaded with lilac.

VICTOR VERDIER is a very showy flower of a rosy carmine, with purplish edges.

MADAME CHARLES WOOD, a very large and effective flower, of a clear vinous crimson colour.

ANTOINE DUCHER is a very fine flower, very large and full, in colour bright red.

ALFRED COLOMB is bright fiery red, of a fine globular form, and very effective.

DR. ANDRY, one of the most showy, being very large and full, of fine form, and dark bright red colour.

MADAME LA BARONNE DE ROTHSCHILD, a most beautiful flower, colour clear pale rose, shaded with white, very large and double.

Those of our readers who wish to confine their collection to a dozen of the choicest roses, may order of their nurseryman the following names, with every assurance that they will do well in our climate, and satisfy every reasonable expectation. They are among the very best, and we esteem them as perhaps the very best dozen roses it has been our privilege to plant. We name them Alfred Colomb, Antoine Ducher, Boule de Neige, Comtesse de Chabillant, Duke of Edinburgh, Madame Alfred de Rougemont, Madame la Baronne de Rothschild, Madam Charles Wood, Maurice Bernardin, Prince Camille de Rohand, Victor Verdier, and Xavier Olibo.

Those who wish a few choice roses for window culture will be well pleased with Devoniensis, Madame Alfred de Rougemont, Maurice Bernardin, Modele de Perfection, Souvenir d'Elise Vardon and Souvenir d'un Ami.

How to Make a Lawn.

The ground should be entirely free from stagnant water. It must be trenched or trench-ploughed to the depth of eighteen or twenty-four inches. A week of hot, dry weather will be sufficient to dry up the grass on a thin soil, whilst on a deep, well-prepared soil, a whole month of drought would fail to destroy the verdure. The depth, whatever it may be, should be uniform, for if it be deeper in some places than in others, the deep places will settle and make the ground uneven. Evenness of surface is of great importance. I do not mean level, for an undulating surface is quite as desirable for a lawn as a level one, but whether level or undulating it must be smooth and free from even the smallest stones, as these interfere with the operations of the mowing machine.

Red-top is the best grass for a lawn, about fifty or sixty pounds to the acre. Fifty pounds will be sufficient if the seed be clean and good, which it seldom is. Some people recommend white clover, say one-fourth, to be mixed with the red-top, and this does very well, but I prefer the pure red-top. Early in the spring is the best time of seeding a lawn. All preparatory work should be performed in the fall, so that during

winter the ground may settle, and any defects that may be developed can be corrected before sowing. In spring, at the fitting moment, give a light ploughing, a good harrowing, pick off the stones, sow the seed, and give it a good rolling, which finishes the work.

By sowing early in the spring you may have a respectable lawn before midsummer. — *P. Barry's address before the Genl. N. Y., Agricultural Society.*

Hickory Nuts.

Cracking hickory nuts is one of the pastimes of boyhood that men seldom forget. But with all its popularity, and the almost universal acknowledgment of the good qualities of the hickory nut, very little has yet been done to improve or propagate the best varieties. The common shell bark (*Carya alba*) and the pecan nut (*C. oliviformis*) are generally admitted to produce the best nuts; but there is a great difference in the size and quality of these, and varieties are abundant, some of which are far superior to others.

To produce improved varieties from seed would be a slow and tedious process; but it can, and will be done, although at present we may well be satisfied with the very best natural seedlings that can be found in various sections of the country. The hickory is a difficult tree to propagate by the ordinary methods of budding and grafting; and we should be happy to hear from any of our readers who have been successful in propagating it by either of these methods. At present we do not know of any better plan than to splice or cleft graft the young seedlings.

Believing that there are varieties of hickory nuts worthy of propagation as well as for the purpose of receiving distinct names, we shall endeavour from time to time to call attention to some of the very best, and we commence the list with

HALE'S PAPER SHELL,

a most superior variety of the shell bark hickory, which originated near Ridgewood, N. J. The nuts are large, varying from an inch to an inch and a quarter long and about the same in width. Shell thin, and instead of the regular corrugations running from base to point as usual in varieties of this species, the entire surface appears to be broken up into small depressions, which gives it a wavy appearance somewhat similar to the English walnut. The Hale's is certainly one of the most distinct and valuable sorts that we have ever seen. There is one seedling of the Hale's standing near the original tree, which is now thirty years old; but the nuts are quite distinct from those borne by the parent tree; and this fact shows that the only certain way of perpetuating distinct varieties of hickory nuts will be in the usual mode adopted with fruit trees. — *Rural New Yorker.*

The Beurre d'Anjou Pear.

This is one of the most valuable pears in cultivation, and deserves to be most widely disseminated. The fruit is of large size and fine appearance, the skin of which is yellowish green, sprinkled with russet, and often presenting a dull crimson cheek on the sunny side. The flesh is melting and juicy, very nicely perfumed, and having a brisk vinous flavour, ranking in quality among the best. It is usually ripe in November, but will often keep until January. The tree is vigorous and very productive, and seems to be likely to prove hardy, so as to thrive well where pears can be grown.

The fruit is much sought after in the city markets, and last year sold readily in the Boston markets at \$30 per barrel.

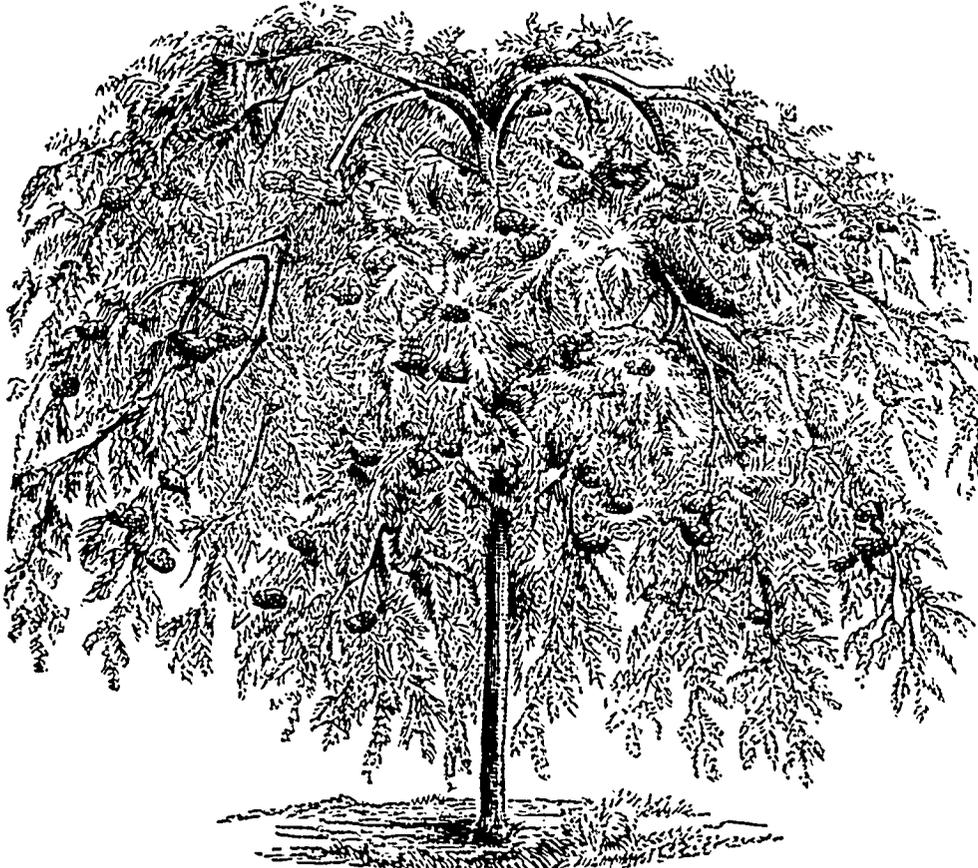
most productive and hardy everywhere of any variety in cultivation, and when fully ripe is a much higher flavoured berry than the Triomphe de Gand, which is usually grown as the next most profitable sort

THE FARMER'S CHRISTMAS FLOWERS.— Besides the Everlastings, which can be cut in summer and laid away in a drawer for the decorations of the holidays, the double geraniums furnish a showy and most beautiful bouquet. If these are cut when the truss is in perfection, and carefully dried in a dark drawer, they will keep their colours perfectly and not drop a petal. Tastefully arranged with a few spigs of evergreens, they make a most showy ornament for the Christmas dinner table.

Protection against Mice.

To the Editor.

Sir,—Mr. W. H. Mills' plan of protecting fruit trees from mice during the winter may be very good in some places, particularly where tiles may be easily procured and where the snow is not very deep, but tiles would not be of much use in many parts, especially where the snow falls to a depth of two to two and a half feet. I saw plenty of apple trees last spring that had been peeled to a height of five feet, even up into the limbs. It was the outside row of trees nearest the fences, where the snow had been drifted, for the mice will work as high as the snow lies. To make sure work with tiles, they would require to be at the least two tiles deep. In this township last win-



Protecting Strawberry Plants

In those parts of the Province where snow cannot be relied upon to cover the strawberry plants all winter, some protection should be given them to insure a full crop of fruit. When the plants are not covered through the winter by the snow, they are subjected to so many freezings and thawings that the fruit buds, already formed and lying concealed within the crown of the plant, are injured. A very slight covering is all that is required—a few evergreen boughs or leaves, or thin covering of straw. A thick covering is apt to keep the plants too warm, which proves to be equally as injurious as too much exposure. Every one can have an abundance of strawberries any year, at the cost of a very little care and labour. The Wilson has proved to be the

The Weeping Mountain Ash.

This is a variety of the common mountain ash, which has a drooping habit, and on that account makes a very pleasing object on the lawn. It is propagated by grafting the drooping variety upon the common mountain ash, at such a height from the ground as it is desired to form the head, for it droops so much that it increases but very little in height above the place where the graft is inserted. It bears berries like the common kind, as shown in our engraving, which gives our readers a very good representation of the general appearance of the tree. It is very hardy, and will thrive in any part of the country, so that no one need hesitate to plant it. It is particularly appropriate for cemeteries, where it may be very advantageously planted with other drooping trees.

ter there were hundreds of trees killed by the mice—some that had been planted for six years and were bearing well. One man estimated his loss at not less than a hundred dollars.

I have about three hundred trees, none older than seven years planted, and I did not lose one tree by mice, nor even have one bitten by them, although there are some fifty pine stumps in my orchard, which are good harbours for mice. Indeed, the ground last spring was riddled by them, but no trees were touched.

My plan of protecting the trees is simple, and within the reach of all, not costing over one-twentieth of the price of Mr. Mills' tiles. I use white lead and linseed oil, putting in a little lamp-black to colour nearly of the colour of the bark. I make a good thick paint and put on with a brush. It is

good for the trees into the bargain. White lead is a poison, and mice have four good, strong senses, namely, sight, hearing, taste, and smell. It will also prevent the apple-tree borer in summer, and it is good for wounds of all kinds on trees, whether by pruning or from accidents.

A large number of apple-trees were lost last winter by bark-splitting at the bottom. The cause I believe to be this—when it rains in winter the water runs down the trees to the ground, lodges in a small pool and freezes round the tree. Bank the trees with earth, a few inches higher than the ground around, so that the water will run away instead of lodging, and no fear of bark-splitting. In general there is a hole or depression around the stems of trees at the root; before the winter sets in, fill this up, and avoid the loss of valuable trees in spring.

AN OBSERVER.

Craigvale, Nov., 1870.

Such practical suggestions are always valuable, and always welcome—ED.

The winter meeting of the Fruit Growers' Association of Ontario will be held in the Court House, in the City of Hamilton, on Tuesday, the seventh of February, 1871, commencing at 10 o'clock, a.m., and continuing through the evening.

CHESTER SEEDLING GRAPES.—F. R. Elliott writes to the *Rural New Yorker* his doubts concerning the value of these seedlings in the climates and soils, the rough care and culture, of the majority of our grape growing sections.

SUMMER PINCHING OF RASPBERRY AND BLACKBERRY CANES.—A correspondent of the *Gardeners' Monthly*, writing from Illinois, says that he has found much benefit by pinching back the canes of raspberry and blackberry plants in July, and enumerates them thus: 1st. Increases the size and self-supporting capacity of the main canes. 2nd. Increases the number of side branches, and consequently the quantity of fruit.

USEFUL MANURE FOR RASPBERRY PLANTS.—Mix equal parts of sawdust and stable manure, and place the compound around the roots every fall before the snow comes. This mixture tends not only to keep the roots warm during winter, but the sawdust, by partially decomposing, furnishes a quantity of potash which is very requisite food for the growing plants. Grape vines may be treated in a similar manner.

THE WEEPING HEMLOCK.—There is an illustration in the *Rural New Yorker* of a new weeping variety of the hemlock, which must make a very handsome addition to our collection of hardy native evergreens. It seems to have been discovered by H. W. Sargent, Esq., of Fishkill, N.Y., growing among some young seedling hemlocks. Grafted some feet from the ground on stocks of the common hemlock, it forms a very pretty drooping head of light feathery evergreen spray.

Poetry.

SEA VENTURES.

I stood and watched my ships go out
Each, one by one, unmooring free,
What time the quiet harbour filled,
With flood tide from the sea.

The first that sailed, her name was Joy,
She spread a smooth, white, shining sail,
And eastward drove with bending spars
Before the sighing gale.

Another sailed, her name was Hope,
No cargo in her hold she bore;
Thinking to find in western lands
Of merchandise a store.

The next that sailed, her name was Love,
She showed a red flag at her mast
A flag as red as blood she showed,
And she sped south right fast.

The last that sailed, her name was Faith
Slowly she took her passage forth,
Tacked and lay too; at last she steered
A straight course for the north.

My gallant ships they sailed away,
Over the shimmering summer sea;
I stood at watch for many a day—
But one came back to me.

For Joy was caught by Pirate Pain;
Hope ran upon a hidden reef,
And Love took fire and foundered fast,
In whelming seas of griet.

Faith came at last, storm-beat and torn,
She recompensed me all my loss;
For, as a cargo safe she brought,
A Crown linked to a Cross.

—Boston Cultivator.

The Winter Snows.

Over the mountains the snow-wreaths are drifting,
Hanging their garlands on laurel and pine,
Robing the fields with an exquisite beauty,
Bending the feathery sprays of the vine,
Falling like down on the breast of the river,
Crowning the maple trees over the way,
Drifting along on the winds to the southward,
Hiding the vessels far out in the bay

In the red sunset the snow-flakes are shining,
Snow-drift on snow-drift, and curl upon curl,
Flashing back colours of exquisite brightness,
Diamonds and rose-leaves and mother-of-pearl.
Softly, ye snow-wreaths, drop over the hill-side
Where in still slumber the weary ones rest,
Where by the pine-tree my mother is sleeping,
Tenderly lay your white folds on her breast

Soon shall the spring-time break over the mountains,
Over its beauty no cold wind shall blow;
Frost shall not breathe there to wither the flowers,
Never again shall they hide in the snow;
Eye hath not looked on that spring in its beauty;
Songs of the seraphs shall welcome its birth;
Come in the beauty and glow of the morning,
Spring-time eternal, dawn over the earth!

Architecture.

Building Houses without an Architect.

I had an excellent kind friend, and also an old worthy female servant. They each wanted a house, and, as I had some experience in almost all kinds of Canadian work, and also wished very much to make some return to both my friend and the old servant, I offered to buy them each a lot and build two houses. There was a vast difference in the kind of house required; my friend's was to be a handsome imposing brick edifice, to cost some \$2400, and his lot was set down at somewhat over a thousand dollars outlay; whereas the old servant's lot must not exceed \$400 in cost, and the house must be built for her at a cost of \$100, and not to exceed this amount—indeed she had no more money.

This work, the first of the kind I ever attempted, is now complete; and I may say, what few young architects can, it is complete without a mistake of any kind. I may except one, which is more an alteration than a mistake, but it needs no particular description, and only amounted to enlarging one room at the expense of another, thereby equalizing them both.

Now I may safely state that an architect is not always necessary, and in our case we should have had to pay him over one hundred and forty dollars for just doing what I myself did. And the only safe thing for any of my readers—who are going to build, and who are also going to dispense with an architect—to do is, just to carefully draw the ground plan of the house, show everything, doors, windows, partition, chimneys, and all, do not leave one iota to be contrived or introduced, or "seen about," when the lower floor is built. Do the same with all other flats, draw them all most carefully; and also draw each joist and trimmer in it. When you have done this with every floor from the ceiling to the garret, staircase and all, begin on the outside, and draw four or more views, one for each side, and put in every window and door, water spout and descending pipe, so that you can see at a glance what every view will embrace and require. Do this with roof and also each view of it. Next we come to particulars—windows and doors. Proceed to draw a window, the very same you design to have, but do this last plan on a very large scale, say one inch to the foot at least, and draw every view of the window—sides, sill, top and sash, each in its turn, but so drawn, even to the moulding, as will show every view of your window; and this one window will answer for all others. Do the same with a door, and this one, outside or inside door, will also answer for all else. If you want any plainer door, draw it also; draw everything, and you will find that although when you begin you will know nothing about drawing plans,

when you have given five or six evenings to the various details here described you will wonder *how much you have learned*, and in how short a time. And this is the true way to knowledge; the way, simple as it seems, that all great and self-made men have been formed. In fact, the only way, for if you wait for instruction on every point and your mind is too indolent to think it out for yourself, for the most part you will never do to build a house without an architect; you may quite rely on that. Nor, indeed, is it probable you will ever do anything but work for some one whose mind is not too indolent, or whose body too lazy to carry out any project he may determine on as feasible and within his reach.

Save it further to say, that both the houses were completed, and also almost to time, and neither cost more than was estimated, except where some extras were introduced, which were well afforded and did not cost much. In some future article I will give a description of the buildings and the cost. One thing I am quite sure of—no small family need pay rent who have \$100 wherewith to build a small house of three rooms of 12 by 9, 12 by 12, and 12 by 9.

These three measurements were the size of the \$100 edifice, and when I first married I lived in one much worse for some years, until I determined to build one for myself and did so at a cost of \$125. Some description of this house, which was built of clay unburnt bricks, may at a future time interest some of the readers of the FARMER.

The present \$100 dwelling was, however, built of frame, and plastered inside. C.

Foundation of Houses on Sand.

It is not generally known that foundations for large and heavy brick buildings can be quite safely constructed on quicksand, even where your foot will sink rapidly when pressed on it, and also where the sand is full of water—the only requirement to ensure a perfect foundation under these conditions being that no future operation will allow of the escape of the quicksand, and that the base or lower bearing of the building on which the walls are to be erected should be first constructed of two-inch plank laid crosswise, say about three or four feet in width. On this should be laid another layer of two-inch plank, but this should be laid lengthwise, crossing the former. For very heavy walls another crosswise layer of planks may be laid; but for all ordinary heavy buildings, such as mill walls, the above supply of two-inch plank will be found sufficient. The fact of water being on the sand will not hurt the stability, or injure the walls in any way; nor will any settlement be as likely to take place as on ordinary soft clay, at large as it may seem. But beware of under-draining *after* the building is constructed, and thus removing the water from the sand. There will in this case be imminent danger of settlement; the quicksand, deprived of its water, will at once allow of alteration in relative levels. C.

Household.

Farmers' Daughters.

There can be no question that the mutual influence of the sexes in families is fraught with advantage to all parties concerned. It is a matter of common observation and experience that boys or young men who have been brought up without sisters, are more rough, uncouth and boorish, than those whose manners and tempers have been softened by female intercourse at home. It is equally true that the presence of brothers in a household is of no small importance in moulding the character of sisters. This is most marked when the brothers, or at least one or two of them, are the older. The girls in this case will always exercise, both towards each other and their brothers, more forbearance and sweetness of temper than where there is not this intermixture of sexes. Boys and girls, however amiable, will be more quarrelsome with those of their own sex than when under the harmonizing and restraining influence of the other. On the tender and ennobling influence of the mother over the son, every man who a spark of goodness lingers in his breast will carry some true and softening memory to his dying day. It is here, indeed, that woman's highest mission lies; and while she has the noble task of moulding men's characters, and instilling into their souls all that is purest and best in human nature, she need not descend from her lofty sphere into the dusty arena of politics. Very few *mothers* trouble themselves about the *ballot*, or care for the franchise in any form.

It is true that domestic cares, in this country especially, often press too heavily on women, and their life is sometimes one of too little varied drudgery; but nevertheless it is no doubt best for them to know something of household care.

Our belief is that a due proportion of duties and recreation constitute the *summa cum laude* of female happiness. We do not mean that girls shall have too much absolutely hard work to do, and of course a better object to their having to engage in out-of-door farm labour; but we hold that they are both better and happier, as wives and mothers, when the necessary home duties have terminated, before marriage, part of the daily routine of the daughter's life. To do otherwise, is simply to make any girl feel, that having married has made her life harder and her lot worse rather than better, and with these feelings rankling in her heart, she will be always more easily vexed and "put out," when any little misunderstanding takes place with her husband, than if the duties above alluded to were so familiar as to make no such painful impression on her mind.

By all means let our daughters discard the idea of there being anything to be ashamed of in household work. Sensible young men

would rather see them in neat and appropriate dress "making biscuits," than know that they have rushed from some such employment, on the announcement of a visitor, to re-arrange their toilet and put on with "company" dress "company manners," from which all naturalness has fled. A loving woman with neat-handed skill in home comforts is more attractive and more helpful and happy than all the "fine ladies" in the world. Depend upon it, where two young people begin housekeeping together, even when their means are not straitened, the household will be far better managed and mutual happiness more surely attained, if the wife looks on her family duties as her pride and pleasure, than if she regards them as a burden and a tax from which she will escape as much as possible.

PASTE THAT WILL KEEP A YEAR. — Dissolve a teaspoonful of alum in a quart of warm water. When cold, stir in flour to give it the consistency of thick cream, being particular to beat up all the lumps; stir in as much powdered rosin as will lay on a dime, and throw in half a dozen cloves, to give a pleasant odour. Have on the fire a tea cup of boiling water; pour the flour mixture into it, stirring well all the time. In a few minutes it will be the consistency of mush. Pour it into an earthen or china vessel; let it cool; lay a cover on, and put it in a cool place. When needed for use, take out a portion and soften it with warm water.

THE CHILD'S CORNER.

The following lines and the moral appended were sent to us by a little girl, eleven years old. We are always glad to encourage the little ones, and especially to foster in their minds such sentiments as are here expressed.

There's a Streamer of Grape on the Latch of the Gate.

There's a streamer of grape on the latch of the gate
When the sun shines bright and fair,
And the children say, as they play on the green,
"There's somebody dead in there."

There's a streamer of grape on the latch of the gate,
And a boy comes forth from there,
"My darling is gone," she says to the throng
That is waiting about the fence.

The streamer of grape removed from the gate,
But to be placed there again,
For the father took the daughter away,
And left the sorrowing parents to weep.

MOTHERS.

Children, you will never have another mother. Be careful to obey her every word, and earnestly attend to all her wishes. If you do this, there will not be so much remorse when the loved one is taken from you. You can think in after times, when you call her to mind, that there was one comfort, and that comfort was that you never did anything to displease her.

MARIE.

Agricultural Intelligence.

Sale of Thorough-bred Stock.

An auction sale of Short horns, Cotswold sheep and Berkshire swine, belonging to Mr. John Miller, took place according to advertisement, on the 16th of November, at 'Thisle Ha', Pickering. There was a good attendance of buyers, and the sale was quite successful. The first lots offered were the Cotswold sheep. Eleven imported ewes were sold, of which one pair brought \$220, another pair \$200, and the rest ranged from \$170 down to \$91 per pair. Fourteen ewes, bred on the farm, brought from \$40 to \$80 the pair. Only two of the rams were put up, the season being late. These fetched \$100 each. Five Berkshire boars brought from \$18 to \$41 each.

Of the Short-horns there were eight cows, eight heifers, and eight bull calves. The total sum realised for the twenty-four cattle was \$3634, giving an average of \$151 per head. The highest price obtained was for the cow Maggie 2nd, that with a heifer calf by her side brought \$310. \$291 was given for another cow, Cannellia, and several fetched over \$200. Mr. Morgan, of New York State, gave the highest price, \$200, for a heifer. The bull calves also brought good prices, making an average of \$120 per head for the lot. The highest price for any one calf was \$180.

Trial of Double-Furrow Ploughs.

A public trial of two of these ploughs took place at Milliken's Corners, Markham township, on Monday, November 14th. The day being wet and stormy, but a small attendance of farmers was on the ground, the number of spectators not exceeding fifty. Of the ploughs brought out one was made by John Gray & Co., Uddington, Scotland, and imported by Wm. Rennie, of Eglington, York township. The other was made by R. Mitchell & Son, Peterhead, Scotland, and imported by C. Brodie, Gormley, Markham township. The ploughs set to work about 2 p.m., in a field of good strong timothy sod, the soil a rich loam interspersed with small stone. One pair of horses drew each plough. The work done by both was not only entirely satisfactory, but greatly exceeded our expectations; and was superior even to what can be accomplished by the best ploughman. The work done by the Gray plough seemed the best, the furrows being more smoothly and evenly laid, and set up at a better angle than those of the Mitchell plough. Each furrow cut was 12 inches wide by six deep. For want of a dynamometer we could not ascertain the amount of draft of the respective ploughs, nor how it would bear comparison with that of the ordinary single-furrow plough; but the general impression seemed to be that with three horses such as are ordina-

rily used, and as a faster gait attained, it would be easy work to plough four acres of land in an ordinary day's time. The teams used were heavy Clydesdales, and accomplished their work with apparent ease, yet their gait we thought to be too slow, as compared with ordinary ploughing. The machines themselves are somewhat complicated, requiring no handles for guidance, the work being controlled by three wheels on which the machine runs, which go a great way towards lightening the draft. From what we saw at the trial we are satisfied that the double-furrow plough will prove perfectly practicable, and not only a saving of time and labour, but also doing away with the necessity of employing experienced ploughmen at high wages; as the machine can be easily controlled and guided by any man or boy of ordinary intelligence after a few lessons on its management. The cost, too, is not great, being about double that of the best iron plough now in use. It could be probably still further modified and cheapened by our own agricultural implement manufacturers.

It is Mr. Rennie's intention, we believe, to import several more of them during the winter, and have them tested with the dynamometer next year.

Shorthorn Sales in Britain

A number of recent sales of Shorthorns are reported in our English exchanges; among them the following are worthy of notice:—

A sale was held early in October of a selection from the herd of the Messrs. Garne, of Broadmoor and Churchill Heath, when no very high figures were given, but prices were pretty uniform, and the good average of £36 4s. 4d., on fifty-seven animals, was realized, the fifty-four cows and heifers making £36 2s. 11d. each.

A herd of 74, belonging to Mr. Butler, of Padminton, sold the next day, including some higher figures, but making much the same averages, namely, £38 7s. 4d. on the whole, and £39 11s. 7d. on 62 cows and heifers by themselves. Bids were made in several cases for Mr. Cochrane.

At the sale of Mr. Hower, Sevenhampton, prices were low, averaging £26 on cows, about £23 on heifers, and less than £12 on calves. A fine lot of Berkshire pigs were sold at good prices, Mr. Beattie, of Canada, being one of the most liberal purchasers, and paying from 9 to 17 guineas each for a number of young sows. One young boar brought 21 guineas. The forty pigs realized £459 18s., or an average of £11 10s., said to be probably the highest price that has ever yet been realized for a similar lot of Berkshires.

A draft from the herd of Sir G. R. Phillips, Weston Park, was sold on October 18, consisting of 39 females and 9 bulls. The averages were very good, being £46 15s. 6d.

on the former, and £28 on the latter, or £43 5s. on the whole 48. The highest prices paid were—£215 5s. for Polycherry, red, calved Sept. 27, 1868, by 3rd Duke of Geneva; £210 for Lactea Oxoniensis, roan, calved Jan. 27, 1867, by Imperial Oxford, £183 15s. for Lactine, roan, calved March 14, 1869, by 3rd Duke of Geneva, and £115 10s. for Polygeneva, calved March 29, 1869, by the same bull. As regards the several families of cows embraced in the sale, the following averages are given:—

	Average.	
	£. s. d.	£. s. d.
13 Lawley & Charmets	169 15 0	83 16 9
12 Welcomes	365 8 0	33 4 4
6 Gwyneths	374 6 0	29 1 0
28 Shotter Pedigree	446 15 6	21 6 5

At a recent sale of Mr. Marr's short-horns, Uppermill, reported in our English exchanges, the average price of twenty bulls sold was £25 14s.; the average price of heifers was over £26 10s.; and the total proceeds £1059 10s. Some of the lots were destined for Canada.

Cattle Plague.

For upwards of fifty years the continent of Europe has been a stranger to the widespread diffusion of cattle plague which now exists. The disease has extended far and wide from many of the places then named as centres of the infection. This was to be expected, seeing that the pressing necessities of war prevented the full adoption of those sanitary measures on which Central Europe mainly relies for arresting the cattle plague. Passing onwards with the German army, the plague soon came into the valley of the Marne and the Seine, and according to some reports has absolutely made its appearance in Paris itself. How it passed the Prussian lines which beleaguer the unfortunate city may not perhaps be known, although we can easily conceive of many ways by which the infection might easily be transmitted inside the fortifications. The provinces of Alsace and Lorraine—especially in the district around Metz—are sustaining severe losses; indeed it has been recently stated that the cattle were there dying too fast to admit of their proper burial. Around Metz also the plague has broken out among the sheep. To save as much food as possible the Germans are slaughtering the apparently uninfected animals, and salting down their carcasses. In the Palatinate the plague is reported to exist in sixty communes, and already about 1,200 beasts have been killed to arrest its progress in the neighbourhood of Kaiserslautern and Landau. Fairs and markets are suppressed in Luxembourg, and also the herding together of cattle in large numbers belonging to different owners. In Rhenish Prussia the disease has broken out in the neighbourhood of Treves and Cologne, and also in some districts near Coblenz. In Prussia proper it has re-appeared in many places in which it

was thought it had been exterminated Six places near to Potsdam, according to the latest intelligence, are still the seat of the malady. No improvement has taken place either in Pomerania or Mecklenburg. In the latter-named duchy the prevention of the pasturage of cattle in open fields, among other means of suppression, has been adopted. In Saxony no more cases are reported from Dresden; but Fricberg, Langenune, and Berthelsdorf are still centres of the infection. In Poland also no improvement has taken place, while the spread of the disease in Galicia may be designated as most serious. Eight divisions of the country, some of which are far removed from each other, are now suffering from the cattle plague. In Transylvania the disease is on the increase. We have no information from Hungary; but in Turkey and along the Asiatic shore of the Black Sea the disease is far from being exterminated.—*Mark Lane Express*

Ploughing Match.

A ploughing match for the Township of Hamilton was held on the farm of Mr. Wm. L. Barnham (Lot 25, in the 1st Concession), on Tuesday, the 15th November, when thirty ploughs entered for the match. They were divided into three classes, two for men according to the kind of plough used, and one for boys. There were eighteen in the first class, seven in the second, and five in the boys' class. The rain of the previous day had made the ground rather soft, yet the work was all well done, and some of the boys' ploughing was particularly good. The Judges, Messrs. Wm. Mulholland, George Carruthers, and John Kendall, after long and careful examination, awarded the prizes as follows, viz.:—First class: 1, Geo. Retalick; 2, — Wright; 3, Patrick Doyle; 4, James Raby; 5, William Smith. Second class: 1, Matthew Smith; 2, Robt. Ferguson; 3, David Butters; 4, Walter R. Riddell; 5, William Mason, junior. Third class: 1, George Farr; 2, Samuel Redpath; 3, Francis Ward; 4, James McCulloch; 5, David McIntosh. The day was fine, and there was a large number of spectators from Hamilton and neighbouring townships, and much interest was taken in the work as it progressed. It was the largest ploughing match, we believe, ever held in the township.

The rinderpest continues to make frightful ravages among cattle around Metz and other parts of France and Germany.

The Western Fair Committee of London have met and reported a successful financial result. The Fair of 1870 has sustained itself, with a little to the good. With the untouched fund in 1868 of \$1,000, and \$2,500 of the city society in the bank, the directors of the institution congratulate themselves upon having \$3,500 as a capital to start with next year.

One of the novel and attractive features of the California State Fair at Sacramento, was the display of indigenous sugars, of which there were specimens manufactured from beet-root, and also from melons.

"Free markets, free roads, no tolls," is the cry in Kingston. The loss of the military is stirring up the people to counterbalance it by attracting produce to the city from the back country to a free market over open roads.

The exports from the port of Naganee to the United States for the month of October were 174,960 bushels of barley, 1,615,300 feet of lumber and other woods, amounting in all to \$155,066.

The Waterloo cattle fair on the 5th Nov., was attended by about 100 head of cattle. From 3½ to 4 cents per lb., live weight, were the ruling figures for those in moderately good condition. There appeared to be a lively demand for cattle for feeding purposes.

A Bee-keepers' Convention is to be held in Cincinnati, Ohio, on Wednesday and Thursday, February 5th and 9th, 1871, at which all sections of the United States, Canada, and other places, are to be represented.

In New York and some other American States a very commendable law is in operation, by which any one who plants shade or fruit trees on the highways is relieved from his assessment of taxes to the extent of \$1 for every four trees so planted at distances specified by the Act.

A Fish-breeders' convention has been called to meet at the Skating Rink, New York city, December 20. A show of fish may be expected in connection with the exhibition of the New York State Poultry Society. The design of the convention is consultation for the protection of the interests of fish breeders, and, if thought best, to organize a permanent association.

The *Elora Times* says there have arrived at the Elora railway station during the past week about seventy car loads of wheat. The wheat was purchased in Milwaukee by J. M. Fraser, Whitlaw & Gay, and J. M. Ross; and after paying expenses of freight, &c., can be laid down at their mills cheaper than they can purchase it from the farmers around Elora.

The report of the United States Department of Agriculture comes to the startling conclusion that such is the wholesale destruction of American forests, there will be an actual famine for wood in the country within thirty years, unless immediate measures are taken to supply their places by new plantations. It is estimated that from 1850 to 1860, 20,000,000 acres of timber land were brought under cultivation, and that in the present decade no less than a hundred millions will be so reclaimed. We see but one remedy for this:—Let the Government offer large premiums for the cultivation of forests.

It is said that the English sparrow is death on the curculio and the caterpillar, two great pests to fruit trees. The English sparrow is found to be easily acclimated in Canada, and the colony in Quebec is thriving heartily. Following the example of Colonel Rhodes, of Quebec, Mr. John Proctor, of Hamilton, intends to bring with him on his return from England a large number of these birds, which will be turned loose in the spring.

Owing to the letting of two of the Branches Park farms, and the consequent necessity of the reduction of stock, a portion of Lady Pigot's herd of Short-horns was lately sold. Among the cows disposed of, Mantalini 2nd brought the highest price, 260 guineas; 100 guineas was given for La Belle Helene, 80 for Lady of Branches, and 75 for Pele. The other cows made from 22 guineas to 56 guineas each. Several young bulls were subsequently offered, but none of them made more than 31 guineas. The total produce of the sale was £1,179 18s. for thirty head; the average obtained per animal offered was £39 5s.

MR. BEATTIE'S IMPORTATIONS.—We learn that Mr. Simon Beattie, who now resides near Bangor in Pickering, besides his valuable services in selecting stock for Mr. Cochrane, has recently imported on his own account several short-horns of great beauty and high pedigree. Among them is the cow Innocent, a fine looking animal of large size, the dam of some excellent stock in England, and descended from Mr. Robert Collins' Cowslip, the ancestress of the celebrated prize heifer Countess of Yarborough, winner of premiums at the Royal and Yorkshire shows. Mr. Beattie has also imported two bulls, Bothwell, 25661, and Lord York, 26766. The latter is half-brother to Mr. Cochrane's renowned heifer Duchess 97th, both having been sired by Captain Gunter's Third Duke of Thorndale. A very superior entire colt, a Cleveland bay bred by Mr. Bruere, of Braithwaite Hall, Yorkshire, also came out by the "European" for the same enterprising importer.

Farmers in the burnt Ottawa district are setting to work vigorously to repair their losses by the disastrous fires of last summer. The *Ottawa Citizen* says that in some places they have adopted the plan of entering into partnership to cut and draw fence stuff for their farms with one team, and send their idle horses to the shanties. They are enabled in this manner to keep their teams for next spring's work and draw timber enough during the winter to rebuild their fences when the snow is gone. The horses in the shanties will be earning money to purchase feed to keep them from the time they leave the shanties in the latter end of the winter until the grass is good. They would feel a great loss in the spring if they should be compelled to part with their teams this fall through want of the means for keeping them through the winter.

Miscellaneous.

Bear-hunting Extraordinary

In the fall of 1842, I was engaged in inspecting some lands in the township of King, then almost a wilderness in comparison with what it is now. Wild animals were comparatively numerous, bears and wolves especially. One wet evening I stopped at a newly-erected farm house, occupied by an old English family, who had moved on to the land about two months previously. The house was not even chinked or plastered, and great difficulty was experienced in keeping the candles burning, on account of the wind. The settler, who had determined to make his home in Canada, had brought everything he could with him from England, and amongst the rest the ancient family "spit." To the uninitiated, we must explain that the old English spit, now long banished from modern households, was formed of a bar of steel half an inch thick by one and a quarter inches wide. There was a formidable spear-shaped point at one end, whilst the other was terminated by a strong oak wheel, two inches thick and about eight inches in diameter.

About two feet from the north side of the house was the pig-pen, formed of upright rails set firmly into the earth, and built in this fashion to protect the gruntings from a bear that had regularly visited the farm for some days previously, and generally had succeeded in carrying off a young half-grown pig, or severely injuring it. Between the house logs and the rails of the pig pen there was a sort of stile built of cross rails, about two feet long, and this stile thus formed was about three feet high, and intended as a defence to the passage of the pigs during the day, from their yard to the garden.

Just after our supper, composed of potatoes and milk, was over, the same ominous sounds which had accompanied the bear's former visits were quite audible. He had found out the new pig pen, and was walking round and round it, seeking, as usual, to get one of the inmates. The pigs were in an awful fright, grunting and running about their enclosure, and endeavouring to escape, whilst Bruin would every now and then dash his paw through the rails in his efforts to catch hold of a pig. No doubt, a few previous or present scratches added to the general tumult amongst them.

The old farmer, who was no hunter, did not know what to do. The bear kept running round the pen, and each time clambering over the stile, quite close to us, and at last determined to use the elevation thus obtained to clamber over the enclosure. The old wife, thus seeing the certainty of ultimate success on the part of the bear, who by this time, with the excitement of the chase,

had ceased to pay any attention to us, although sometimes within four feet of us, now became thoroughly roused, and after reproaching her husband and your humble servant for their pusillanimity—and truth to tell she was an awful scold—seized the afore-said spit, and when the bear next clambered over the stile, she, with a furious exclamation, plunged the weapon into, and about two feet completely through the bear, and about one foot into the pig pen, between the upright rails. The stab was given with a right good will, and the spit driven quite through as far as it would go, accompanied with the usual English expletive of "Drat you, you brute!" and the bear being absolutely transfixed with the spear end of the spit through the rails of the pen, and the other end prevented from being pulled through the logs by the wheel before mentioned, the bear was thus entirely powerless for mischief. He was not killed outright, nor, indeed, so far fatally wounded as to make him quiet. Of course he would have died, but not from the instant effects of the wound. The consequence was that he became furious, and tore about in a frantic manner.

When we found the animal absolutely incapable of resistance, we sallied out, and finished his career with the axe. We feasted from his meat that night and next morning for breakfast. Our former diet of potatoes and milk was entirely thrown in the shade by this wholesale importation of bear meat.

Some may doubt this little anecdote, but it is literally true, and the old man retained the bear skin for many years, and used to boast of his wife's prowess. She, in her turn, certainly used often to jeer at his want of presence of mind, and this little episode formed the source of many an evening's tale.

C.

Tanning Sheep Skins.

The following directions for tanning sheep skins, which we take from the *Prairie Farmer*, will be useful to some of our readers:

For mats take two long woolled skins, make a strong suds, using hot water; when it is cold, wash the skins in it, carefully squeezing them between the hands to get the dirt out of the wool; then wash the soap out with clean, cold water. Now, dissolve alum and salt; half a pound, with a little hot water, which, put in a tub of cold water sufficient to cover the skins, and let them soak in it over night, or twelve hours; then hang over a pail to drain. When they are well drained, stretch or spread carefully over a board to dry. When a little damp, have one ounce of saltpetre and alum, pulverized, and sprinkle the flesh side of each skin, rubbing in well, then lay the flesh sides together, and hang in the shade for two or three days, turning the under skin upper-

most every day until perfectly dry. Then scrape the flesh side with a blunt knife, to remove any remaining scraps of flesh, trim off the projecting points, and rub the flesh side with pumice or rotten stone, and with hands; they will be very white and suitable for a door or carriage mat. They also make good mittens. Lamb skins (or sheep skins, if the wool be trimmed off evenly to about one-half to three-fourths of an inch long), make most beautiful and warm mittens for ladies or gentlemen.

A Model Tool House.

"Where shall I find a blacksmith?" said a traveller in a frontier settlement to an individual whom he met on the road. "My horse has lost a shoe, and I wish to have it replaced." "I am a blacksmith," replied the person addressed. "But where is your shop?" "This is my shop," said the son of Vulcan, with a graceful sweep of the hand such as Selkirk may be supposed to have made when he exclaimed, "I am monarch of all I survey;" "this is my shop, but my anvil is a mile ahead."

Almost as extensive as this frontier blacksmith's shop is the tool house of neighbour P. The blue heavens above are its roof; that portion of mother earth included within the boundary fences is the floor, and each field is a compartment. In each compartment may be found one or more farming implements; here a plough standing in the furrow where it was last used; there a harrow gracefully reclining against a fence; cultivators, reapers and mowers, and grain drills basking in the sun; hoes, scythes, grain cradles, rakes, etc., hanging on the trees and fences, whilst about the barn are conveniently congregated rollers, carts, waggons and other implements "too numerous to mention." Neighbour P. is an ardent admirer of the good old adage, "a place for every thing, and every thing in its place."—*Cor. Country Gentleman.*

Mechanical Items.

Horse-chestnut has great lasting qualities when exposed to moisture, and might be made useful for mill work.

TO CLEAN STONE.—Boil a pound of pipe-clay in three pints of water and a quart of vinegar; put in a bit of stone blue. Wash with this mixture, and when quite dry, rub with a dry flannel and a brush of moderate stiffness. Sweep off the fine dust thus raised with a clean hand-brush.

GRINDSTONE SHARPENING.—A correspondent of the *Scientific American* says:—"The grindstone is a self-sharpening tool, and after having been turned some time (if a hard stone) the motion should be reversed. Sand of the right grit applied occasionally to a hard stone will render it quite effectual.

SELECTING GOOD OAK.—When selecting this wood for whippletrees, &c., choose that

in which the concentric rings are close, thick, and uniform, and has, when cut, a glossy varnish-like appearance, and is of a pale yellow or straw-colour. That which has a bluish tinge is generally tough, but is apt to be elastic or springy.

STEEL DRILLS.—A mechanical journal says that drills should be made as short as the work to be done will allow. Much care is required in hardening them, as it is a very easy matter to make them too hard, or to overheat the steel. After the proper temper is obtained draw the temper a little above the point, and there will be less danger of the drill breaking. Do not use oil as a lubricator when drilling steel; water is much better. All that is required is to keep the drill cool.—*Ohio Farmer.*

To Prevent Decay of Shingles.

The following is said to effectually prevent decay in shingles: Take a potash-kettle, or large tub, and put into it one barrel of lye of wood ashes, five pounds of white vitriol, five pounds of alum, and as much salt as will dissolve in the mixture. Make the liquor quite warm, and put as many shingles in it as can be conveniently wet at once. Stir them up with a fork, and when well soaked, take them out and put in more, renewing the liquor as necessary. Then lay the shingles in the usual manner. After they are laid, take the liquor that is left, put lime enough in it to make white-wash, and if any colouring is desired, add ochre, Spanish brown, lamp-black, etc., and apply to the roof with a brush or old broom.

This wash may be renewed from time to time. Salt and lye are excellent preservatives of wood. It is well known that leach-tubs, troughs, and other articles used in the manufacture of potash, never rot. They become saturated with alkali, turn yellowish inside, and remain impervious to the weather. *Ohio Farmer.*

HOW TO GUARD AGAINST DROUGHTS.—A Central Illinois correspondent gives, in an American paper, the following means of guarding against the worst effects of drought: 1. Underdraining, trench ploughing, or ploughing 6 or 7 inches deep. 2. Fall ploughing, or where that has not been done, ploughing as early as the last half of March. 3. Sowing and planting, if not in March, at the earliest practicable hour. 4. Sowing and seeding thinly, and clean and careful system of cultivation.

The rise in the value of farm property has been very general in all parts of Canada for a few years past, but the Chatham Planet says the county Kent has far outstripped any other section, now that the fame of "the Garden" has been spread abroad. Farms which might have been bought a few years ago for \$10 or \$15 an acre, have now doubled in price, and it is no uncommon thing to

hear of sales of choice farms at \$30, \$40, and even \$50 an acre. A few days ago Mr. Wm. Williams sold his farm in Dover, (124 acres) about three-fourths of a mile down the river, for the enormous sum of \$9,000. The purchaser is Mr. Pullar, at present residing on the mountain near Hamilton. South of the river the Southern Railway is affecting the prices of farm property very materially, but the figures asked are by no means exorbitant.

Advertisements.

ONTARIO VETERINARY COLLEGE.

TERM for Junior Students will commence JANUARY 4th.
For particulars apply to A. SMITH, V.S.,
Temperance Street, Toronto.
v2-12-1t

CHEESE APPARATUS.

PEDLAR'S SMALL CHEESE VATS

ARE noted for being the cheapest, simplest, and most complete Vat and Heater yet introduced. Vat and Heater, all in complete running order, suitable for a Dairy of from ten to 30 cows, \$30.00—delivered to any station in Ontario free from freight charges. Factories supplied throughout with everything of the latest improvement, at a very cheap rate. The best PRESS SCREWS at \$2.50 each, delivered.

Before buying, write to
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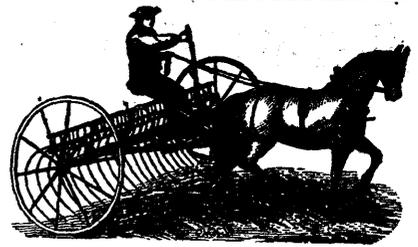
Fine Missouri Farm For Sale,

SITUATED in St. Charles Co., 4 miles south-east of Wentzville, N. M. R. R., 40 miles from St. Louis. It contains 600 acres; 450 under cultivation—250 in grass, clover and timothy, 50 in wheat, 150 good timber. An inexhaustible stone quarry. Watered by cisterns and never-failing springs. Good two-story house, containing seven rooms and cellar. Good stables. Granary, corn cribs, &c. Good orchard. This farm is divided into convenient sized fields, with staked and ridged fence. This is a very desirable farm, being in an excellent neighbourhood, 1 mile from church and school. Reasons for selling satisfactory to any one. Price, \$30,000. Terms liberal. ADDRESS—
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Will do more work, easier, cleaner, and better than any other. Does not gather dust in the hay. Will rake over rougher ground. Is light and strong, well-made and nicely finished. The teeth are fine spring steel, independent of each other, and will yield to pass obstructions. Took first prize at the Provincial Fair, London, 1869. For testimonials, &c., send for circular. As our manufacture for 1870 is limited, orders should be sent at once.

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DOMINION OF CANADA



EMIGRATION TO THE PROVINCE OF ONTARIO.

To Capitalists
 Tenant Farmers
 Agricultural Laborers,
 Mechanics,

DAY LABOURERS,

And all Parties desirous of Improving their
 Circumstances by Emigrating to a New
 Country.

THE attention of intending Emigrants is invited to the great advantages presented by the Province of Ontario. Persons living on the interest of their money can easily get eight per cent. on first-class security.

Tenant Farmers with Limited Capital

Can buy and stock a Freehold Estate with the money needed to carry on a small farm in Britain. Good cleared land, with a dwelling and good barn and out-houses upon it, can be purchased in desirable localities at from £4 to £10 Stg. per acre. Farm hands can readily obtain work at good wages. Among the inducements offered to intending Emigrants, by the Government, is

A FREE GRANT OF LAND (WITHOUT ANY CHARGE WHATSOEVER.)

Every Head of a family can obtain, on condition of settlement, a FREE GRANT of two hundred acres of land for himself, and one hundred acres additional for each member of his family, male or female, over eighteen years of age.

All Persons over 18 years of age can obtain a FREE GRANT OF 100 ACRES.

The Free Grants are protected by a Homestead Exemption Act, and are not liable to seizure for any debt incurred before the issue of the patent, or for twenty years after its issue. They are within easy access of the front settlements, and are supplied with regular postal communication.

Registers of the Labour Market

And of Improved Farms for sale, are kept at the Immigration Agencies in the Province, and arrangements are made for directing emigrants to those points where employment can be most readily obtained. Several new lines of railway and other public works are in course of construction, or about being commenced, which will afford employment to an almost unlimited number of labourers.

Persons desiring fuller information concerning the Province of Ontario, are invited to apply personally, or by letter, to the Canadian Government Emigration Agents in Europe, viz: Wm. Dixon, 11 Adam Street, Adelphi, London, W. C.; J. G. Moylan, Dublin; Charles Foy, Belfast; David Shaw, Glasgow; and E. Simays, Continental Agent at Antwerp.

Also to the Emigration Agents in Canada, viz:

John A. Donaldson, Toronto; R. H. Rae, Hamilton; Wm. J. Willis, Ottawa; Jas. Macpherson, Kingston; L. Stafford, Quebec; J. J. Daley, Montreal; E. Clay, Halifax, Nova Scotia; Robert Shives, St. John, and J. G. G. Layton, Miramichi, New Brunswick, from whom pamphlets issued under the authority of the Government of Ontario, containing full particulars in relation to the character and resources of, and the cost of, wages, &c., in the Province, can be obtained.

JOHN CARLING,

Commissioner of Agriculture and Public Works for the Province of Ontario.

Department of Immigration,
 Toronto, October, 1869.

v2-2-121.

TO AGRICULTURAL SOCIETIES AND BREEDERS.

For Sale or Hire.

One of these magnificent, high-stepping, powerful and active Cleveland Bay Coaching or Roadster Stallions, six years old, about 16 hands 2 inches high, imported October last by O. E. TEASEL, to whom apply, or to H. PRETTY, Belleville, Ont. v2-12-11

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At his Farm in Markham,

On the 18th day of January, 1871,
 A very superior lot of Thorough-bred Stock, consisting of 6 Pure Short-horn Bulls, and 14 Short-horn Cows and Heifers, besides a number of very fine Grades.

v2-12-11

GEORGE MILLER,
 Markham.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Dec 15th, 1870.

FLOUR AND MEAL.

The produce market generally, owing to the close of navigation and the interruption in the cable reports, has been unusually dull. But few sales have been effected.

The following are the quotations:—

Flour—Superfine, \$5 00 to \$5 25; Fancy, \$5 40 to \$5 50; Extra, \$5 75 to \$6 00.

Oatmeal—\$5.25.

Cornmeal—\$4.00 to \$4.75.

Bran—\$15 per ton.

GRAIN AND SEED.

The market, from causes already mentioned, has been extremely quiet with very few transactions beyond the supply of mere local demands.

Wheat—Softes, \$1 20 to \$1 23; Spring, \$1 12 to \$1 15.

Barley—No. 1, 60c to 63c; No. 2, 50c.

Peas—68c to 71c.

Oats—45c to 46c.

Rye—70c.

Clover Seed—\$4 50 to \$5

Timothy—\$2 50 to \$3.

HAY AND STRAW.

Hay—Owing to the state of the roads, receipts have been light, and the price is higher—selling at from \$12 to \$16.

Straw—Scarce—from \$12 to \$14.

PROVISIONS.

Live Hogs—5c per lb.

Dressed Hogs—6c to 8c per lb.

Beef—From 4c to 6c per lb.

Mutton—From 5c to 6c per lb.

Poultry—Turkeys from 50c to \$1; Geese, 4c to 60c; Ducks, 50c per pair; Chickens, 2c to 40c.

Eggs—20c to 25c per dozen.

Bacon—9c to 9½c.

Hams—12½c to 13½c.

Lard—12c to 13c.

Butter—18c to 20c.

Hops—13c.

Salt—Godenoh, \$1 00; American, \$1 55; Liverpool, per bag, 75c.

HIDES AND SKINS

Hides—7c to 8c.

Sheepskins—30c to \$1.

Calfskins—Scarce; nominal at 12½c to 15c

CATTLE MARKET

Nerves from 5c to 5c per lb.

Sheep—\$3 10 to \$5.

Lambs—\$2 50 to \$3 50.

Calves—Scarce; from \$5 to \$10.

London, Dec. 6.—Spring Wheat, \$1 15 to \$1 27. Red Fall Do., \$1 10 to \$1 15; White Do., \$1 to \$1 26. Barley, 48c to 50c. Peas, 65c to 70c. Oats, 41c to 42c. Corn, 70c to 75c. Rye, 40c to 50c. Dressed Hogs, \$6 25 to \$6 65. Hay, \$8 to \$11. Timothy Seed, \$2 50 to \$3. Potatoes, 35c to 45c. Turnips, 15c to 20c. Flaxseed Wool, 28c to 31c. Eggs, 20c to 23c. Butter, rolls, 17c to 22c; do., tub, 12½c to 18c. Cheese, factory, 10c to 11c; do., new, 8c to 10c. Onions, \$1 to \$1.12½c. Tallow, 26½c to 7c. Green Hides, inspected, No. 1, 9c.

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