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THE

CANADA FARMER:

A MONTHLY JOURNAL

OF

AGRICULTURE, HORTICULTURE,

AND

RURAL AFFAIRS.

VOLUME XII.

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The Field.

Trees in Fields.

Some one has defined a weed as a plant out of place. An onion or a cabbage, however valuable in the vegetable garden, is a weed in the flower-bed. "A place for everything, and everything in its place," must be the law of both the garden and the farm.

We often and very strenuously advocate tree-planting. Time and again have we urged that in cleaning wood land, and laying out new farms, provision should be made for an abundant supply of trees, for fuel and other uses, for ornament, for shade, and for protection from cold winds. But the practice of leaving a tree here and there in fields is one we never approved or commended. Trees about the dwelling, trees environing the farm buildings, trees lining the highways, trees belting the exposed places, all this is in keeping with good farming, but trees left standing here and there in fields are huge weeds,—because out of their proper place.

No crop, except one of grass, will thrive around and under trees, and we are certain that great loss results every harvest from the presence of trees in tilled fields. Every farmer must often have noticed how spindling and unthrifty growing grain looks in close proximity to a tree. There is, in fact, a well-defined circle of barrenness around its base. And this is the case, no matter how liberally the field may have been manured. This shows that it is not the shade which does the mischief, but the myriad root fibres, which are preying upon the fertility of the soil, and robbing the crop to enrich the tree. We have read of a farmer who made a careful calculation, and found that he lost in a single season fifteen dollars on a certain crop, in consequence of two large trees that stood in the field where that crop grew. At half that rate, or even less, the loss accruing from trees on many farms must come to a considerable item. To put the thing in a nutshell,—if trees are allowed to exist in tilled fields,—they must be supported at the expense of the growing crop. Consequently, their presence is a heavy tax on the crop. In a word, however desirable, appropriate, and beautiful a tree may be in a park, on a lawn, in the wood, or by the roadside; in a field it is simply a gigantic weed, "only that and nothing more."

On farms where a system of under-drains has been established, much damage is likely to result from the roots of adjacent trees. These will travel a considerable distance in search of water, and getting into the tile-joints, and even into the tiles themselves, will expand, so as to derange and even choke up the drain. The elm and locust are particularly troublesome this way, from the peculiar formation and habit of their roots. The elm is a noble and beautiful object in a landscape. There is a peculiar gracefulness about it when growing, as it generally does, in low places, where moisture is abundant. We are disposed to say, "Woodman spare that tree,"—at any rate, when found on low ground and along creeks and river-banks.

It will doubtless be urged that it is well to have trees here and there in fields, because when laid down to grass and used for pasture, the shelter and shade are grateful to the stock. There is, it must be admitted, some force in this objection. But let us consider how much—rather how little. Granting that it is a barbarous thing to expose horses and cattle to the rays of our summer sun, without a screen, is a leafy one all that can be had? Cannot a cheap shed be constructed in some secluded corner. The cost of doing this is trivial compared with the cost of supporting a lot of trees. Properly speaking, there should not only be a shed of the kind just referred to, but it should be spacious enough, and so built, that the animals can be fed in it with some green succulent food for their mid-day meal. It is well known that stock will undergo very long fasts in very sultry weather before they will go out into the broiling sunshine in search of food. If the whole truth must be spoken, the fact is, our whole system of pasturing is a mistake. Only in the woods left on a farm, should stock be pastured as a general rule. These should be underbrushed, all rubbish and decaying logs cleared out, and the bush seeded down with suitable varieties of grass. Here the young creatures may roam and find suitable forage. But working animals, milch cows, and fatting stock should be summered on the soiling plan; while sheep would be huddled on green forage crops. It may be said, this implies too great a revolution in our mode of farming to be reasonably hoped for. Our answer is, that however great the resolution may be, come it must, and *come it will*. The sooner the better.

The winter season now upon us is the time to cut down and chop up the trees left standing in the fields. In some cases there are enough on the farm to yield a considerable supply of fuel, and as this is getting scarce and dear, something may be made out of the job. More will be made out of next year's crop, and out of the crops of ensuing years. Let all the small wastes and leaks be stopped, and a by no means despicable addition will be made to the profits of the farm. "A penny saved is a penny gained," and sure we are, that a great many pennies may be saved in the manner this article indicates.

Diversified Agriculture.

It is often debated among farmers whether it is better practice to devote their attention to specialties or to carry on a system of mixed husbandry. That there are circumstances under which special products may be grown to advantage, it were idle to deny. But the tendency to rush into the cultivation of a particular crop because of a transient demand, has often been proved unwise, as also has the old plan of exclusive grain-growing. The *Western Farmer* considers a diversified agriculture "the great want of Minnesota farming," and gives the following sound arguments for the method it advocates:

1. Because under the present system the market is overstocked with some products, and the price is correspondingly low, while right here at our own doors, other farm products bring as much as in New York city, a great centre of consumption and export. Diversity of cropping tends to equalize prices.

2. Because diversity of cropping means rotation, and under a system of rotation, larger crops can be produced each year, and the fertility of the soil will last much longer than when the same crop is sown year after year.

3. Because it is safer. He who stakes all upon a single crop merely buys a ticket in a good lottery. If everything proves favorable, he gets a good thing and a large sum of money all at once. But if the crop proves a poor one, he is in a correspondingly *bad* condition.

4. It distributes the labor, and the cash receipts also, more equally through the year. Under a judicious system, the farmer will first sow his wheat, then follow with oats, barley, potatoes, roots, corn, beans, etc. He may get returns for wheat, barley and oats in August; for potatoes and beans, in September and October. His hay, corn and root crops will make the wool to sell in June, the pork to sell in November, the poultry to sell at the holidays, beef and mutton to sell in March or April, and butter and eggs to sell almost the year round. Thus little bills can be paid as they become due, and the long credit system discontinued.

5. Another advantage will arise from fewer purchases at the grocery and greater variety in the home fare.

YIELD OF POTATOES.—The English Agricultural papers are just now discussing how many fold a potato can be made to produce. One writer thinks it perfectly marvelous that two pounds should produce sixty-one. This, we think, is nothing to American growers. Last year the writer cut up three potatoes of a new variety given to him, and they produced very nearly a bushel. We have little doubt but that if one set about to try, several hundred pounds of potatoes could be obtained from two pounds taken in hand early in Spring.

Destruction of Weeds.

The destruction of weeds has become comparatively easy by the use of modern improvements in machinery—one man with a horse and cultivator will kill more weeds than a dozen men with the mattock or hoe of forty years ago, or six men with the implements of twenty-five years ago. After the stumps and stones are removed, almost the whole work of thorough cultivation may be done by horse power, with machinery. These means, in the hands of a skilful workman, will drive back or render harmless the most troublesome weeds.

Legislation has done a good work towards preventing the spread of noxious weeds by putting in the shape of laws what always was a duty of owners of cattle to restrain them. I mean to prevent stock from running at large in the highway. The grass will be eaten off if stock is permitted to run at large, leaving the weeds to ripen their seeds and spread over adjoining fields. I think I never saw a man looking for the weeds to cut in the highway where his stock had eaten the grass. The streets should be mowed early, or before the seeds mature, and all mowing should be done early, both to secure the most valuable and profitable crop of hay and go far to prevent the spread of noxious weeds.

By a constant care in preventing weeds from seeding much labor may be saved in eradicating them—in fact, the first place to meet the case is, prevent seeding; in the next place, meet the weed plant as soon as it comes from the seed, or place the seed where when it springs up it can not live. In hoed crops it is hardly consistent with good farming to allow weeds to seed. The practice of hoeing once or twice will not always destroy all summer weeds. Not once or twice should they be put down, but as often as they appear, even to the first of August in potatoes and corn.

The seeding of weeds in the cultivation of small grain can hardly be avoided as they spring up and come to maturity nearly with the grain. They, like the tares of old, must be gathered with the wheat, and then disposed of.

One fruitful reason of the spread of weeds and their seeming to spring up even in the face of careful husbandry is the practice of ploughing in green manure. This should never be done by the farmer if weed seed is even expected to exist. The seeds of most weeds troublesome on the farm will last for years, and it may be for ages, not germinating except when brought near the surface. If they are ploughed in and mixed with the soil a hundred workings will hardly suffice to bring them where they may germinate and be destroyed. Frequently the ground is first seeded to weeds by ploughing in manure after slipshod cultivation, being well adapted to their finally becoming master of the situation.

I believe a theory with two propositions acted upon, and executed thoroughly, will hold weeds which propagate by seed under such control as to render them harmless. One proposition is, put all manure on sward land—if weed seed happens to be in the manure it will work down in the grass in moist weather and germinate, to be dried up and destroyed the first sunny day. Farmers need have no fear from scattering weed seed on a good green sward. The sward will become stronger and cleaner by manuring. The other proposition is, cut all the weeds in the highway, in the corners of your fences, everywhere. Also, all your meadows, before any seeds are sufficiently ripe to germinate. Follow up these two suggestions for a few years, and my word for it the cultivation of the soil will be comparatively easy.

The question whether manure is of more value as a top-dressing—or ploughed in may belong to another topic—but I am confident the ploughing in of manure is the planting of foul seed, and slack farming is the cultivation of them. Some farmers pile their manure, thinking to kill the seeds, if any are in it. No better place could be devised to keep them alive. Most of the troublesome weeds will retain their full vitality for an indefinite length of time one inch or more under ground, or in the manure.

Three advantages resulting from removing manure at once on to grass land and spreading it are saving of labor, saving of manure, and, better, the destruction of weed seed.

There are some troublesome weeds that spread from their roots, as the milk-weed, Canada thistle, quack, &c. These should be treated to a thorough cultivation. They can be effectually destroyed in spring by keeping covered a few weeks, not allowing any foliage in sight, or in the fall by bringing the roots to the top of the ground and allowing them to dry. The smallest cutting will live through the winter under ground ready to come forth in spring, but in spring if kept under ground will die. Thorough seeding is of no small importance in preventing the spread of these as well as all noxious weeds. If the soil is left in condition

to receive and nourish seeds, nature will sow if the husbandman does not.

No pains or expense should be spared to keep land well seeded with grasses, which are valuable and easy to exterminate. With modern machinery for cultivation, a head and heart for its use, and with the variety of grasses that may be spread all over the earth as a blanket, adapted to every kind of soil, these should make us feel that we are masters of the situation as far as annoyance from weeds is concerned.—*S. A. Clearcland, before Central N. Y. Farmers Club.*

Light and Heavy Soils.

At a recent meeting of the N. Y. Farmers' Club, Mr. S. E. Todd read a paper on the above subject, of which the *Times* gives the following synopsis:

A fair crop of excellent wheat may be produced on a light, sandy soil; but such land will not furnish a congenial sub bed for growing wheat. Barley, for example, may be raised on light, mucky soils; but some other crops may be produced on such land with far more profit, as a mucky and peaty soil is deficient in those element of fertility which make a congenial soil for barley. As all soils are spoken of by working farmers as either heavy or light, the proprietor of a grain farm will always select land that is neither too heavy nor too light. There is a grade of soils between the heavier and the light which it is always desirable to secure. Yet where the choice lies between the light and very heavy, it will be more satisfactory in every respect to choose the heavy land, as such ground will be found more congenial to a larger number of crop plants than the light soil. Besides this, the heavy soil is susceptible of being brought to a higher state of fertility than the very light land, and the fertility can be maintained from year to year with less labor and fertilizing material than where the soil is so light and porous that the elements of fertility are not retained for the use of the growing plants. When a supply of phosphatic, nitrogenous, or other fertilizing matter is incorporated with a heavy soil, larger than is essential to meet the requirements of the growing plants, the adhesive, argillaceous, portion of the seed-bed envelopes the valuable elements of fertility and retains the minute atoms until the numerous spongioles of crop plants, spread through the soil the succeeding season, and lay hold of and appropriate the rich pabulum that had long been held in store. The intelligent proprietor of a grain farm, if he has adopted a system of progressive agriculture, chooses a judicious rotation of crops. Here, also, the important principle of adaptation must be strictly observed. On the heavier kinds of lands the following rotation system will be found quite satisfactory in nearly every respect, namely: Indian corn, barley, oats, wheat, and red clover. The crop of red clover should be plowed under the next year after seeding. On some grain farms the system of rotation is varied from the foregoing, thus: Indian corn, oats, rye, and red clover. In some locations rye straw is so valuable at markets in certain cities, that certain farmers prefer to raise rye instead of wheat, as the remunerative price received for the straw, together with the returns for the grain, will greatly preponderate over the profits of a crop of wheat on the same ground. Besides this, there is no other crop among the cereals with which the seed of red clover can be sown with the same assurance that there will be a good catch as with rye. A crop of clover in a judicious rotation is more valuable and more important than a crop of rye or wheat. Red clover will "catch" satisfactorily in some instances with wheat, oats, or barley. But as oats and barley are so liable to yield such a heavy and dense burden of leaves near the ground, the young clover is often in danger of being smothered to a ruinous extent.

Winter Fallowing.

There has been a great deal written in agricultural books and papers about summer tilling, or summer fallowing fields, which are to be seeded to grass in the fall,—some writers recommending the practice very highly, while others object to it because the best part of one season is used up in cultivating the land without getting any crops in return. Summer fallows are excellent for cleaning fields from switch grass, or other troublesome weeds; and if the land can be spared from raising a crop, the practice is sometimes economical, although farmers generally prefer to see their land producing a crop every year.

Last April we sowed a field to grass, which had neither been summer tilled nor planted to any hoed crop, but had been worked by a process which might, perhaps, properly be called winter tilling. It was well plowed the September previous, after the second crop of hay had been removed, using a strong team and turning wide deep furrows, such as would lie still after being inverted. A few days after the plowing was finished, the field was harrowed with a two-horse Share's harrow, going lengthwise of the furrow. This levelled down the furrows without turning them back.

During October and the early part of November the Share's harrow was run over the ground very thoroughly, once in about every ten days, till it was as level, fine and smooth, as a piece of old ground. Before the ground froze up, a liberal dressing of good stable manure was applied and well worked into the surface, and about seventy-five bushels of leached ashes to the acre were spread evenly over the whole. It was then left till Spring.

Mr. J. W. Gay, of West Dedham, paid us a visit during the Fall, and expressed surprise that a piece of greensward could be made like old ground in so short a time, no weeds and very little grass being in sight on the surface. The land is naturally stony and difficult to plow, but at a former plowing the stones were dug by men following the team, and at this time a large swivel plow and heavy team were used, and the furrows turned over measured about eight by fourteen inches. This kind of plowing gives material to work upon and renders it possible to work up a good, mellow seed-bed, which would not be the case if the plowing had been shallow and imperfectly done.

Last spring the ground had settled sufficiently to allow the use of a deep toothed cultivator, which was run about four inches deep lengthwise of the furrows, and then diagonally across the field, leaving the surface in as perfect condition for seeding as if it had been planted one or more years. It was seeded to grass early in April, and two very heavy crops have been taken off during the summer, and now there is a good coat left on the ground for a winter protection to the grass roots.

This course of treatment we have given a portion of our mowing lands nearly every year for several years past, and with very satisfactory results. No crop is lost, and there is plenty of time in which to make the surface thoroughly fine, smooth and level. If any special instruction is needed by others trying this method of re-seeding grass land without planting, it is to do all the work very thoroughly, manure well, and sow the seed as early in the spring as it is possible to work the land without packing the soil or miring the team.—*N. E. Farmer*

Storing Potatoes.

Before storing my potatoes for the winter, I always sort them over, picking out the very small ones for the pigs, and the nice, small, or medium sized ones for seed. For seed I like a whole medium sized tuber. With a pocket-knife I gouge out all the eyes except two. In some cases I am obliged to use cut sets; in this case two eyes are quite sufficient. The sets should be cut a week or two before they are planted, so that the starchy matter may dry up. Kidney potatoes I never cut, except a very small piece off the end, just before planting. My seed potatoes are kept as follows: I have a quantity of flat boxes, about 5in. deep. These are filled with a single layer of potatoes, and a card or piece of paper, with the name of the variety written on, is thrown into the box. When a quantity of the boxes are thus filled, they are afterwards piled up one on top of the other, in a corner of a cellar or any out-of-the-way room which is secure from frost. Two laths or pieces of wood are placed under each box, which allows a little air to come to them. The effect of a little air causes the seed to make stronger sprouts. When no air is allowed to come near them they sprout much quicker, but at the same time they grow weakly, and are long instead of being stiff and chubby. About the end of February the boxes of seed may be removed from the corner, and spread out on the floor separately, to enjoy daylight, which will cause the white tender sprouts to become green in a few weeks, and they will harden in such a manner that there will be no fear of them breaking off whilst planting is going on. This is the best and most convenient method of preserving seed that I am acquainted with. And it is astonishing what a small quantity of room is wanted in the corner of a cellar to pile up these boxes; nine or ten boxes can be piled up, with about 1½ stone in each box. Useful boxes for the purpose can be procured at a small outlay from any grocer; they are merely empty package boxes, that are of no further use. Endeavour to procure them as near an equal size as you can, on account of fitting them firmly upon each other; but the weight of the potatoes will hold them firmly together. In storing potatoes for eating I find it best not to heap too many together; and, as it is said that potatoes always eat the best when just taken out of the clamps or pies, I stored mine in the following manner: Make a round hole in the garden, about 5in. deep and about 3ft. or 4ft. in diameter, according to the quantity to be stored. Place a fair quantity of wheat straw in the bottom of the hole; then spread two thin layers of straw across this circle, and you will have four cavities, each holding about 4st. Place a different variety in each cavity, taking care to use plenty of straw between each division, in order to prevent the sorts from getting mixed. When they are piled up in the form of a cone, cover the whole with straw, previous to which place a strong stake or stick, with a tally tied to it, firmly into the ground, close to the division containing the sorts named; then cover up with soil by deep digging round the pie. Whenever you want a few of any particular variety, you are directed to the exact spot where to find it by your stakes. A small hole can soon be made, and a few taken out at any time. The trench made round the pie drains off the water, and keeps them perfectly dry. Five of these small pies will hold twenty bushels of potatoes, and all of them may be of different varieties. There is a great benefit in storing them in small pies—they are not so liable to heat and sprout as when larger quantities are heaped together.—*Field.*

Relative Value of Fertilizers.

We find the following sensible paragraphs in the American *Agriculturist*:—"You pretend to be able to tell what a ton of manure is worth; but I notice that the chemists differ very much among themselves as to the value of the same identical manure, and I do not see how you can tell with any certainty how much good a ton of manure will do."

No one pretends to do so. What we say is this:—Here are two samples of barn-yard manure in about the same condition. One contains twice as much nitrogen, phosphoric acid and potash, as the other, and we say, if the one is worth $1 per ton, the other is worth $2 per ton. We do not say that if you put 20 tons of the former, or 10 tons of the latter upon an acre of land, the difference of the crops will be worth $20. This may or may not be the case. The chemists estimate of the value of different manures is based on their chemical composition, and on the condition of the ingredients. The chemist does not undertake to tell a farmer, whether he can afford to buy sulphate of ammonia, or nitrate of soda, to sow on his wheat or barley crop. But if you are going to sow these manures, the chemist can tell you to a certainty which of two samples is the cheapest for you to buy.

For instance, he finds one sample contains 22 per cent. of ammonia, and the other 18 per cent. If he tells you the latter is worth $72 per ton, and the former $88 per ton, he merely uses these figures in a comparative sense. If he should say the one was worth $36, and the other $44, he would be equally correct. He has nothing to do with the commercial value on the one hand, or the fertilizing value on the other. The latter must be determined by the experience of farmers themselves, and on repeated experiments. Where wheat is worth only 75 cents per bushel, and other crops on the same scale, ammonia is only worth half as much to a farmer as in a section where wheat is worth $1.50 per bushel.

When an agent for some artificial fertilizer shows me a whole string of testimonials as to the value of his fertilizers, I tell him that a good analysis would be more satisfactory to me than an actual trial on my own land and under my own eye. A man need not swallow a lot of Glauber salts to tell if they are pure. The chemist cannot tell him whether he needs a dose of the salts, but he can tell him whether the salts are genuine or not. Chemistry cannot tell us whether our land needs this or that manure, but it can tell us whether the manure is genuine or spurious. If farmers had clearer views on this subject, the sale of inferior or worthless fertilizers would soon cease.

VALUE OF MANURE.—An authority on agriculture says that if the manure from a ton of wheat straw is worth $2 68, then the manure from a ton of meadow hay is worth $6.43, from a ton of clover hay $9.64, from a ton of corn $6.45, and from a ton of peas $13.38. This estimate of the comparative value of these different kinds of manure is doubtless made from the analysis of those substances, and of course is liable to some variation, but a fair average is taken. The figures show only the comparative value; the real value will depend on the price of the crops raised by the manure, which would be rated higher in a season of high prices; and lower where prices are low, as at the West. The value would also depend much on the mode of application if thoroughly intermixed or diffused through the soil, it would be more than double in its effects, compared with manure half-plowed in while in large lumps.—*Live Stock Journal.*

WEEVILS IN PEAS AND BEANS.—The eggs of the pea-weevil (*Bruchus pisi*, Linn.,) and of the bean-weevil (*Bruchus fabæ*, Riley), are glued to the outside of the pod while it is young and tender. The young grubs hatching from these eggs eat through the pods into the seed, their passage way being so minute that it closes up and becomes obliterated. Within the seed the grub develops and undergoes all its transformations, the pea always containing but a single individual, the bean several. Plant clean and uninfested seed and you will be little troubled with these pests. The best way to get clean seed is to keep it over two years in tight vessels. The weevils may also be destroyed, so as to use the seed the first year after gathering, if it is kept during the interval in tight vessels, accompanied with camphor. Late planted peas are most exempt from the attacks of the weevil. The genuine corn weevil, (*Sitophilus granarius*) gets into the grain the same way as the other species mentioned.—*Prof. C. V. Riley, in New York Tribune.*

THE BEST FIELD BEANS.—The *Rural Home*, Rochester, N. Y., says, that in Western New York the Medium and Marrow are most planted, and the White Kidney and early Pea to a limited extent. The Medium is considered the most reliable, as, from its early ripening, it is less affected by the vicissitudes of the season. It sells for less, however, than the other varieties named. The Marrow is quite a popular variety, and on a strong soil is very productive. It is quoted thirty five cents a bushel higher than Medium in the Rochester market, now, and the same as Kidney. The White Kidney has larger stalks, requires a longer season to be matured in, and is more liable to be spoiled in ripening. When everything, however, is favorable, it will produce large crops. It will, of course, make a difference in what way the beans are planted as to the quantity of seed required, but farmers generally use about a bushel of the Marrows and Mediums to the acre, rather more of the Kidneys, and about half as much of the Pea bean.

Grasses and Forage Plants.

Laying Down Land to Pasture.

We are indebted to the *Mark Lane Express* for a short catechism on grass farming, which every one engaged in tilling the soil would do well to get by heart. At a recent monthly meeting of the Shropshire Chamber of Agriculture, a list of questions framed by the Royal Agricultural Society of England was introduced, and answers furnished thereto by Mr. Henry Brown, of Preston. We bespeak a careful study of this catechism:

1. What is the acreage of your farm?—99 acres.
2. Is it your own property, or do you rent it? If the latter, do you hold on lease, or from year to year? And have you Tenant-Right?—12 acres only my own; the remaining part rented from year to year to Tenant-Right.
3. What is the nature of the soil and subsoil?—Sand, gravel, peat, clay.
4. What is the average rainfall in your district?—Very light; I should think not more than 25 inches.
5. In what year did you begin to lay down land to permanent grass?—1851.
6. What were, at that time, the proportions of your farm in arable land?—66 acres. Permanent pasture 33 acres.
7. What breadth of arable land (if any) have you, since the above date, laid down as permanent grass?—The whole of my farm I have now under grass.
8. In changing your system of management, were you influenced by the high price of fat and lean stock, by the increased and increasing cost of agricultural labor, or by other, and what circumstances?—Purely by the increased cost and difficulty of agricultural labor upon a small farm.
9. Besides distance from the homestead, and water supply, what other conditions (as quality of soil, value, aspect, &c.) guided you in selecting your fields for permanent grass?—In the outset difficulty in working thin-skinned land with uncertainty of crops.
10. Having made choice of your ground, with what kind of cultivation and crops, say in the two preceding years, did you prepare the soil for the reception of the permanent seeds? (If you have tried different methods, kindly state which you have found to answer best, as this is very important).—Turnips followed with barley or oats. Both sown thin, say from 5 to 6 pecks per acre.
11. Does your experience teach you that land should or should not be made as dry (I mean by underground drainage) for grazing as for arable purposes?—Decidedly not so dry, particularly open subsoils.
12. Your land being ready for seeding, in what month have you generally sown the permanent grasses and clovers? Did you sow the light and heavy seeds separately, and what mixtures have you used with most success?—In April the light and heavy seeds generally sown together. The mixture of grass seeds I have not found of so much consequence as a high condition of land. I have always tried to get my land in a high state of cultivation before laying it down to grass; and not only so, but have found it even profitable to dose it well every year for the first four or five years, which compels nature as it were to produce grasses that are indigenous to the soil. In this consists the secret of the whole business.
13. Do you recommend that the permanent seeds be sown with or without a grain crop which shall be allowed to ripen? with or without a sprinkling of rye or rape, or some similar crop, to be eaten green?—With a grain crop allowed to ripen, sown thin, thereby lessening the probability of its lodging.
14. In laying down land to grass, have you practised the system generally known as "inoculation? If so, please describe the process adopted, and state the cost?—No.
15. What have you found to be the best mode of treating (including manuring) the young seeds, say during the first two or three seasons? Would you mow in any year? or would you depasture with cattle or sheep?—Always one or two dressings of well-made farm-yard manure. I should prefer depasturing with cattle, but in a great measure should be guided by seasons. If a moist season I should prefer depasturing with sheep, or even to mow; but if the latter, a most liberal dressing of manure will be required. I think it of the utmost importance to avoid as much as possible treading and poaching of the surface for the first two or three years.
16. Have you found that this altered mode of farming pays you better than your former practice? and can you give in figures a tabulated comparison of the two systems, including the saving in manual labor and horse-keep?—Having only just finished putting the whole of my farm under grass I cannot answer the question as to pay, but so far as I can at present judge the result will be satisfactory.
17. What alteration (if any) in the number of breeding store, and feeding animals kept on the farm has been the result of laying down this land to permanent grass?—Two-thirds more cattle; principally feeding.
18. Do you find that the number of stock kept on the farm is being increased or diminished as the recently laid down grass acquires greater maturity?—Much increased. For reasons given in the latter part of answers to question twelve.
19. What aid (if any) have you received from your landlord (if you have one) in laying down your permanent pasture? and what conditions (if any) accompanied that aid?—None.
20. Judging from the results of your own experience, what description and quality of land do you consider pays best to lay down to grass in your district? and what soils would you prefer to keep under arable cultivation?—Clays. The more open soils for arable culture.

The Improvement of Permanent Grass.—1. What means have you adopted to improve the already permanent grass existing on your farm, but not laid down by you, viz., by the application of manures, or the consumption of roots or artificial food on the land?—I have given heavy dressings with prepared bone manures and farmyard manure, and also a liberal consumption of linseed corn and decorticated cotton cake.

2. What effect has the application of farmyard manure (if any) to your grass land on the system as manuring your arable land?—Greater outlay in artificial manures.
3. Do you mow any portion of your grass land in any year; and if so, how often, or do you entirely depasture, and if so, with cattle or sheep?—A small extent of peat grass land mow each year, the remainder entirely depastured with cattle.
4. Have you found that to improve your grass land makes it pay you better than before? and can you give in figures a tabulated comparison of the two systems?—My first application of prepared bones gave an increase of 27 per cent. in butter. I was then dairying.
5. What alteration, if any, in the number of stock kept on the farm has been the result of this improvement of your grass land?—I kept 25 head of cattle when my farm was one-third under grass. I have already reached 70, and confidently expect to increase to 90.

Fat in Forage Plants.

The *Scientific American* makes the following statements, which are well worthy the attention of stockmen and farmers generally, showing as they do the value of the grasses as fat-forming food both in a green and dry state:

To any one not a chemist or a quadruped, the last place to look for fat would be a hay-mow or a stack of straw, yet it appears from recent investigations that fat is not only an essential constituent of hay, straw, and similar forms of vegetation, but one of considerable economic value.

In the lower leaves of oats in blossom, Arndt found as much as ten per cent. of the dry weight to consist of fat and wax, the latter appearing as the bluish bloom so conspicuous on the leaves of luxuriant cereals. In fodder crops, generally, the greatest portion of fat is found in young and thrifty plants. Thus Way found early meadow grass to contain as much as six and a half per cent. of fat; while in that of the same meadow, collected in the latter part of June, there was but a little more than two per cent. The proportion of fat is increased by nitrogenous manures; the grass of a sewaged meadow at Rugby contained above four per cent. of fat, while similar grass, not sewaged, afforded less than three per cent. of fat.

The nature of this sort of vegetable fat was investigated some little time ago by the German chemist, Konig, who found that by treatment with strong alcohol, the fat of grass and clover hay could be separated into two parts, one a solid waxy substance, the other a fluid fat, soluble in alcohol. At first he considered the latter to be a true glycerine, but changed his mind after the investigations of Schulz, who proved that though it contains the same proportion of carbon and hydrogen as ordinary fat, the fluid fat of hay is something quite different, since no glycerine can be obtained from it.

Konig has since confirmed these results and carried forward the investigation, showing that the fat of oats, rye and vetch seed is similarly constituted. In all these forms of vegetation, hay, oat straw, the grain of oats, rye, vetches, and possibly others, he finds oleic and palmitic acids, not combined with glycerine, but in a free state; and as these acids in their combinations are well known as large ingredients of nutritive fats and oils, it is likely that they have a considerable influence on the value of these plants for fodder.

Konig also finds in hay and in oat straw the important ingredient of animal bile, *cholesterin;* still further, cerotic acid, a waxy body, which forms twenty-two per cent. of ordinary beeswax; and two fatty substances new to science, one fluid, the other solid. They are distinct compounds, having the character of fatty alcohols. Another interesting discovery in hay fat is the presence of a hydro-carbon, the relations of which are not fully made out. In several respects, it agrees with some of the paraffines.

Grass for Poor Land.

A correspondent wishes to be informed what kind of grass to sow on poor soil, so as to support stock sufficient to till the land, make beef and butter, and provide a supply of manure, so that the farm shall not grow poorer year after year.

It is difficult to answer such a question properly without fuller information concerning the nature of the soil and the general condition of the farm, Clover, vetches, rye, rape, or kohl rabi, grown with the aid of artificials and fed off by sheep, will put poor land into a state fit for a root crop, after which it may be sown to grain of some kind, and laid down to grass. Or, little by little, the farm may be brought up to a higher pitch of fertility by liberal manuring, and then seeded down. Clover is a valuable restorative on soils where it will flourish, and may be eaten off by sheep or ploughed under as a green manure with the best results. A farmer who has poor land to operate on, should not be in too great haste to raise beef. Let him be content to raise mutton for a time, and employ a flock of sheep in manuring the place bit by bit, until the whole is enriched. A farmer so situated should carefully avoid selling away any of the hay or straw produced. Feed it all to stock. As far as possible too consume the grain on the farm. The crops should be made walk to market by transforming them into mutton, beef and pork.

When land is in a fit state to be laid down to grass, the varieties to be sown must be determined by the nature of the soil, and the use to be made of the field, whether it is to be pastured or mowed. If it is meant for pasturage, a miscellany of grasses should be chosen, from the earliest to the latest in their seasons of springing and ripening, that so a succession of fresh and tender herbage may be provided for the grazing stock. If meadow is wanted, a few grasses that ripen simultaneously should be sown together, and all cut while full of juice, and before going to seed.

Neglect of manuring land laid down to grass, is the great source of impoverishment. Too many farmers fail to regard hay as a crop. They look upon it as a kind of natural, spontaneous product, requiring no particular attention. But hay is a crop as truly as any other, and takes out of the land elements of fertility that must be given back to it in some way, or the soil will keep growing poorer. To mow a piece of land year after year, and apply no manure of any kind, is one of the surest methods of exhaustion that can be tried. And yet is any practice more common than this?

An exchange tells the story of a Mr. Gifford who bought a farm in 1844, which had been mostly laid down to grass, and treated in the manner just alluded to, until it was almost valueless, the yield had become so small. Finding it impossible to make both ends meet on such a place, he grew discouraged and was on the point of giving up. While trying to find a purchaser for his wornout farm, he encountered a gentleman who had spent a considerable time in Europe, and who advised him to try the following plan of fertilization:

Spread four loads of common barn-yard manure on the meadows every year, and on alternated years, one bushel of plaster to the acre. Mr. Gifford adopted this suggestion, and has practically acted upon it ever since. The result has been that his grass crops have steadily increased year by year, until in a good season, three tons to the acre is by no means a rare crop. In one instance, he cut nearly twenty-eight tons of grass from seven acres of land. A trial of thirty years induces him to believe that he has solved one of the most difficult of agricultural problems. He keeps up the vigour of his grass lands. His plan is, to get out the manure in March. He saves all the labor and expense of composting, by applying the manure in a green state, leaving it to the action of plaster and moisture, to rot it into the soil. Under this method there is a constant and apparently spontaneous growth of clover in many parts of his farm, and without the trouble of breaking up and re-seeding every few years, his meadows continue luxuriant and productive.

JUNE GRASS at the North is the blue grass of the limestone region of Kentucky, modified very little by climate. It is the very best, most permanent and nutritious of the perennial grasses. It soon runs out the timothy sown with clover seed, and supplies its place. Like clover, it delights only in a lime-stone soil, but on such a soil, if top-dressed in winter with stable dung, it will yield, both with and without clover, a heavy hay crop. It is very early and hardy, with a light stem and profusion of narrow leaves, forming the best, earliest, and most permanent pasturage and hay crop. As it grows vigorously in a low temperature it is invaluable for early pasturage.

Dairy farmers say that the curd made from cows' milk fed on this grass changes more rapidly into rich cheese than that obtained from other grasses. There is no species of the pea so productive on calcareous soil. It covers the surface like a mat, and if top-dressed, sends up fresh stems from its roots, making a larger forage crop than three years' old timothy can give.—*Cor. N. Y. World.*

Implements.

New Ideas in Implements.

At the recent Royal Agricultural Society Exhibition in England, some new ideas were brought out in connection with farming utensils, which might possibly be utilized among us in Canada. Amongst these a Mr. T. P. Milford exhibited a Lorrie (light carriage) which he had excellently arranged for speedy conversion into a market wagon. We read a description of it as follows.

It has harvest raves which are simply hooked into an eye on the bottom of the vehicle, where they rest firmly upon the cross-bar at its head and tail. This is all that need be done to make it a capital harvest cart for hilly land, and it may be re-transferred to a Lorrie with the same despatch. Its low body and sides when it is in the latter form, make it very convenient for loading harrows, ploughs, and other implements, which are better carried than drawn along roads. The one-horse cart, also made by this maker, and for which he obtained second prize, is admirably made for carrying threshed corn, coals or any heavy commodity, and at the same time it has ample room when out-rigged for carrying hay, unthrashed corn and straw.

A GENERAL PURPOSE HORSE HOE, well adapted for use on large cleared estates, was shown by F. Mote, of Ely, and demands more than a passing notice:

This hoe has three lever frames carrying three hoes each, and these levers are so hung that they will adapt themselves to the furrow side of a stetch, or to any unevenness of the ground that does not coincide exactly with the line of the axle from the position of the wheels. These hoes have not the disadvantage of preserving the same "pitch," whatever may be the unevenness of the ground, and they do not therefore cut too deeply in the centre while the outside is skimmed or "scampered," but as the lever frames are separately hung, the hoes in the furrows cut the same depth as those on the ridge. This hoe is fitted with a double-action hand lever for lifting at the land's end, and for fixing the hoes high above the level of the surface when the implement is travelling from field to field or elsewhere. Each lever frame is supported with a wheel to regulate the depth, and a lever to regulate the pitch. The cutting parts of this hoe are everything that can be desired; while the manner in which the blades are fixed makes them firm and secure.

A NEW PATENT CHAFF CUTTER, exhibited by Cowley & Co., of Sheffield, it thus described in regard to its singularly perfect mechanical arrangement:

This consists in every required alteration for starting the "feed," regulating the length of cut, and stopping the "feed," being all done by one lever. This lever, too, is so placed that when a man or boy is replenishing the "feed," he can instantly stop the drawing in of it by a slight jerk with the elbow. Thus the accidents which we have frequently heard of from fingers or clothes being caught in the rollers when horse or steam power is used, are next to impossible with this machine, as invented by Mr Samuel Edwards. The lever works in a slot beside the machine and is held to catches by a spring. When it is fixed in the centre notch one length is being cut, when in the end notch towards the tail of the machine another length is cut, but when it is jerked towards the far end from the main feeding, that is, towards the front or mouth of the machine then the feed rollers are out of gear. Thus, as we have said, can be done with a man's arm or shoulder, should his hand, fingers or clothes chance to become entangled between the rollers.

A SOURCE of much thought and contrivance on the part of manufacturers in England, and of equal annoyance to agriculturists, is the very high price of dry manure distributors. The necessity of such distribution is now acknowledged as one of the essentials of successful modern agriculture, but strange to say, no implement however simple, has yet been devised for the purpose under a cost of from $80 to $100. On the occasion of the above exhibition, however, R. Willacy showed a little apparatus for fixture on the stern of a cart, which appeared to answer the purpose very well, although not at all what may yet be expected.

His mode of distributing such dry manure as soot or ashes may be described as upon the pin-wheel principle. Even as sparks fly off that showy and otherwise interesting firework, so do ashes or compost fly off Mr Willacy's turn table. This turn-table has, however, as a matter of course, to be set in motion by machinery, which is done by gearing it and driving it with a strap from the wheel of the cart after which it is drawn. By an arrangement of the box, however, in which this turn-table is made to revolve, only a semi-circle of dispersion is produced, and this is wisely made to spread fan-like in the rear of the machine. This is accomplished by having a number of raised divisions from the centre to the outer edge of the turn table, and by causing it to revolve rapidly in a horizontal position, whereby it acts like a fan, a strong breeze of air is produced, and the compost is delivered as described. There are drawbacks, however, to this plan, for the main advantage which a mechanical distributor of dusty materials has over hand sowing, consists in the regularity with which it is delivered close to the soil, and there left without being doubled up, or two handfuls blown to one place by the fitful gusts of wind which occur in our climate when the air is in motion, which is generally the case more or less. We have long had an opinion in favor of delivering composts for distribution upon some principle of pneumatics, but Mr. Willacy's present invention after this principle is one that we can commend for its novelty, and the pleasure which it evidently afforded to its inventor, but it is not an apparatus which we can recommend for agricultural purposes.

AMONGST "Water cart" exhibitions Mr. Affleck Swinton, of Wilts, attracted much attention to an implement of this kind which may be speedily converted into a liquid manure distributor, the cart itself being essentially a plain barrel on wheels.

This liquid manure is simply distributed by affixing a rubber hose a foot long or so by a union-joint, which conducts the liquid to a trough out of which it runs through small slots made in a strip of thin bar iron, the flow being regulated by raising or lowering a strip of wood, which is held in position by the slotted iron bar at the bottom of the trough. A man-hole which is easily opened is made to this cart so that it may be cleaned out after being used for liquid manure, and a vent hole is so arranged at the edge of the flange of the man-hole that the barrel may be completely filled to prevent the horse from being jerked as the water squabs, as in the case when a barrel not quite full is being drawn.

A Safe Barn Lock.

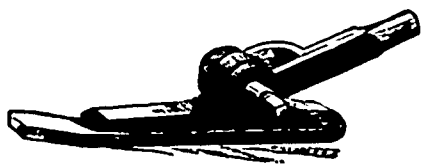
A very safe and serviceable barn or stable lock may be home-manufactured as follows.—Let the lock proper, so to speak, be an ordinary sliding wooden bolt, fixed on the inside. About one and a half or two inches above the bolt, bore a half inch hole through the door, and then for a key get an ordinary piece of quarter inch, or three eighths iron, shaped as in Fig 1, with a joint at *a*

Fig 1 Fig 2

When you wish to open or lock your door, insert this iron through the hole; when it has entered past the joint, the inner half will drop of its own accord, as in Fig. 2. There being two projecting portions on the bolt between which it rests, you observe it will answer all the purposes of a ordinary key—i. e., it will move the bolt either way. The beauty of such a lock is that it cannot be picked. In fact no burglar could pick it unless he was acquainted with the proper method of working it. The key too, of course, could be taken away and kept in the house.

Patent Self-Adjusting Pitman Connection.

William Ferris, of Pleasant Plain, Warren Co., Ohio, called at our office a few days since with a model of his Self-Adjusting Pitman Connection for Harvesters, a cut of which we give below. Mr. Ferris points out that most reapers and mowers as they are turned out of the shops have a defect, viz: the connection between the pitman and knife or scythe of the machine. The improvement suggested will be readily understood from an examination of



the cut. The wrought iron attachment seen at the right hand side of the engraving is made to fit snugly on the eye piece fastened to the end of the cutter bar. The hole for the pin which secures the connection is slightly *bevelled* and the pin itself is of stout, sound, hard wood, shaped to suit the bevel of the hole. The extremity of the pin is threaded to screw into the flange of the attachment farthest from the head of the pin, and when through wear or otherwise there is too much play, a slight turn of the pin forces it sufficiently far into the hole to make everything tight again. Among the advantages claimed for his invention by Mr Ferris are, its simplicity; its perfect adjustability, by which all play between knife and pitman can be taken up; the elasticity of the wooden pin making the connection obviate all concussion between knife and pitman; its silent workings, making it much more agreeable to use the machine; its adaptability to all kinds of machines; it prevents the wear on the eye of the knife and pitman, which is the most important item about a reaper or mower; it is self-adjusting, on the same principle that governs a nail when driven into wood—it requires less force to drive it through than it does to start it back.

Keep Implements Oiled.

An implement that is not kept properly lubricated or oiled will very soon wear out in practice; not only so, but the extra degree of labor in draught alone, which such an omission causes, can scarcely be over-estimated. We need scarcely enlarge upon this. It is a truism but too well known and understood. Nothing will occasion greater waste than friction; in fact it is the great wearer of all things. In a carriage or cart, for instance, the smaller the axle is, the less friction will occur, hence in constructing either of these vehicles, care should be taken to have the axle no larger than is actually required. But besides the general principles here deducible, certain surfaces rubbing against each other will create much greater friction than if they had been employed or applied differently. For example, an iron-shod sleigh runner will offer much more resistance than a wooden one in sliding over a bare road or bridge, and so on of several other things. Now the object of oil, soap, tallow and other lubricating substances, is to overcome, not exactly the resistance offered by a sleigh on the road, but an exactly similar resistance met with in the movable portions of machinery. In ordinary cases, or where the machinery is simple, those lubricating substances are best which keep their places best. Finely powdered black-lead mixed with lard is, for this reason, much better than many other substances for greasing carriage wheels. Linseed and other drying oils are not at all good for this purpose, for they soon dry up and stiffen, rendering the original friction greater than ever. Olive oil, on the contrary, and some other animal oils, which scarcely dry at all, are much more preferable; but whatever kind of oil is used, the application must be frequent in order to secure the full benefit. According to experiments made and often verified, wooden surfaces on wooden surfaces give rise to a friction equal to from one-fourth to one-half the force applied, whilst the friction of metals on metals is from one-fifth to one-seventh. By the use of lard on wood, the friction is diminished to about one-sixth of what it was before; and that of metal on metal to about one-half what it was before.

To lessen the friction of wooden surfaces, lard is better than tallow by about one-eighth or one-seventh; and tallow is better than dry soap about as two is to one. For cast-iron on cast-iron (polished) the variety of diminution in friction caused by different substances, may be exemplified as follows, viz.: Water, 31; soap, 20, tallow, 10, lard, 7; olive oil, 6; lard and black-lead, 5. As a general rule there is least friction with lard when hard wood rubs on hard wood; with oil, when metal rubs on hard wood or metal, being about the same in all these instances.

Preparing Forage by Steam.

In some portions of the East, pulping roots, grinding grain, cutting the hay and straw, and then steaming altogether, has been practised successfully. It is only a question of the relative price of the raw materials and labor, and the adaptation of steam and machinery to as much of the preparation as possible. In England and Ireland, this plan has been in vogue for years. The *Irish Farmer's Gazette* describes the method used there, where forage is dear and labor cheap, the materials being hay, roots and meal:

For 100 head of cattle, a six-horse power engine is required, a root pulper, a chaff cutter and a steaming apparatus. The cutter is able to reduce a ton of hay in an hour into chaff of half an inch in length. The pulping and nailing is done upon a floor or platform, or above the feed box. The roots are fed to the pulper from a floor above it, from which they are shovelled into the hopper with great rapidity. When steaming is practised, the feed is mixed in the proportion of one pound of hay to fourteen pounds of roots. One hundred and twelve pounds of this mixture, with four pounds of meal, is sufficient for the daily rations of a fattening beast, along with a modicum of dry hay or straw, as an appetizer, or in the way of change.

The required quantity is mixed and thrown into a steam tight vat, which is covered, and the steam is then turned on for thirty minutes. It is then cooked, and by and by it is emptied into a cooling vat, where it is reduced to blood heat; then it is fed to the animals, and they eat it with avidity.

Horticulture.

THE ORCHARD.

The White Willow

(To the Editor of the CANADA FARMER.)

SIR:—Please state in next issue of the CANADA FARMER whether the enclosed cutting is that of the real white willow; and if it is not, would you inform me where the genuine article is to be had? Do you recommend it for fencing? Yours, &c.

A HURONITE.

It is impossible to tell the particular kinds of willows from a leafless cutting. There are several species of willow that have been sold by white willow vendors, as we have been informed, all of which are represented by the sellers to be the genuine article. We do not believe there is any value in any of them as a hedge plant for Canada.

Orchards and their Care.

At this season of the year but little of a practical character can be done in the orchard, and we must content ourselves with considering what the proper course is to pursue when the time for activity arrives.

The orchard has, within the past few years, become almost a necessary part of every well managed farm. The time was, and that not very long since, when we could ride for miles through some sections of country without discovering the slighest traces of fruit culture of any sort, but to-day an orchardless farm is regarded by most people as somewhat of a curiosity, and the possessor of such a property as admirably adapted for "filling the bill" only in the ages gone by.

Nor is the increased number of orchards throughout the country the only improvement in this very important branch of farm economy. The subject of fruit-growing generally has of late engaged the attention and careful study of some of the leading agriculturists of the country, and to-day it ranks as a science second to none that can claim the consideration of either the curious or the practical every-day farmer.

We are fully convinced that there is no department of the farm that can be made more prolific of genuine pleasure and hard cash than that of fruit-culture; but in order to attain these, the hap-hazard system now so prevalent must be done away with, and a common sense course adopted. We have been raising wheat, oats and peas all our lives, and their manner of growth, habits and needs are known to us without special study. It is not so however with fruit-raising. We have had fewer opportunities of studying the various causes of failure and noting the requirements necessary to success. It is absolutely necessary therefore that we give the whole subject very much greater thought and attention than we have hitherto done, and when can there be a more suitable time for the purpose than during the long winter evenings with which we are now favored, and which are so eminently conducive to study and reflection.

If we intend setting out an orchard next spring, or adding to our present one, the first thing to be considered is the particular sort or sorts of fruit we wish to have; *i. e.*, whether it is to be for family use, the home market, or for exportation; because the selection which will answer very well for one purpose may not suit for either of the others. It is on this rock that many who have planted orchards have made horticultural shipwreck. Too many kinds are selected with the avowed purpose of suiting all comers, and it is not to be wondered at that in this as in most other attempts at practically testing the "two chairs" theory, the unfortunate experimenter should find himself "floored."

We throw out the foregoing introductory remarks for the purpose of eliciting the opinion of such of our readers as are practically conversant with the following points:

1st. The best apples and pears to plant for family use.

2nd. The best apples and pears for the home market.

3rd. The best apples for exportation.

It would materially enhance the value of the information given in response to the above inquires, if the writers would state in brief terms the reasons for the selections made. We propose to go more into detail on this subject in our next.

Dead Leaves--A Hint to City Authorities.

The removal of all debris and other offensive accumulations from our streets and frequented thoroughfares, is in these days of advanced sanitary science, one of the most important subjects that can engage the attention of the civic authorities. In no well regulated community should the sight or odor of anything offensive, or that is likely to generate malaria be tolerated for a moment. The general health, apart from all other considerations, forbids the slighest relaxation in this respect.

The *Gardener's Magazine*, in a recent article on the pestelential effects of allowing dead leaves to become incorporated with the mud, &c., of our streets and pavements, remarks:

Leaves trodden into paste are as injurious to health as their appearance suggests, and it is a matter equally painful and surprising that in the suburbs of towns, where deciduous trees abound, the leaves are usually left to make autumnal pedestrianism unpleasant, and spread poison through the common atmosphere. Wherever clay soil prevails the evil attains a maximum, for the slightest shower makes the surface greasy, and the clay works up amongst the leaves, and the result is a sticky, mucky, and stinking roadway, generating malaria day and night, and offending the eye no less than the nose of everyone who goes abroad to enjoy a gleam of autumnal sunshine. Where chestnut-trees abound the case is desperate, for their huge leaves come flopping down without intermission until the trees are quite bare, and the complete stripping, if no frost occurs, is usually spread over a term of three weeks. One big horse-chestnut-tree is capable of shedding leaves enough to sicken a village, if the leaves are allowed to remain where they fall, and are well trampled to promote hasty decay. The elms and thorns are the least offensive, for they hold their leaves until the winter is somewhat advanced, and then shed them slowly a few at a time. As leaves are always worth storing to rot down into compost, it ought everywhere to pay to remove them from the thoroughfares; but, as regards the public health, their removal is a matter of most serious importance, and it is one of the curiosities of local government in these days of advancement in sanitary science, that, in very few instances, do the parochial authorities or public scavengers take any notice of dead leaves. When laid up in heaps they are harmless, when much mangled by feet and wheels they constitute a seed-plot of pestilence.

Our Apple Orchard—How we Manage it.

One of the very best things a man can put on his farm, especially a young man, is an apple orchard of choice varieties, for it will be a source of revenue for very many years, if properly attended to. You will have to wait several years for a paying crop from your trees, but that time is not lost, nor is the ground devoted to the orchard entirely useless for any other crop. Let me tell you how we manage our apple orchard, and how we planted it. It is now in splendid order and cannot be excelled by any orchard of its age in the country, and seldom can we find its equal. This has required constant work and some outlay, but we have always gotten our money back by cropping the orchard with small fruits or with garden vegetables.

The way we did it was this: the land selected was a sort of clayey loam, with a good clay subsoil. It had been in corn the year previous to setting out the trees, which cleared the ground from weeds and sod. The trees were planted in the fall of the year by merely drawing deep two-horse furrows, thirty feet apart each way. At the intersection of the furrows we dug holes sufficiently large to contain the roots without cramping them, and taking especial pains to prune off all bruised or broken roots and branches before we set the trees out in the orchard. We put as fine earth around the roots as we could, pressing it down firmly with the foot after the hole was filled up. With all of our fruit trees we take the precaution to wet the roots well with a thick mud, in which there is some little manure water, to make the fine dirt adhere well and cause the tree to start off and grow rapidly from the commencement. We have always found it go much towards insuring the growth of trees, this wetting the roots with mud.

After the trees are planted, we go over the orchard and straighten up all the leaning ones, so as to make the work look as if it had been done by a careful person. We then threw two good furrows to the trees on each side, to protect them from the frosts of winter before they have started to grow. They were left in this way until spring, when the whole piece was plowed towards the trees, well harrowed, and corn planted in it. Of course we supplied the soil with manure to make our corn crop, as well as to thereby benefit the trees. The year following we set out about half of the orchard, some four or five acres, in strawberries, while we put the other half in white potatoes, supplying both crops liberally with manure. We made a good crop of potatoes that year, and got an excellent stand of strawberry plants, the latter picking, the two following years, heavily; stable manure being applied as a top-dressing each year. In the other half we, the following year, grew a heavy crop of sweet corn for the Baltimore canning market, that crop being followed the next year by a crop of early tomatoes. We then grew early peas, planting canteloupes between two rows of peas, so that when they came off (the peas) the canteloupes could have full possession of the land. In this way we got paying crops yearly off our orchard, and also greatly benefitted the trees with the manure annually applied and by the constant and thorough cultivation. We now have the orchard down to clover alone, not any other kind of grass seed being sown with it. We will let the clover remain in the orchard for one, or at the most two years, when we will again put the plow in and raise a heavy crop of corn. The reason we put it down to grass is to prevent an over-production of wood to the detriment of the fruit, resulting from liberal applications of manure annually, to make the other crops pay. Further than this, I do not believe in the grass system of growing fruit.

Besides the apples, we have the Early Richmond cherry trees in the same land, thus:

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o . o . o . o .

the large marks being the apple trees thirty feet apart, and the smaller marks being the cherries. By this means we can cultivate one way just as readily as if there were no cherry trees planted, while, when cultivating the other way, we have nearly fifteen feet, which gives us room enough. We had a few cherries this last season, and from the healthy look of the trees we can reasonably expect a crop.

We wash the bodies and larger limbs of our apple and cherry trees with a wash made by mixing about two tin cupfuls of ordinary soft soap in a bucket of water and applying it with a long-bristled whitewash brush. This keeps our trees clean, healthy, and free from bark insects. In my next I will tell what apples have suited us best, in regard to profit and other qualities.—D. Z. EVANS, JR., in *Rural Home*.

A Plum Curculio-Proof.

Travellers on the North Pennsylvania Railroad from Philadelphia during early Autumn can enjoy the rather novel sight of whole trains of cars loaded with plums. Every farm along the line of the road for some distance has its complement of trees, and the amount of fruit is annually swelled to hundreds of baskets. The variety grown is a seedling from the old Blue Damson, and originated in Bucks County, where it is called the Richmond. The fact that it is almost curculio-proof is the great reason for its popularity in this section, because it is very far from first quality in point of flavor. In size it is somewhat larger than its parent, and has a reddish purple skin covered with a bright bloom. Although not first-class the flesh is sweet, juicy, and refreshing. It is well adapted for the kitchen, and this accounts for the Philadelphia market.

The tree is a straight, upright grower, quite hardy, and an early and regular bearer. It is generally propagated from suckers, a method not to be recommended; far better to have them budded upon non-suckering stocks. We know that in some sections of the country where curculio is not so plentiful, and where the fruit men can save their crops by jarring the trees, that this plum would be entirely ignored as worthless, but for the majority of our farmers and small places one or two trees will always yield sufficient for family use and will answer quite well while experiments are going on with the thin-skinned, delicious varieties that fail in the majority of localities. Do not understand that we wish to discourage any one from fighting the "Little Turk" from his plum orchard, but where one industrious cultivator, like the horticultural editor of *The Country Gentleman*, can save his crops, hundreds of others, through lack of perseverance, never obtain a solitary specimen; and to this latter class we recommend the Richmond—*Tribune*.

Destroying Curculios.

The following extract has been going the rounds of the agricultural press for some years. Have any of our readers tried the experiment, and if so with what measure of success:

Soak corn-cobs in sweetened water until thoroughly saturated; then suspend them to the limbs of the trees a little while after blossoming, being sure to burn the cobs after the fruit ripens, as they will be found full of insects. A good plan is to change the cobs every few weeks. My theory is this—that the insects deposit their eggs in the cobs in preference to doing so in the young plums. The first season I tried it upon one or two trees only, and in the summer was rewarded by a good crop of as fine plums as ever ripened, while those on the other trees fell off when they were about half grown. In accordance with this result, next spring found sweetened corn-cobs dangling from the limbs of all my plum trees, and the summer found them full of delicious fruit.

PARTIES in Annapolis, N. S., are preparing to ship 3,000 bushels of apples to England.

A PHOTOGRAPH has been forwarded to England which has aroused the astonishment of their distinguished men. It is taken of a branch of pears, grown from a tree on the ranch of Mr. Kercheval, near Sacramento, Cal. The branch was four feet, six inches long; carried 265 pears, (most of which were about five inches in length) the whole weighing about 110 pounds.

THE FRUIT GARDEN.

Varieties of Strawberries.

Those of our readers who propose setting out strawberry plants the coming spring, will read with interest the following remarks from a correspondent of the *Agriculturist*:

If any one wishes to know how many worthless strawberries there are, let him set out every kind he can get. I did so for my own instruction, but while this kind of planting is very edifying, it makes a poor show on the table. I at first thought that I would keep up a collection of all, good and bad, but needing the land for other purposes, and considering that Dr Hexamer was keeping up a standard collection—many thanks be to him - this spring a large lot of my fancy sorts went under. I thought we should be nearly without strawberries this year, as a bed for fruit put out in another place, could yet I'm thin until another year, but much to my surprise, we have had all the berries we could eat. The main chance had been upon four rows of Charles Downing, each thirty five feet long. A row of the Black Defiance—most excellent berry—has helped, but the rest, a dozen or more sorts, count for nothing. Two rows of Kentucky are common on to prolong the picking, and instead of scarcity we have had abundance. If there is any berry upon light soil better for family use than Charles Downing, I am desirous of knowing what it is. It is good to know that a name so highly esteemed, is in this case properly bestowed, and the fruit is a precious legacy, left us by that excellent man, the lamented S. S Downer, of Kentucky. Upon my soil varieties in high favor elsewhere are quite useless. In this class I am sorry to be obliged to place a berry that bears so high a name as President Wilder, but we can console him by saying that Napoleon III. is no better. Russena, a prize berry of a few years ago, is on my best as small, sour, worthless, as a fruit can be; and so I might go on enumerating a long list of the kinds that are not worth growing upon my light sandy soil, no matter how well they are fertilized.

Last year Dr. Hexamer, of New Castle, Westchester County, N.Y., sent us specimens of the fruit of the Duchess, which seemed to be of excellent quality and early. Our own plants being too small to allow of a fair judgment, we requested Dr. Hexamer to state how the Duchess had done with him. He replies: "It has for three years ripened earlier than any other of over 100 kinds. Its berries are larger than those of other very early varieties, hold out well in size, and are of uniform globular shape, without neck; color, light crimson; flavor, good and sprightly, without being acid, like the Wilson; texture, firm. Berries sent to Virginia arrived there in good condition, three days after being picked. Foliage, hardy and vigorous, withstanding the severe drought of last year exceedingly well. This variety has not yet been disseminated, but will, if it succeeds in other localities as well as in the vicinity of New York, form a most valuable addition to the list of early strawberries."

As Dr. Hexamer has a soil quite different from ours, we requested he would state how some of the newer sorts have done with him, and he adds the following notes:

Monarch of the West. A large, irregular, globular berry, of dark crimson color, fair flavor, and moderate firmness. On our soil—a light clay—it is not productive enough to be profitable.

Champion. Reports from many localities show that this variety is not excelled in size and productiveness. Its quality is rather indifferent, and it lacks the firmness necessary to withstand long carriage, but for local markets it will, no doubt, be much sought for.

Black Defiance still continues to gain many friends. It seems well adapted for many varying localities and soils, and its large size, excellent flavor, and great productiveness, make it one of the most valuable varieties for the family garden.

On the Cultivation of Vines in Pots.

The cultivation of the Grape Vine has been a study of mine for many years, and I think I may say I have met with a fair share of success. Where there is convenience for fruiting vines in pots I very strongly recommend their growth. Where there is not sufficient convenience to grow the young vines in their early stages, they can be procured from most nursery establishments. I am of opinion that vines for fruiting may be bought even cheaper than they can be grown by a gentleman's gardener or an amateur, because it is seldom that sufficient room can be spared for their proper development. Vines in pots, when well grown, are most useful in several ways, not the least interesting of which is the ornamental appearance which they have when placed in vases on the dinner table. By the following arrangement a beautiful effect may also be produced. Instead of putting the vines on the table, place them at intervals down each side, concealing the pots under the sides of the table and arranging the tops so as to form an arch over the table from one side to the other, keeping the arches all the same height, and shaping them with hazel rods, to which the vines are neatly tied; green moss and vine leaves may be woven round to hide any bare stems or hazel sticks which may remain in sight. If it happens that a large party is given in the autumn, the autumnal tints on the leaves of some of the vines, such as Wests, St. Peters, Barbarossa, and several other varieties, produce a remarkable effect. Pot vines may be had in establishments where there are sufficient forcing pits all the year round; they are useful for forcing for the first and second crops of grapes, a circumstance which renders the early forcing of permanent vines unnecessary, and which saves much time, labor, and money. I always think it a pity to force permanent and well-established vines before the beginning of January; the latest succession grapes (in gardens where there is no stint of forcing-houses) may be produced from vines in pots, and, by so doing, growers will be enabled to do full justice to their permanent vines. Every practical gardener knows how detrimental it is to leave grapes on permanent vines after the month of January; the French mostly cut all their late grapes off the vines in the month of November. I was at the late Baron James de Rothschild's, at Ferrieres, a few years ago, in the month of January, and there I found that all their late grapes had been cut, and that the stems were placed in bottles containing charcoal and water, having been severed from the vine about two months. I have stopped the bottles with Portland cement to keep the atmosphere from the water, and it has answered well; unfortunately, few gardeners have convenience to do this.—J. MEREDITH, in *The Garden*.

PROF. MCNAB has presented to the Royal Irish Academy a memoir on the ascent of water in the stems of plants, to investigate which point very many experiments were made. He finds in the privet the rate of ascent to be about six inches per hour; in the elm, 16.6 inches, in the cherry laurel the rate varied from 21 to 12 inches. Experiments were also made as to the influence of sunlight and darkness, the influence of the bark, the influence of the leaves, and the influence of pressure.

THE FLOWER GARDEN.

Dianthus.

This is described in *Vick's Floral Guide* as a splendid gem of the most beautiful perennials grown. The Sweet William *(Dianthus barbatus,)* the Carnation and Picotee, *(D. caryophyllus,)* and the Garden Pink, *(D. hortensis,)* belong to this genus. The species known as *D. Chinensis*,

embracing the old Chinese Pink, very much improved of late years, and the new and superb varieties from Japan, known as *D. Heddewigii* and *laciniatus*, are among the most brilliant and useful of our garden flowers. The last two run into many varieties, the result of hybridization, with flowers of monstrous size and varied and rich in coloring. Plants of the tall growing sorts are from twelve to fifteen inches in height, while the dwarf kinds make handsome, low, compact bushes, excellent for the garden and unsurpassed for pots. Seed may be sown in the spring, under glass or in a seed-bed. Easily transplanted. Set the plants from six to twelve inches apart, according to varieties—the dwarf sorts only about six inches. The Dianthus flowers freely during the whole summer. If the flowering is checked by pruning, so as to keep the plants vigorous, they will usually survive the winter well, and make most beautiful plants the second season, even much better than the first. If allowed to flower too freely, they are sometimes so weakened as to be unable to bear the winter without suffering great injury, if they escape destruction. Seed sown late in the spring will produce strong young plants for the second season's flowering. The Dwarf sorts especially, and, in fact, all kinds, make very good house plants, if not kept too warm. In this family there has been very great improvement in the past few years, so that now flowers grown from seeds of the common China Pink are far superior to anything known among the China or Japan Pinks ten years ago. The engraving shows a flower of a good double Pink, of natural size. The single varieties are so brilliant that they are prized by some persons even more than the double sorts, and for beautiful markings and rich coloring few flowers equal the single Japan and China Pinks.

Selection of Bulbs.

In making selections of bulbs, size is not a criterion of value, as many of the best sorts have comparatively small or moderately sized bulbs. The *American Garden* advises the selection of bulbs that are hard and firm, free from fungus or any signs of decay, and the rejection of such as yield to a slight pressure of the hand, or have the coatings or layers of the bulb closely attached. For in-door culture, it says, the single flowering sorts are the best, as they bloom earlier and more freely than the double, and the spikes of bloom and the individual flowers are much larger. The following standard varieties are recommended:

DOUBLE RED.—*Bouquet Tendre*, fine deep red; *Grootvoorst*, delicate blush; *Comtesse de la Coste*, delicate rose, purple eye.

DOUBLE BLUE.—*A la Mode*, porcelain blue, purple eye; *King of the Netherlands*, pale blue; *Bloksberg*, violet blue.

DOUBLE WHITE.—*La Tour d'Auvergne*, pure white; *Prince of Waterloo*, pure white; *Triomphe Blandina*, blush white, pink eye.

DOUBLE YELLOW.—*Louis d'Or*, straw colored, red eye; *Gaula*, cream colored; *La Grandeur*, clear yellow.

SINGLE RED.—*L'Ami du Cœur*, dark red; *Tubiflora*, blush, striped with pink; *Maria Theresa*, peach color.

SINGLE BLUE.—*L'Ami du Cœur*, dark blue; *Baron Von Thaqll*, violet blue; *Nimrod*, light blue.

SINGLE WHITE.—*La Candeur*, pure white; *Grand Vainqueur*, pure white; *Voltaire*, blush white.

SINGLE YELLOW.—*Heroine*, pale yellow; *Kœnig Von Holland*, reddish yellow; *Adonis*, reddish yellow.

Besides Hyacinths, the bulbs most easily cultivated in rooms, are Polyanthus, Narcissus, Early Tulips, and Crocuses. The Narcissus are best cultivated in pots, with soil the same as directed for Hyacinths, but using pots of one size larger, as the bulbs are much larger than those of Hyacinths. Early Tulips require the same sized pots and soil as Hyacinths, while Crocuses, having much smaller bulbs than the latter, can be planted a dozen in a five inch pot. Fancy flower-pots in the shape of hedgehogs, pyramids and other forms, can be obtained at the seed stores and florists for growing these latter. In all cases the soil and treatment is the same as for Hyacinths. The best for in-door culture are:

NARCISSUS.—*Grand Primo*, white, with citron cup; *Grand Monarque*, white, with yellow cup; *Grand Soleil d'Or*, yellow, with orange cup; *Paper White*, pure white; *Bazleman Mayor*, white, with yellow cup; *Double Roman*, white and yellow.

EARLY TULIPS, DOUBLE VARIETIES.—*La Candeur*, pure white; *Rex Rubrorum*, scarlet; *Tournesol*, red and yellow; *La Blason*, rose color; *Marriage de ma Fille*, white, striped with red.

SINGLE VARIETIES.—*Duc van Thol*, in its different colors; *Alba Regalis*, cream white; *Couleur Gramoisi*, carmine crimson; *Monument*, red and white striped; *Grand Duc de Russe*, bronze and scarlet; *Couleur Ponceau*, purple and violet.

CROCUSES.—*Cloth of Gold*, golden yellow, striped with brown; *Albion*, white, striped with violet; *Sir Walter Scott*, striped; *Garibaldi*, dark purple; *Lilaceus Superbus*, light blue; *Newton*, dark blue.

PETER HENDERSON says that experiments with pure water, sawdust, charcoal, anthracite, brick-dust, and sands of all colors and textures, showed that cuttings placed in each, in the same temperature *rooted almost simultaneously and equally well*. A sharp snap this at pretentious scientists.

FLOWERING SHRUBS.—We want to impress upon all the cheerful aspect of a home surrounded with shrubs. Plant them in groups and masses, so that in all the summer and autumn you may enjoy a perfect wealth of flowers. In the corners, at every bend of the walk, at your entrance gate, before some unsightly object, are all suitable positions. Certain species make lovely specimens standing singly in the lawn. Such is the Hydrangea Paniculata, or the Stuartia, with their conspicuous white flowers. Other species look best in beds of different shapes, as Daphne Cneorum, a small, partly evergreen shrub, with fragrant umbels of pink flowers. Rhododendrons and Azaleas are difficult to propagate, and must be left to the skilful gardener; but nothing makes a more gorgeous sight than a little group of these.

CAMPANULA AS A WINDOW PLANT.—Barrelier's Bell Flower (*Campanula Barrelieri*) is considered by a correspondent of the *Garden*, one of the finest of all dwarf-growing bell flowers for window culture; and, after trying many others, I have given this the preference. Grown in a pot of rich, sandy earth, it forms a bushy little plant in the spring, while a month or two later its branchs elongate, until they hang gracefully over the pot sides, covered with pale, purplish-blue salver-shaped flowers. One of my plants looks splendidly just now, being a perfect mass of flowers. A good potful of this plant makes a capital substitute for a hanging basket; and the flowers show to better advantage when the plant is suspended in the window or on the balcony outside. It is also a capital bracket plant; or it looks well on the window sill, where the shoots can hang down freely.

THE VEGETABLE GARDEN.

Hot-Beds and how to Manage them.

In time of peace prepare for war, and during the winter months while we have time for considering our plans, let us make our arrangements for the coming spring. One of our first duties should be to prepare our hot-beds, and the following pertinent remarks on this subject from the *Garden* will prove acceptable:

Hot-beds want as much daily attention as a milk cow. While their season lasts, some little time must be spent upon them, or all the work of their preparation is of no value. The preparation is easy. The principal expense is the sash. There have been many attempts to use substitutes for glass, but they are generally failures. There is no article so cheap, nor so durable, nor so satisfactory. The sashes are usually made 6 feet long by 4 feet wide. The beds are made large enough to extend a foot to 18 inches outside of the box or frame in which the sash is placed; a single sash will give enough early cabbage plants and lettuce to supply an ordinary garden. Usually, however, frames are composed of two or three sashes, so that they are 6 feet wide by 8 or 12 feet long. The frame itself is a rough box that should be made of 1½ or 2 inch stuff, with the back side 18 to 20 inches high, and the front 12 to 15 inches.

The preparation for the bed is simple. Some dig a square pit to put the bed in, but this is not necessary. The vegetable market gardeners generally level off the ground, and extend their beds just as far as they have glass to cover them. The manure used generally has a large proportion of horse dung in it, especially if great or quick heat is wanted for forcing. But the ordinary farm-yard manure with a few loads of horse manure mixed with it, and the cleanings of the poultry house, will make a good bed that will give a moderate heat for a long time, and is better for an ordinary villa garden. Besides, such a bed requires less attention and skill in the management. If the bed consists of three sashes, or is 12 feet long, there will be needed about four good loads of manure. The custom is to pile the manure lightly in a heap or heaps close to the place where the bed has been staked out, and to let it remain for a few days till it shews that it is beginning to heat. Then the manure is laid down in a bed till it is fully 2 feet high, treading it down solid as possible, as it is spread level and even. Then the frame is put on with the sashes. After the frame is put on, a layer of sand, if convenient and handy, about 3 inches, may be spread over in the inside of the frame. In a day or two, a bed of from 6 to 8 inches of fine garden soil should be put in and levelled, and pressed down as firm as possible. In the meantime the frame must be banked up on the outside with manure all round, and the bed is ready for the seed. If the soil is clean and free from seeds of weeds or grass as it should be, the seeds may be immediately sown; but if not, then it is better to wait till they start and the weeds are killed. The frame is then all ready to grow whatever seed may be sown.

Now, it is after this is done that to secure success the hot-bed requires daily attention. We should say however, before proceeding farther, that the locality of the bed should be in a sheltered situation, where it can face the south or south-east. The principal attention is to supply the young plants, after they are started, with water and air. The heat of the sun through the glass also should be modified by shading to a certain extent, and the glass is sometimes covered with a light, thin whitewash on the underside for this purpose. The heat below causes a rapid evaporation, but also supplies a good deal of moisture to the earth at first; but the heat of the glass dries it at the surface. Water is constantly needed from a fine-rose watering pot after the plants shew themselves; but the heat, the moisture, and the crowded state of the frame draw the plants, and their stems are white slender filaments that are tender to the last degree, and hence are useless. We want the plants short-stemmed and stocky, with plenty of leaves. To secure this kind of vegetation, the plants must have air. This is where the care and skill in management come in. To prevent the effects of frost or the check which the cold of the nights will surely cause, we shut down the glass frames, and the temperature, close, moist, and warm, causes a very tender growth.

In the morning, early, the first thing done is to raise the sashes or slide them open a few inches so that the plants may have air without being chilled. Later in the day, as the weather may happen to be suitable, the sashes should be thrown more open, and as the plants shew their growth and hardiness, the sashes may be completely taken off during the day, covering only at sundown and lifting them at sunrise. It is on the judgment exercised in the treatment of the growing plants that the success depends.

As the early vegetation is taken out, the bed may be used to grow various other plants by skilful management. It is best, however, to confine this to a single sash that may be used independent of the other part of the bed. For instance, after the early cabbage and lettuce plants are set out and cleared off from under a single sash, the cucumbers and melons, which may be growing in another section, still require protection at night, though not in the day-time, and nothing should interfere with them. But when the bed has been cleared, all the annuals for the flower-beds may be started growing under one of the sashes, and they will make strong, nice plants for bedding out, and be almost ready for flower by the time that, otherwise, we should be only sowing their seeds if grown in the ordinary way in the open air.

To the country house, where the garden must furnish most of those necessaries which are procured in the markets by those who reside in cities, the hot-bed is indispensable, and it is astonishing how great an amount and how varied are the products a well-managed one will furnish.

Tomatoes—Profits on One-seventh of an Acre.

Tomato growing has in the neighborhood of our large cities become one of the most profitable branches of truck gardening. It is but a few years since the tomato was but a rarely used vegetable with us, and a small supply filled the demand in our markets, but now, since canned tomatoes and tomato catsup, and tomato mustard have come so much into vogue the demand has wonderfully increased.

The following letter written to the *Live Stock Journal* gives some idea of its profitableness as a crop:

I send you account of the culture of a small piece of tomatoes. I am just beginning for myself, and keep a strict account of every item of expense, time and income. It appears to me that farmers and gardeners would find it very much to their interest to keep a strict debit and credit with all their crops and stock. I hope another year to give you the exact figures of what I can do on an acre.

My young plants were started in boxes in the house, March 21, and transplanted to hot-bed April 4; root pruned April 15, then transplanted to another hot-bed April 25, to give them more room and make them hardier. May 27, set the plants out in the garden, four feet apart each way. June 16, I staked and commenced trimming the plants. Trimmed and tied them three times, about once a week.

July 22, I marketed one bushel, and received ten cents per pound; the last load of the season sold for fifty cents per bushel.

I had 400 plants on about one-seventh of an acre. It would have cost but little more to have marketed twice or three times as many, as I was obliged often to go to town with only part of a load.

Received for 25 dozen young plants	$10 55	
Received for 65 bushels tomatoes	77.45	
Value of hot-bed, glass, sash and tools on hand	6 00	
		$94 00
Cost of hot-bed, tools and labo	$12.89	
Cost of marketing, picking, pruning and cultivating	22 80	
Rent of land and board of man and team	10.00	
		45 69
Profit		$48.31

Parsnips in the Channel Islands.

In the Channel Islands, the parsnip is extensively cultivated for feeding the peculiar breed of cattle for which these islands are celebrated. According to Col. Le Conteur, a leading agriculturalist in the island of Jersey, the average crop of parsnips per statute acre in that island may be from nine to eleven tons, but in some cases, twenty-seven to twenty-eight tons per acre have been grown, a quantity sufficient to support ten cows during the six winter months, according to the calculations of the Flemings, and more than enough for twelve Jersey cows, in conjunction with straw, hay, and a few mangolds or turnips, given to produce the necessary bulk and variety of food.

In October the leaves are cut off, and given, when dry, to the cows. It is important that they should be dry when given, for, when given while wet, they are apt to produce inflammation of the udder. The leaves serve as an excellent auxiliary to grass in the Fall, and when given moderately, about a good armful per day to each cow, impart nearly as much richness to the milk as the parsnip itself.

In these islands the parsnip is also used for fattening cattle and swine, and when boiled is much prized for feeding poultry. It is one of the best preparatory crops for wheat, as in Spring, after the second hoeing, the broad leaves cover the soil, and kill weeds, drawing also a considerable part of their nutriment from the atmosphere, whereas the comparatively small leaves of the carrot are less useful for smothering young weeds, and allow more space and air for the growth of these intruders.

From experiments made by Col. LeConteur, two and one-half drills of the Altringham carrot produced two hundred and sixty-one pounds, and an equal portion of land in parsnips produced eight hundred and forty pounds. There were many autumnal weeds among the carrots, but none in the parsnips, although treated alike. The White Belgian cattle carrot produces as heavily as the parsnip. Sir Humphrey Davy found that one thousand parts of carrots furnished ninety-five parts of sugar, three parts of mucilage and one-half part of extract, while one thousand parts of parsnips afforded ninety parts of saccharine matter, and nine parts of mucilage. The excess of mucilage in the parsnip is said to be one cause of its superior fattening and other valuable properties.—EDWARD MASON, in *Western Rural*.

How to Grow the Cauliflower.

BY PETER HENDERSON.

There is, perhaps, no vegetable we cultivate that is so uncertain of giving satisfactory results as cauliflower, particularly if grown for an early crop. It is often rather amusing to see how a failure to obtain a crop astonishes our full-fledged scientific European gardener on his first attempt here. When he starts in the spring with his plants, all the conditions are apparently the same as they were when he planted near London or Paris, but as the season advances the conditions change; and he has a drier atmosphere and a higher temperature, making a climate entirely unsuited to the crop, and the result in five cases out of six is partial or entire failure. But there is one way to obviate this failure. If the ground had been properly prepared by heavy manuring, and if good plants are on hand, they should be planted the first week in April—certainly not later than the second week. By the middle of May they will have made a fine growth, but by this time the high temperature begins, accompanied by a dry atmosphere; to obviate the effects of these, and to produce the crop in perfection, copious watering is essential. One of my neighbors in Jersey City had a patch of about half an acre, which he annually, for many years, planted in cauliflower, and never failed to have a heavy crop, but his land was so situated that he could thoroughly irrigate it at pleasure, which insured his success. When a few dozen plants are grown for private use, and where water is convenient, each plant should have, if the weather is dry, at least three gallons each evening, for about two weeks before the time of heading up. A mere sprinkling is utterly useless; enough must be given to reach the lowest roots. When the ground is thus saturated, the temperature is also lowered and the atmosphere surrounding the plants made also more humid—conditions indispensable for the well-being of the cauliflower crop.—*American Agriculturist*

A MAN in Labette county, Kansas, has raised one hundred bushels of onions on one acre, and got $100 for them.

PLANT EVAPORATION.—So great is the evaporation of water from plants, as stated by Mr. Lawes, that a plant of barley of 172 days growth, in which it had acquired 419 grains of dry organic matter and 46 grains of dry mineral matter, had converted into vapour not less than 17 pounds of water.

A RECENT WRITER, himself a gardener of large business and long experience, has declared it his belief that the time is not far distant when all the suitable land within a radius of at least 100 miles of our present commercial centres, will be occupied as farm gardens, in producing vegetables for the millions who will be engaged in mercantile and mechanical pursuits in the cities and neighboring towns and villages, and that this increase will not be out of proportion to the growth of the business within his experience.

VEGETABLE GROWTH TO AN ACRE.—It would be interesting to ascertain what plants will yield the heaviest vegetable growth in a season, and then to find out which will afford the greatest money returns. The *Agriculturist* says that a "truck" farmer near Providence, R. I., by heavy manuring, raised nine tons of Myatt's Linnæus rhubarb on a quarter of an acre—or at the rate of thirty-six green tons per acre. Owing to competition it sold for only $25 per ton, or a cent and a quarter per pound, but even at this rate the returns were $225 for the quarter acre, or at the rate of $900 per acre. The *Agriculturist* remarks: "A farmer uses $50 worth of manure per acre, and thinks he is extravagant; a market gardener uses $200 worth on rich land, and regrets that he has not put on more." One reason why the farmer comes to this conclusion is, that he does not cultivate and stir enough to mix the manure sufficiently with the soil to get its full benefit; the gardener mixes well by constant cultivation, and obtains from his four-fold amount, a ten-fold return.

TO RECOVER FROSTED PLANTS.—An intelligent florist writes to an English periodical on the subject of recovering plants that have been frosted in greenhouses, pits or frames. He says that geraniums, and such soft-wooded plants, cannot endure one degree of frost at certain stages of their growth, although Cape heaths and several other hard-wooded plants, endure four degrees of frost without being injured, if precautions are taken, before the sun's rays reach them, to raise the temperature two degrees above freezing, and shade the plants inside or outside the house with mats. The sun will gradually increase the temperature of the house and the effects of frost will gradually disappear. The covering should not be removed until the sun is past its meridian. In extreme cases, syringing the plants over head with tepid water, after the temperature has been raised to thirty-four or thirty-five degrees, and maintained at either of these points, will produce the same effect; but unless sufficient air can be admitted to dry up the moisture, and the temperature of the house is kept up to forty degrees during the night, the remedy may prove worse than the disease. There is more difficulty in securing plants from frost in pits and frames, than in houses where fire heat can be applied; the greatest attention ought then to be given to cover such places only with some dry material, such as hay or straw, and to increase the cover according to the intensity of the frost.

Breeder and Grazier.

Sewage-Made Food.

(To the Editor of THE CANADA FARMER.)

SIR:—I herewith enclose you an interesting and important article from the *St. James (London) Chronicle* on "Sewage-Made" Food. It opens up a wide field of inquiry in the ramifications and effects of artificial feeding on the animal and vegetable worlds, and its ultimate effects on the health of mankind, particularly in our large cities.

The Epping Forest referred to in the article is a beautiful old spot, about seven miles from London, and about which there have been great contentions with "Lords of the Manor" and others respecting enclosing large portions for building purposes. I am, &c.,

ALEX. GAVILLER.

Bond Head, Dec. 29th, 1874.

The following is the article referred to by our correspondent:

MODERATION is a condition on which depends the success and permanent well-doing of all human, indeed of all mundane affairs. Things are good only so far; liberty is good, abundance is good, but only so far. The sick man who was sent to the sea side to bathe and drink a wine glass of salt water daily found himself much better, so he increased very largely the dose, but then he found himself much worse, and he died. A million or two of people picked up in the cellular life of London—this huge "wen" of ours—may preserve health and enjoy life, but when the multitude grows to four millions there is not room enough wherein to live, hardly is there standing room in the pit of this world's play-house, clearly not room for ventilation and cleanliness, and no room for the adjunct even of a palatial dust-bin. The very villages are narrowed of their margin of vacant space. Hence what can be done with the refuse of the town—its sewage?

It is held that this sewage is convertible into nutritious substances. So it is, but, like everything else, only within a limit. Sewage is now much beyond the limit. Mr. H. Smee reports some experiments which are most instructive in respect of the vegetable produce of sewage-fed lands. Thus, he made an effusion with the tops of grass grown on a sewage farm, and from a similar weight of grass grown from a neighboring meadow, the soils being similar. The two samples of the effusion of grass yielded different results: that from the sewage farm yielding nitrogen in various combinations, 22.1 per gallon, but from the meadow grass 9.1 per gallon, one nearly two and a half times that of the other. Thus, it appears that sewage grass contains a great excess of unassimilated nitrogenous matter; it is not improbable that a part at least of the "albumenoid ammonia," is sewage pure and simple, locked up in the cells and juices of the plants. More raw food has been given to the plant than there has been time, slowly under the influence of heat, to elaborate into its own proper healthy tissues. The operations of nature are minute atomic—changes take place atom by atom. Such matters, be they sewage food for plants, or any kind of food for man or beast, can only be healthily appropriated by a slow, gentle, vital process, and by very limited quantities. Excess of food causes disease. Without normal exercise in stall-fed beef, the oil cake is applied in such quantities that the oil runs out of the cooked beef in the condition of a very offensive gravy. In illustration Mr. H. Smee gives an interesting experiment: "If a musk plant be fed for some weeks with Guinness's stout instead of water, a strong smell of stout will be emitted from the plant on bruising the leaves with the fingers. Again, the cream from cows was set aside, and the time required for churning it into butter varied; it was from the sewage-fed grass two and a half hours, but from the meadow grass thirty-five minutes, or nearly five times as long for the sewage-fed grass as for the grass from the meadow. Moreover, pats of butter were set aside and kept until they went bad, and it was invariably found that the sewage butter became rancid many days before butter made from meadow grass. The conclusion from these skilful observations seems to be that, in the present state of our physiological knowledge, farms, irrigated by sewage, must be at the best looked upon as comparative failures."

Every new street takes away a field on which the butter-making cow was fed, and, at the same time, adds to the number of consumers of butter. Larger demand, less supply. The beef we bring from the Pampas and from Australia will hardly help the difficulty. Wisdom says "cram the old country with no more eaters and drinkers; bring not the ox to the man here, but *take the man to the ox there.*" It was an evil thing to steal the lands of Epping Forest from the people, but the lands were intensely wanted for the productive use of the people. The more people, the less waste land can there be; yet a people—a nation—becomes miserably poor when their margin of spare land is taken to fill the maw of an ever-increasing, voracious multitude. If the appropriation of Epping Forest had continued, there would have been more and more room for home and food, but that would only mean more and more demand for food.

Our rivers seem to be exhaustible of fish, but the supply out of the great ocean is as yet without limit. Cod and salmon are as good as ever, so are sprats and herring. No stall-feeding in the deep sea yet.

Short-Horn Heifer "WATERLOO J." the Property of MR. J. R. CRAIG, Edmonton.

Oil Cake.

(To the Editor of the CANADA FARMER.)

SIR,—We have great respect for your reliable information, and beg your answer in any early, if not next number, as to the effect of oil-cake as usually supplied to cattle. Please say when and how often and in what condition the cake should be fed to stock cattle, so as to fatten earliest for market. If you advise the use of it in cases of still slop fed cattle, how often per day and in what size doses should it be given. An early answer will favor

Your subscriber, GODERICH.

The merits of oil-cake as a feeding material are known to most stock-breeders, but its exact flesh-producing qualities as compared with other substances, such as bran, corn, &c., is not so well understood. According to the researches of Profs. Wolf and Knop, the relative composition of bran and oil-cake are as follows:

	Bran.	Oil-cake.
Water	13 1	11 5
Organic matter	81.8	80.6
Ash	5 1	7.9
Albuminoids	14 0	28.3
Carbohydrates	60.0	41 3
Crude fiber	17.8	11.0
Fat, etc	3.6	10 0

Mr. X. A. Willard, an authority on questions of this nature, gives the following as the weight of the several ingredients contained in one ton (2,240 lbs.) of oil-cake and bran, respectively:

	Oil-cake lbs.	Bran lbs.
Nitrogenous, or muscle forming food, (albumen, gluten and casein)	490	448
Heat giving and fatty substances, { Starch	897	1,232
Fat.	252	112
Mineral and bone forming substances. (phosphates of lime, etc., alkaline salts).	154	108
Water, husk, waste,	148	500

In Allan's American Farm Book we find it stated that the value of linseed oil-cake and corn meal is as 64 cents to 56 cents, in other words, that when corn meal is worth for feeding purposes 56 cents, oil-cake is worth 64 cents and *vice versa*. Boussingault gives the "fat" in oil-cake at 9 per cent., and in corn at 8·8 per cent.

Where oil-cake is difficult to obtain many persons adopt the plan of preparing the flax-seed for food. In such cases the seed should first of all be thoroughly bruised or ground. Water must then be added in the proportion of about a gallon and a half to each pound of seed, and the whole left to simmer for a couple of hours, stirring occasionally to prevent burning. When cold enough, mix to each gallon two pounds of corn, pea or barley-meal, a sprinkling of salt, and a sufficient quantity of chopped fodder, to make a good ample feed. For fattening purposes, one pound of the flax-seed meal, and two pounds of either of the other kinds will, with the fodder, be quite sufficient, and this allowance may be given twice a day. At a recent meeting of the East Lothian Agricultural Club, held at Haddington, the subject of oil-cake feeding was discussed at great length, and as the remarks there made contain much valuable information on the points asked for by our correspondent, as well as on the question of cattle feeding generally, we offer no apology for transferring them to our columns. Mr. Robertson, of New Mains said:—As to the fattening of cattle, I am quite of opinion, at the early part of the season when cattle are first put upon turnips, it is wise as well as judicious not to give cattle, as is often done, as many turnips as they will consume, as the change of keep and the turnips at that season are apt to purge the cattle too much. I would recommend to stirks a limited quantity at first and, if possible, for a few weeks, to give some hay, which is the means of keeping the cattle from scouring; also beginning with four pounds of cake a day, in the case of cattle, to lie on until spring. And in the case of more forward cattle to give double that quantity. Cattle ought to be fed with turnips twice a day, and I would recommend that the roots be all put through the slicers into large baskets in the case of stirks, allowing so many baskets to every close. By that means the turnips can be more economised, where necessary, than is generally the case by allowing the attendants to put any quantity before the cattle at random. I would add a certain quantity of potatoes, which in my opinion, may be used to advange for feeding purposes at 40s. per ton, with beef at its present value, along with other feeding substances, and thus reduce your oil-cake bill. But I would never lose sight of a liberal supply of the best oil-cake, which if judiciously applied to a right class of stock, never in my experience has failed to pay. In fact, my experience is that if applied with economy, a larger balance for turnips will be obtained after paying a liberal supply of cake than without using any. I hold it to be the cheapest and best mode of bringing a farm up to condition. The advantage to the farmer of consuming cake is greater in some parts of the country than others. For instance, if at a great distance from manure, more value must be put upon home-made manure than where a liberal supply can be got in the neighborhood of large cities. As to consuming cereals,

bruised beans for cattle, to a limited extent, mixed with cake, I have always found to be of great benefit when cattle are nearly ripe, if they can be got at 40s. per quarter, or thereby. On no other class of cereals do I put much value as a substitute for oil-cake for cattle, except for young cattle; oats may be given in limited quantities, there being more bone substance in oats than in any other of the cereals; they make cattle grow in the bone, bringing out size.

Mr. Paton, Standingstane, said.—I am sure the club will agree in almost everything that had been said by Mr. Robertson on the subject before us to-night. * * * *

The chemist tells us that wheat contains 80 per cent. of fat and flesh-forming substance; barley, 77; oats, 75; beans, 74; linseed cake, 73, and linseed 85—34 per cent of this being oil. It seems to me, therefore, that a mixture, say of two tons of wheat and one of linseed, would make a very excellent feeding stuff, at a cost of about £10 10s. to £11, containing about 83 per cent. of flesh and fat-forming material, while oil-cake contains only 73 per cent., and costs about £2 per ton more money.

The expense of carriage to market is also saved, and we are sure of a genuine article. Against this, however, there is more trouble in preparing and giving it to the cattle, and there is also more waste by the cattle while eating it. Barley and oats are too dear to think of offering to stock, and I may here mention that I have heard one of the best feeders of cattle say that he would sell oats as low as 16s. per quarter, and buy cake at £12 per ton; perhaps a half of each would be better. It is rather a queer state of matters when a farmer finds cattle his best customers for his wheat; but the crop is exceptionally good this year, which makes up a little for the low price. Then as to potatoes, chemistry again tells us that there is only 17 per cent. of real food in this root, 15 of that being for the formation of fat and two only for flesh; and calculating as before, we find that they are worth about £2 per ton for feeding, a price which is generally allowed they are worth from practice; but as potatoes at present are much higher than this, of course they must go to market.

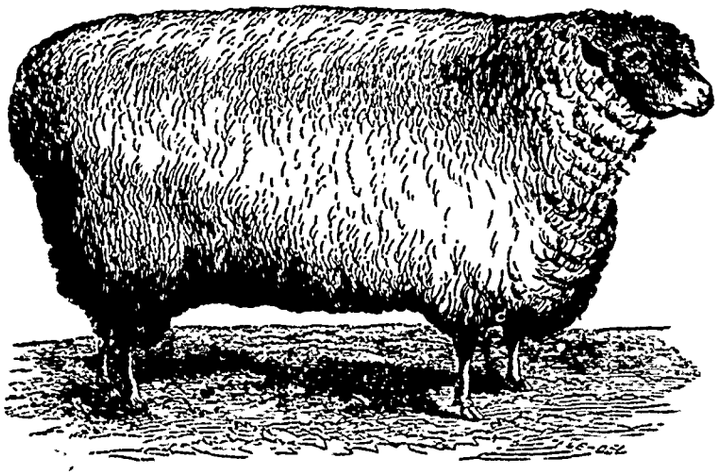
The chairman said there seemed to be a pretty general opinion in favor of using a mixture of feeding substances in preference to any one substance. Fine linseed cake, though highly spoken of as one of the best feeding substances either for cattle or sheep, made more progress on the stock and was more satisfactory to the feeder, when mixed with some other material, than given alone. His practice just now, considering the low price of wheat, was to mix four parts of wheat meal with one of linseed meal, all finely ground. He mixed the meals the day before using, or early in the morning, for use in the afternoon, with cut hay and chaff, and steamed the whole. There was no way by which the cattle would make more progress. At the present moment wheat was the cheapest food they could use. It was very important that when they saw their way to save a little of their own money in disposing of their own produce, instead of giving so much money to the cake manufacturer, they should do so. He thought some people made a mistake in giving more cake than the cattle could easily assimilate. He approved of small quantities, so that the animals could thoroughly assimilate what they got. There was a good deal of bruised or broken oats used in mixtures for stock feeding. A little of those substances was better than even using turnips alone. If they gave many turnips without any of those other substances, the animals were more apt to scour. There was nothing like keeping the animals regular, healthy, easy and comfortable.

Cotswold Sheep.

Mr Smith, of West End, England, gives the following interesting notes in Cotswold history:

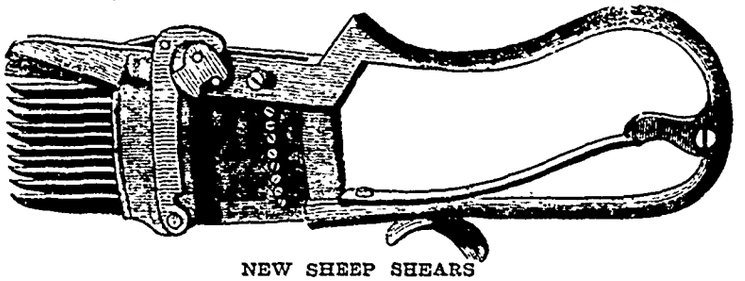
The Cotswold sheep are supposed to derive their name from the "cots" or sheds from which they were fed in winter, and from the "wolds" or open hilly grounds in which they were pastured in summer. I believe them to be the original breed of the long-wool sheep, as they are continually spoken of from the earliest times, when no other sheep are noticed.

I find that Gloucestershire was the earliest trading district for native wool in England. Gloucester had its trade companies and Guildhall long before one was established in London. In the thirteenth century, Cirencester had two markets—one on Monday for corn, and one on Friday for wool. The monumental brasses in the church at Cirencester and Northleach were paid for in Cotswold wool to foreign artists. That attests the importance of the wool trade at that period. The immense quantity of wool grown in the county of Gloucester is apparent from the fact that, in the reign of Edward III., 30,000 sacks of native Cotswold wool was the annual quantity granted from that county for the king's household.



COTSWOLD RAM.

In the fifteenth century, both sheep and wool were largely exported. In 1437, Don Durantee, King of Portugal, applied to Henry VI. for permission to export sixty sacks of Cotswold wool to manufacture certain cloth of gold for his own private use. At that time the wool of the Cotswold sheep stood unrivalled in point of excellence, and bore a higher price than any other kind of wool. It is said to have been worth four shillings per pound at the present value of money. It continued nearly a century to realize that price, in consequence of the great demand for the manufacture of the beautiful fabrics, such as cloth of gold, etc. Cotswold sheep were undoubtedly considered the best animals England could produce at that period, as a proof of which I might say that if one monarch made a present of animals to another it would be what he considered the best in his kingdom. In 1464, a present of Cotswold sheep was made by Edward IV. to Henry of Castile, and in 1468 another lot of Cotswold sheep was sent to John of Arragon, both designed to improve the Spanish breed of sheep.



NEW SHEEP SHEARS

In the reign of Queen Elizabeth, the Cotswold sheep are described as a coarse, large-boned, long-wool sheep. They have undergone a great change and improvement since that time. Notwithstanding the improvement in most breeds of sheep, the Cotswold holds by far the pre-eminence. Their beautiful and immense frames, their fine countenance and full fleece give them a grand, majestic appearance, such as no other breed of sheep have ever yet attained. I think them the best sheep in existence, and will produce more mutton and wool for the food they consume than any other breed of sheep.

The Cotswold, although large sheep, have big backs and small bellies, and will not consume so much food as some smaller sheep that have little backs and great bellies. Nearly fifty years past, the Cotswold ram-breeders all used Leicester rams. That greatly improved their flocks, giving them better symmetry, better quality, and more aptitude to fatten. Before the introduction of the Leicester, many of them were grey, but are since mostly white. I have always used grey sheep, but pure Cotswold. My flocks are the Cotswold greys.

A good Cotswold sheep has a large, wide frame, with abundance of valuable wool, a large head, eyes wide from each other across the forehead, not long from the eye to the nose, jaw deep and tapering to the mouth, ears long and fine, the head well covered with wool, a grand arched neck, set on high-feeding up to the ears, ribs well sprung out from the back and chines, a prominent, full, expanded chest, deep foreflanks, wide back and loin, rump nicely formed all round from one loin to the other, heavy leg of mutton, good and full in the twist, moderate-sized bone, feet small, clean, and upright in the posterior or fetlock joints.

Mr R. G Hill, in an address delivered before a farmer's meeting at Morrisville, Vt., upon Cotswold sheep and their value, said:

We should constantly study the demands of the market. The scarcity of heavy mutton makes it always in good demand, and the demand is fast increasing.

The one great trouble in stocking the country with fine sheep, and supplying the demand both for wool and mutton, is the fear among many farmers of paying too much for them, though it is plain enough to be seen they are a great improvement over our common stock. Now let the farmer commence with a few of these sheep, and have his children share in the care and profit of them; they will soon feel an interest, and no longer think farming unprofitable. There is no employment on the farm so remunerative, and so attractive for children, as the care of lambs. The importance of improving worn-out pasture is apparent to every farmer. There is no way this can be done so easily as in keeping sheep; it will take but a few years to double its value.

The Cotswolds are just the kind to improve springy, swaley pastures. They will thrive on rank, coarse feed, bringing in the white clover, and doubling its value in a short time. It is generally admitted that sheep are the best stock that can be kept for the pasture; but knowing that it was generally considered that they were equal to cows to keep up the mowing, I determined to satisfy myself which was the best, and some ten years since commenced feeding the hay on a small farm exclusively to sheep. This lot was in fair condition, yielding about one ton per acre. I let the sheep have the stable, spread the manure on the grass, going over one-half of it each year. The grass continued to increase until it yielded not less than three tons to the acre. The manure from this yield gave it a heavy dressing. For a year or two the grass has not been as heavy; the ground appears to be burnt with manure. Last spring I ploughed a part of it to re-seed, and sowed it with wheat. It grew very rank, but the weeds grew ranker—such weeds as grow on very rich ground. This land has been dressed with clean manure from the stable, and the grass has been free from weeds. There had been no manure put on previous to ploughing. That such weeds should grow on a sward well turned, shows the ground to be very rich.

The demand for good mutton is constantly increasing, and we think the mutton breeds will pay the best when they are kept in small flocks, and given that special attention required to produce the best animals.

New Sheep Shears.

As wool is becoming each successive year of more and more importance as an article of husbandry, and commanding greater attention in proportion, inventors are not behind in placing upon the market new practical ideas as to the method of harvesting that useful substance. It used to be considered in Scotland a fair day's work to clip four or five score. On these occasions, of course, the clipper had

nothing to do but sit and clip on. The animals were caught, carried to him, and lifted upon the stool before him, and also lifted off again as soon as he was through. The wool shears there used was and is still the same as that employed in this country. Could the Scotch clipper secure such an instrument as is here represented, his daily four or five scores would be turned into five or six times the number. At least it is claimed for the new shears that it will shear six sheep in the time usually devoted to one.

Any one, even the greatest novice, can operate it, and do better work with it than many old hands can perform with the old shears, and with much less danger of penetrating too deeply and cutting into the flesh. The movement, in working, resembles that of an ordinary pair of scissors; the blade passes closely over all the several prongs after they have been imbedded in the wool—the handle being arranged with a spring, as seen. When the knife returns to its place again, it is so adjusted that it will rise clear of the fleece and thus obviate injury to the wool by scraping.

A Kentucky Stock Farm.

Edward King, in the December number of *Scribner's Monthly*, thus speaks of the celebrated stock farm of Mr. Alexander, near Lexington:

Nine miles from Frankfort, on the road to Lexington, stands one of the finest and richest farms in Kentucky—that owned by Mr Alexander On t s superb stock farm we saw three hundred blooded horses, ranging in rank from old Lexington, the monarch of the turf, to the kittenish and frisky yearling. Here, also, Mr. Alexander has collected $100,000 worth of cattle, comprising some of the finest stock in the world, and peeping into the inclosure where the costly cattle were kept, we saw one diminutive heifer worth $27,000, and a variety of foreign creatures whose value seemed almost fabulous. On this farm are bred the great majority of fine trotting and running horses which appear in our park during the racing season. Mr. Alexander's estate, which is admirably stocked with fine farm houses, barns and stables, and which is more like a ducal manor than the ordinary American farm, extends over 3,200 acres. Near by is old John Harper's modest farm of 2,000 acres. The roads, the stone walls, and the fine lawns covered with massive shade trees, make a series of delightful pictures. The annual sale of horses on the Alexander farm occurs in June. Only yearling colts are sold. Hundreds of people from all the country round and from every state in the Union flock to this sale. An immense barbecue is held, and high wassail marks the conclusion of the occasion. We paid a respectful visit to old Lexington, the mighty sire of a mightier equine family He is now quite blind, a veteran of twenty-two, afflicted with goitre, and stood gazing in the direction from which our voices came, a melancholy wreck of his former greatness The princes of the race course of the present galloped by, neighing and pawing the ground, as if annoyed at our presence. One of them, named Asteroid, so far forgot his princely dignity as to charge incontinently upon the fence where we were seated, and the artist has depicted the result in a spirited sketch The negro men who manage these erratic brutes undergo all sorts of perilous adventures, but they seem to possess as many lives as a cat, and, like that animal, always land on their feet, no matter how far the rearing and plunging horses may throw them.

Stock Raising in Prince Edward Island.

The *Colonial Farmer*, of Fredericton, after giving a full account of the recent Annual Meeting of the Halifax County Agricultural Society, offers the following observations:

We are glad to see that so great an interest is taken in Agricultural affairs in the sister Province; that gentlemen holding high positions in society and in the Civil Service do not consider it beneath their dignity to give their sympathy, and, when necessary, more substantial aid, towards elevating and advancing this great interest. The improvement of the stock of the country appears to be the great aim at present, and is indeed of the highest consideration, as, without it, very little successful farming can be accomplished. The position which Prince Edward Island sustains to-day as a grain producing and stock raising country, is largely due to the wise provision made by the Government for a Stock Farm; and, although there are no direct returns or profits arising from it, still it has been the means of increasing the wealth of the country generally. The farmers of that favored island have been able to secure, at very little cost, the very best breeds of cattle, and the neighboring Provinces have looked towards it frequently as the source from which to replenish their stock. The effect of all this is, that while Prince Edward Island proudly boasts of possessing better stock than any of the other Maritime Provinces, many of the farmers are wealthy enough to enjoy some of the elegancies and luxuries of life, and thus return, in the shape of taxes to the Treasury, a sum equal to that expended by the Government for the purchase of stock, and in sustaining a Breeding Farm.

Veterinary.

Convulsive Ergotism in Cattle.

During the past six weeks we have had an opportunity of noticing a disease of rather a peculiar character that attacked a number of cattle in the neighborhood of Toronto. In all cases the symptoms displayed a marked similarity, and, we believe, the disease was produced by the action of a vegetable fungi. One night, towards the end of October, we were called out to attend a number of cows belonging to a dairyman five miles east of this city, and were informed that either one or two of the affected animals had died in the course of the evening, and the owner was very much afraid he would lose the whole.

From what was further stated, we understood they had been largely fed on a variety of food to which they were unaccustomed, and we expected to find a number of well marked cases of Hoven. On our arrival, and on making a cursory examination of the affected animals, we could plainly discover that the symptoms exhibited were quite the reverse of those attendant on Hoven.

None of the animals were housed, but all were gathered in a well sheltered enclosure, and all exhibited nervous disturbance in some form or other.

Some had a very peculiar, anxious and excited appearance, which excitement was very easily increased, whilst others exhibited convulsive twitchings of the limbs, without showing well marked cerebral disturbance, and one poor animal had completely lost power of the hind quarters.

The pulse in nearly all cases was quickened, the eye unnaturally prominent, and the pupil slightly dilated, the breathing slightly increased, the extremities somewhat cold. When made to move, there was a peculiar nervous twitching of the muscles of the hind limbs, and also of the neck. In one case, if we attempted to lift the head, the animal went into a convulsive fit and fell to the ground, and so long as the convulsions lasted, the muscles of the jaws were rigidly contracted, making the case almost look like one of tetanus.

Some of the animals appeared to have a slight desire for food, and one or two drank greedily of water. In several cases there were a free discharge of a ropy saliva and mucus from the mouth.

In some instances where the animals were laying down, when made to get up and walk round, they moved off as if they were suffering from lamitis in both fore and hind feet. If they continued moving this symptom disappeared. The belly, in most of the cases, was somewhat tucked up, and the bowels rather costive; the feces passed were of a dark brownish color.

On inquiry, we found that the cows had been fed for two or three days previous to the development of the first symptoms, on *malt combings* in large quantities, which had been saturated for a short time only with cold water, and we believe all the violent and peculiar symptoms so well developed, were due to the effects of feeding on this variety of food. These malt combings contain fungi in great numbers; in fact, they may be said chiefly to consist of sprouted grain, and their action upon the system was similar to the action of the ergot of rye, and it is our opinion that the disease may justly be termed cases of *Convulsive Ergotism.*

We had afterwards an opportunity of meeting with several similar cases in and around this city, and in every case we met with, the animal had been fed on malt combings for some time previous to the attack.

Although the action of ergot has not been so well noticed in ruminants, in the human being it has long been known to exert a very powerful and alarming action. For instance, different parts of the European continent have long suffered from the injurious effects of these ergotised grasses. Perriara tells us "that France, Prussia, Saxony and Denmark, have been at various times visited with a dangerous epidemic know by various names, as Ergotism, Raphania, Morbus Spasmodicus, Morbus Convulsions, &c. This disease affected at the same time whole districts of country, attacking persons of both sexes, and of all ages. So long back as 1597 the use of ergotised rye was thought to be the cause of it. Various circumstances have appeared to prove the correctness of this opinion, which has been further confirmed by the effect of ergot of rye upon some of the lower animals, as well as by the occurence of a disease similar to, if not identical with ergotism, *in consequence of the use of damaged wheat.*

Diez gives the following symptoms as the effect of ergot upon dogs that have been experimented upon, viz.: "Great aversion to the ergot, discharge of saliva and mucus from the mouth, vomiting, dilatation of the pupil, quickened respiration and circulation, frequent moaning, trembling of the body, continual running round, staggering gait, semi-paralysis of the extremities, especially the hinder ones, sometimes diarrhœa, sometimes hot anus, increased thirst, but diminished appetite. Death followed under gradually increasing feebleness, without being preceded by convulsions. To the less constant symptions belong inflammation of the conjunctiva, and the peculiar appearance of turning in a circle from right to left."

Christison mentions that a strong decoction injected into the vein of a dog caused general feebleness, paralysis of the posterior extremities, vomiting, and death.

Christison also relates cases of dry gangrene of the extremities, due to the effects of ergot, as witnessed by Lessier, Roberts, &c., and another condition distinguished by the characters of an acute comatose affection, giddiness, dimness of vision, insensibility, convulsions, imperceptible pulse, and death within two days.

Gangrenous ergotism commences with weariness and a feeling as if myraids of insects were creeping over the body. In a few days fever sets in with a tendency to hæmorrhage, rending pains in the arms and limbs, and at length, dry gangrene of the fingers, toes, or even the legs, which drop off by the joints; and the patient either recovers slowly by granulation of the stump, or expires, worn out during the process of repair.

It might be said that such cases are conclusive evidences of the injurious action of ergot upon animals; but yet cases are related where spurred rye, although given in considerable quantities, had little action upon some animals. Block relates that twenty sheep ate together nine pounds of it daily for four weeks without any ill-effect. In another instance, twenty sheep consumed thirteen pounds and a half daily for two months without injury. Thirty cows took together twenty-seven pounds daily for three months, with impunity, and two fat cows took, in addition, seven pounds of ergot daily, with no other obvious effect than that their milk gave a bad caseous cream which did not yield good butter. Nothwithstanding these experients on ruminants, we think it quite possible that the fungi which exist in such great quantities in malt combings, will, when eaten largely, very soon produce well marked nervous symptoms.

It is also very probable that the manner in which they are acted upon immediately before being given to cattle, may somewhat influence their action. As, for instance, we believe if they are acted upon with boiling water it will render them comparatively inert. In nearly all the cases we met with, the malt combings had been saturated with cold water only, and given in very large quantities.

Diseases of the Osseous System of the Horse and other Animals.

Bony Deposits in the Vicinity of Joints.

Spavins, Splents, and Ringbones may, strictly speaking, be said to belong to the class of ossific deposits which affect bones forming joints; but they are distinguished by certain definite characters, which are tolerably constant, and which have been referred to in previous articles.

Spavins, for example, occupy a position at the inferior and inner surface of the hock joint, and they specially affect two of the small bones of the hock, and portions of the bones immediately below the hock, the large and small metatarsal bones.

Splents occur on the shank bones, commonly at the point of union between them and the splent bones, both of the fore and hind extremities. They have a well-defined outline, and manifest no tendency to spread, at least as a rule.

Ringbones are the most diffused of the bony deposits which are distinguished by a specific name; but they still stop short of the irregularities characteristic of the deposits to which we now propose to refer. In all animals acute inflammation of the fibrous tissues of joints is likely to end in deposits of fibrous structure which are prone to become ossified, or, in other words, in which particles of calcareous matter are likely to be deposited. It does not follow that the morbid growth shall present the structure of true bone; but the deposit of bone earth in the meshes of a fibrous tumor which surrounds a joint is tantamount to an excessive growth of bone round the part, and the result is that the joint is rendered comparatively useless. When the deposit is sufficiently extensive to arrest the motion of the joint altogether, the term anchylosis is ap-

plied to the disease, for the reason that in the human subject such affections are always associated with a bent position of the limb. The same kind of deposit, even to the same extent, may occur in the horse and other animals without the joint being flexed, and to these cases the term anchylosis can only be applied in a qualified sense.

True anchylosis is sometimes seen in the lower animals, but more commonly, owing to the natural position of the limbs in them, the joint remains straight instead of being crooked, as in the majority of cases which occur in man.

Diffused bony deposit affects various joints, most commonly the hocks, knees, and pastern. Occasionally the shoulder or the hip joint is the seat of the disease; and some remarkable specimens of extensive deposit of bone round these joints have been preserved. The cause in all cases is active disease of the fibrous membrane which covers the bone from injury. Inflammation is set up; the ossific deposit when once commenced tends to keep up the irritation during the movements of the part; and there seems to be no reason why the accumulation of osseous material should cease during the life of the animal—and practically it does not, because, so soon as the nature of the disease is discovered, and experimental remedies have been tried and failed, it is usual to have the animal destroyed. Some of the most remarkable specimens which we have seen have been obtained from the knacker's yard, and have been consequently without a history; but they have given cause for astonishment that animals so affected should have been allowed to live in a condition of utter uselessness to their owner, and of extreme discomfort to themselves.

Symptoms indicative of diffused bony deposit round joints cannot always be recognized at the commencement of the disease. When the affected part is well clothed with muscles, as in the case of the shoulder or hip joint, lameness will be the first sign, and this may be referred to various causes. At length swelling is apparent, and the enlargement gradually increases; but it requires a very delicate touch to detect the existence of bony deposit when a large quantity of fibrous material is effused beneath the skin, and covers the irregular surface of the bony mass. In these obscure cases of disease the unfortunate animal is punished with strong liniments, blisters, setons, and probably firing as a last resource; while, had the precise nature of the disease been known, it would have been looked upon as irremediable from the first.

When bony deposit occurs round joints which are easily examined (as the hocks, knees, and pastern), the true character of the deposit will be more readily ascertained; but it does not follow that treatment will be more efficacious than it is in the cases which have been described. In fact, treatment may be considered as of very doubtful utility in all cases where simple joints are affected. When only two bones are concerned in the formation of a joint, it is obviously impossible to interfere with the movement of either or both of them without impairing the freedom of action. Judicious treatment may remove inflammation, but it is rarely that the osseous deposit can be got rid of; and as long as this obstruction remains, lameness will continue.

In the case of a compound joint like the hock, where the principal movement is carried on between two bones, and merely a gliding motion is maintained between the smaller bones, it is possible for the latter to be consolidated by deposit of boney matter without any interference with the free action of the chief articulation. Lameness will exist in these cases during the continuance of the inflammation which is associated with the deposit of the bone in the early stage of the disease, but will cease when the inflammation subsides. Treatment in such instances should be repellent. Cold applications should be persistently used in the endeavour to arrest the further deposition of bone, otherwise the principal joint may be interfered with, and then recovery is hopeless. Very frequently caries of some part of the internal osseous structure is going in while the deposit is taking place on the exterior. This complication cannot, however, be detected during the life of the animal; and if it were, there are no means of arresting the process when it has commenced.—*Field.*

THE VIRUS, or poison of glanders, may lie for months in a state of incubation in the horse's constitution before the disease breaks out. Of this we have the most positive evidence.

A STRANGE and fatal disease has broken out among the hogs in Davis Co., Iowa, brought there by a lot of hogs imported from the grasshopper regions of Kansas. Nearly all the hogs have since died. They get poor, weak in the hind parts and finally lie down and die.

A NEW HORSE DISTEMPER has made its appearance at Syracuse, N. Y., said by veterinary surgeons to be spinal meningitis. It begins with a slight cough, which is followed by a greenness in the throat. This gradually expands until it reaches the lungs and spinal system, where it cannnot be cured. If the cough is properly treated, the disease can be cured at the outset.

LEATHER FROM INTESTINES.—A patent has been recently taken out in France for the preparation of leather from tripe, intestines, and other animal membranes. These are soaked in milk of lime while still fresh, then washed in water, and finally immersed in a paste made of starch and white of egg. The substance thus formed is to be used for glove-making, etc., and may also be tanned or curried.

The Poultry Yard.

Poultry Progress in Canada.

A retrospective glance at the year which has just expired will not fail to inspire the breeders and fanciers of poultry with confidence in the future; infuse into them a zeal for the continuance during another year of the work so successfully prosecuted during the past one, and to hopefully but determinedly persist in a work difficult in itself and too frequently poorly and niggardly rewarded by a too exacting public. To raise a number of chickens is of itself not a very difficult task, but to breed poultry to a well defined standard, and to maintain that standard through successive generations of the same varieties, is a work of which any fancier may feel proud; and it is with no small degree of pride we look back on the Exhibitions of the past year as proof that many of our breeders have now attained to that degree of excellence. Heretofore, as was but natural, we sought in other countries what we had not within ourselves; prize birds for breeding stock were freely imported from Europe and the United States; from England came the chief supply and at prices too which often astonished the unmitiated; our breeders went to work with a determination to succeed, and they did so. We have now in the country a stock of poultry which in the hands of intelligent men need fear no competition from without, and the spirit of rivalry within will but stimulate to still greater exertion as well as exactness in breeding. The exhibitions of the past season are true indicators of our poultry progress, and viewed in the light of entries made and birds exhibited we cannot fail to see that rapid strides are being made; the spirit once confined to the few is now being infused into the many. Local exhibitions, at one time with a single class for *larger breeds* only, now classify those large breeds, and offer separate prizes in each class. Nor is it alone at exhibitions and among fanciers we find progress in poultry raising, but amongst the farmers generally; year by year we find a steady tendency towards the improvement of the ordinary barnyard fowl by the infusion of a better class of stock birds, and thus gradually but surely increasing their economic qualities; and this is exactly the kind of progress we are most desirous of seeing. Excellent as poultry exhibitions are, and nobody will deny that, we maintain, as we always have done, that true poultry progress consists in introducing a better class of fowls into every barnyard in Canada. Inspire the farmer with confidence in the undertaking; show him that the infusion of new blood will increase his old stock in size, in flesh-forming and laying qualities, and that at the end of the season he will be pecuniarily benefitted by the additional outlay in procuring new stock, and the true foundation of poultry progress is laid. And this is just what has been going on during the past season, and we trust will continue for many years to come; but there is still much room for improvement.

As the hands on the dial of a clock indicate the hour of the day, so do we look to our Provincial Exhibition as an index to poultry progress during the year. In this respect we have not been disappointed. The display of fowls at last exhibition was never before equalled in Canada, and any fancier might well feel proud of the vast array of coops of excellent specimens shown. It would be strange indeed if among so many there were not some of an inferior quality, and that some slight mistakes were not made in judging: but our pen is not now that of a critic, but one to narrate progress; we can therefore pass over minor difficulties and speak only of the exhibition as a whole. In several respects the prize list differed from those of previous exhibitions. Two classes were given to poultry instead of one as heretofore, and in addition a special class of prizes to imported birds. All this is a step in the right direction, and manifests on the part of the Association a desire to meet the increased and increasing demand of poultry exhibitors, and entirely in accordance with our own views previously expressed, especially in the latter case. Offering three prizes in each section instead of two as heretofore had no doubt the effect of drawing out a greater number of exhibitors, especially so as they had not in these classes to contend against imported birds. We are also glad to see that Leghorns have been recognized and separate sections given them; we trust soon to see one for each variety of White and Brown, the White only being recognized in the prize list of last year. The changes just noted necessitated an increase in the amount of money offered, the sum of $504 being set apart for prizes in 1874 as against $321 in 1873, a considerable increase in one year, but not more than might be looked for by breeders, taking into consideration that Toronto, the very centre of poultry breeders, was the locality in which the exhibition was to be held.

On examining the different sections, we find in nearly all the varieties a marked increase in the number of entries over the previous year, but more especially so in the Cochin and Brahma varieties. We are glad to note this, and trust the Association will see its way to offering prizes for single birds of these respective breeds at no distant day. In the French breeds a noticeable increase is also observable, the Houdan section being very large. The new section for Leghorns was a decided success, quite a number of entries were made, and henceforward we may look upon this breed as having a permanent place in the prize list. Dorkings, Polands, Spanish, Hamburghs, and Bantams all show an increase in the number of entries over preceding years. A slight falling off appeared in the entries for ducks and ornamental fowls, but still more marked in black red games; although the chickens of this breed showed an increase. Turkeys and geese were also well represented. But the any variety class of all others far exceeded in number of entries those of any preceding year, so much so that it would seem the judges were utterly bewildered in the endeavour to perform their duties. In the agony of their despair, they cried aloud, and failing to be heard left on record the following: NOTE BY JUDGES.—"We, the Judges in class 24, would respectfully suggest that in future the section for fowls of any other variety than those classified be left out, as the same is a source of great embarrassment to the judges." We heartily sympathise with them, but by no means acquiesce in their suggestion. The any-variety class is essentially the poor man's class. It is the only one in which fowls can be admitted which have not a recognized class in the prize list. To discontinue it would be virtually to exclude the different varieties of Hamburghs, such as the Black, the Mooney and Red Cap; of Spanish, as the Andalusians, Minorcas, &c., Malays; of French breeds, as Bredas, La Bresse and Le Man, Dominiques, Plymouth Rocks, Chittagongs, Chitteprats, and a number of others. We very much doubt if the judges considered the effect their suggestion would have if carried out, and trust by this time they are heartily ashamed of making it. It is the any-variety class which affords the managers of English Poultry Exhibitions the means of knowing which variety of a breed of fowls are entitled to a new class, and why should it not be used for the same purpose in Canada; instead then of discontinuing it, it should be cherished with a fostering care.

Of the many local exhibitions deserving special notice we may mention Hamilton, London, Guelph, and Galt. Most of these taking place either immediately before or after the Provincial Exhibition at Toronto. Several of our large exhibitors taking advantage of the occasion, exhibited their birds and carried off a number of prizes; irrespective of this, however, the specimens shown by local exhibitors marked an improvement in poultry breeding both in numbers and excellence over past years, and clearly indicated that a large number of persons are yearly engaging in the raising of farm poultry. At Guelph a poultry club was formed, which we trust will give a fresh impetus to poultry breeding in that locality. The great difficulty to be overcome, or perhaps we should rather say guarded against in this and all similar organizations, is their being rendered subservient to the interests of their promoters rather than to the general good of the poultry community. We trust the Guelph Poultry Society will mark a new era in this respect, and that its labors will be rewarded with many excellent exhibitions. The Ottawa poultry exhibition was, we understand, a very excellent one too, many fine specimens being on exhibition; next season our Provincial Exhibition will be held there, and will no doubt largely increase the poultry interest already manifested. In the Province of Quebec, the cities of Montreal and Quebec each had their poultry exhibitions, showing a decided advance over those of preceding years; that of Quebec, if we rightly remember, being honored by the presence of the Governor-General. Both Montreal and Quebec have many fanciers who by their wealth and influence largely contribute to the successful raising of the better breeds of poultry; it is to be hoped that ere long the same desire will be manifested by the farming population of the Province in which these cities are situated, which at present, we regret to say, is not the case.

The Dairy.

New York State Dairymen's Convention.

The Fourth Annual Convention of the New York State Dairymen's Association commenced its session at Binghamton, N. Y., on Wednesday the 10th ult. The attendance was good, delegates being present from various parts of New York and the adjacent States. We quote from the *N. Y. Times* President Willard's address.

Mr. Willard, after some preliminary remarks, proceeded to show, by statistics, the progress of the dairy interest. In 1863 the associated system began to move forward in earnest. About 110 factories were erected that year, and the whole number in operation was only 200. We were then exporting about 40,000,000 pounds of cheese and 23,000,000 pounds of butter. In 1859 our exports of cheese were only a trifle over 9,250,000 pounds, and butter about 2,500,000. Our cheese exports, from 1859 to 1863, were increased at the annual rate of 7,500,000 pounds. At the end of 1873 the annual exports of American cheese to Great Britain amounted to 104,000,000 pounds, an increase of 64,000,000 pounds in ten years. But of this, 20,000,000 pounds came from Canada. In addition, we exported about 10,000,000 pounds to other countries than Britain, making our total annual exports over 90,000,000 pounds. The Canadians up to 1866 purchased their cheese from the United States. Our bill on Canada for cheese, in 1865, amounted to $200,000, representing about 2,000,000 pounds. It is now estimated that there are 1,200 and upward of cheese and butter factories in New York alone, while the system has been carried into the Northwest on a large scale, and of late is gaining a foothold in other sections, especially in Maine, which offers a good field for its operations.

Fear of Overproduction

Mr. Willard thought there was but little cause for alarm on this subject. The increase of population, both at home and in England, together with the barriers that limit the increase of dairying, go to show that there is no good cause for alarm that there will be an overproduction of prime dairy goods for some years to come. He said the increase of our exports since 1863 was 64,000,000 pounds of cheese. At 400 pounds of cheese to the cow, it would require 160,000 cows to make that quantity. But as our home consumption had increased in as rapid ratio, there was needed 320,000 more cows than in 1863 to supply the increased exports and consumption of cheese at home during the time named.

Milk and Butter

Statistics show that forty-one per cent. of the milk produced in the United States is consumed directly as food, and fifty-four per cent. is used for butter. This leaves only five per cent. of the milk to be made into cheese. Now, according to the United States census, the milch cows in the country in 1850 were 6,385,094, in 1860 they numbered 8,581,735, and in 1870 they were 11,008,925, the average increase being less than 2,500,000 cows for each decade. In other words, the increase of population is at a greater rate than the increase of dairy stock.

For the purpose of showing the great tax on our dairies to supply the needs of home consumption, he gave some statistics in relation to the butter crop. The annual butter crop has been variously estimated at from 700,000,000 to 1,000,000,000 of pounds. This, he said, appears to be a low estimate if we are to take the figures sent out by the New York Butter and Cheese Exchange. A committee of eminent merchants was appointed by the Exchange to consider the subject of classifying and grading butter, and the committee, in their report, state that the census statistics of dairy products are incomplete and defective. A more reliable estimate is that made by an experienced and careful statistician, which the committee indorse, making the annual product of butter to be 1,440,000,000 pounds, which, at thirty cents per pound, amounts to $432,000,000.

At the rate of 200 pounds to the cow, it would require 7,200,000 cows to make the annual yield of 1,440,000,000 pounds. If, as it has been estimated, there are now 13,000,000 cows in the United States, then fifty-four per cent. (the proportion heretofore stated to have been employed for butter) would make the number a little over 7,000,000 cows. He spoke of the rapid increase of butter consumption in this country, and attributed it, in part, to the introduction of the creamery system, and as a consequence, the general improvement in the quality of butter. He said that the price of butter had been gradually advancing abroad, and that, owing to scarcity and great demand for it during the past year in England, prices had advanced to 170 shillings sterling per cwt. on the finest grades. This price it would seem, offers an inducement to us to export. He referred to the demand in the West Indies and South America for dairy goods, and believed that New York will be more and more the chief distributing market of the world for dairy products, and will largely control the prices in all other markets.

An allusion was made to the heavy burden which had accumulated on the dairymen of New York at the commencement of the present season's operations. This came from the low yield of the hay crop in 1873. The scarcity and consequent high price compelled many dairymen to sell stock at a low price, while the early snow in Fall, and the unusual length of the cold weather left stock in thin condition; consequently, the yield of milk early in the season was below an average. If all the items of expense for carrying stock through the Winter of 1873-4, together with the expense of filling up the herds in Spring, be taken into account, the dairymen of New York will not find a large balance of profit for the Summer's work. Still prices have been more than were expected, while the immense hay crop of 1874 puts the dairy farmer in a satisfactory condition for next year's operations. And he has abundant reason to feel encouraged at the prospect of 1875.

Why Farming does not pay.

The impression that farming does not pay is fast gaining ground among farmers. But the question, he thought, may be asked, whether the extravagant and wasteful styles of living, which many farmers have of late adopted, together with the inattention to business, and the trusting of work too much to hired labor, has not something to do in the matter. The income from a $10,000 or $20,000 farm will hardly pay for a style of living afforded by those of large wealth. He gave several instances where dairymen, who had attended strictly to business and practiced economy, had accumulated large properties, and denied themselves none of the substantial and solid comforts of life. He thought there was need among farmers and dairymen of more accurate observation and experiment. It is no wonder we have conflicting views when theories are built up on "guess work," and conclusions arrived at from false premises. A good deal that makes up our current agricultural literature is opinion rather than fact. Some people are incapable of making an accurate experiment, because they will not properly weigh all the circumstances connected with it, and because they allow prejudice to warp facts. They do not seek to learn truth for its own sake, but are looking only for those points which seem to fortify a preconceived opinion. They are like Douglas Jerrold's conservative—"A man who will not look at the new moon out of respect to the old one."

Mr. Willard, in closing, referred feelingly to the loss sustained in the death of the late John Stanton Gould—a loss to agricultural progress which will not easily be repaired. He asked that a committee be appointed to draft resolutions expressive of his worth and of condolence at his decease. And at the conclusion of Mr. Willard's address a committee, consisting of E. J. Wickson, of Oneida; L. B. Arnold, of Monroe, and Flint Blanchard, of Chautauqua, was appointed to draft resolutions in regard to the death of John Stanton Gould.

Dr Craft's Address

Dr Craft, of Binhamton, gave an address on the "Elements of Food. He pointed out the difference in the manner in which animals and vegetables derive their food. He explained the difference between nitrogenous and non-nitrogenous food, and the effect which these two classes of food has in the production of milk. A variety of food is necessary. He found good results in feeding corn-meal, buckwheat roots and good meadow hay. Animals that are starved in winter are injured seriously for summer use. Shelter, food, and good management in winter should be studied by every farmer, for upon these will his success in a great measure depend. The address was of considerable interest, as it very fully discussed the food question in its various relations for the production of milk, as well as for the growth and nutrition of animals.

In the discussion which followed, Mr. Flint Blanchard, of Chautauqua, took the ground that extra feeding in all cases improved the quality of milk. He referred to the experiments of Mr. Miller, of Chautauqua, who had kept cows in winter on corn-meal, exclusive of other food. Mr. Hanley, of Onondaga, believed that good grass was the best food for the production of milk, and that when cows had an abundance of this, the milk was not improved in quality by giving in addition corn-meal or other highly-concentrated feed. He referred to his own dairy of forty cows, on which an experiment had been tried which demonstrated this position. Mr. Crocker, of Broome, advocated plenty of feed, grass and meal at the same time.

Mr. Julien, of Chenango, gave an instance of a cow yielding in one season 462 pounds of butter. In addition to grass or hay she was fed one quart of corn-meal per day, besides returning to her the sour milk resulting from the butter-making. This cow was a cross between the short-horn and Jersey. For the present year she had so far yielded 300 pounds of butter, being fed in addition to hay, two quarts of meal, with roots and sour milk. The question was discussed at considerable length, some advocating that the quality of milk was not improved by feeding meal when the cow had an abundant supply of good pasturage, while others took the opposite view. Mr. John Shuttuck, of Chenango, took strong ground that good grass was the best food for the production of milk, giving the result of his experience through a long series of years as a dairyman and butter-maker.

Evening Session.

The first speaker was S. P. Loomis, of Delaware county. He said the Devon, the short-horn, the Jersey, and the Galloway have each their advocates. The best cow is the cow you like the best, and the cow best liked is best cared for. His favorite was the Devon. He thought the best management of the cow is to give her the food that she likes best, and in such quantities as your judgment indicates. In summer give her grass, and in winter dried grass. He did not think sour milk or whey natural food, though a cow could be educated and coaxed to take them. He advocated feeding but twice a day. If you have not dried your grass to feed, give corn-meal and hay, so that she may do her best. In Delaware county the secret of success in making butter, is climate, native grasses, and good water and plenty of it. In Wisconsin we have the same grasses, the same water, and same care, but not the same climate. The heat is intense in summer and the cold in winter. He believed better results in butter making could be obtained in Wisconsin by winter dairying than by summer dairying. Cows should have plenty of water and not travel far for it. This they have in Delaware. He spoke of cows feeding all day on nettles and no bad flavor imparted to the milk.

At the close of Mr. Loomis' address the question of feed was again taken up, but no new facts were elicited.

Review of the Dairy Interest.

Mr. J. H. Real, of Philadelphia, now addressed the convention in a lengthy paper, giving a review of the dairy interest, and counseling dairymen as to the manufacture and disposal of their product. He depreciated in very strong terms the skimming of milk for cheese-making, and believed the "skim cheese" manufacture, if continued, would destroy our reputation abroad. Skim cheese is becoming a drug in the market. The English demand for our dairy products should be a great incentive to our keeping up a high standard of quality, especially as we have to compete with other nations on the Continent of Europe. So good a customer as England must not be lost through any inferiority in our cheese and butter, and it will be found that the mode of manufacture has as much to do with the saleable quality as anything else. He deprecated in unmeasured terms the manufacture of "Oleomargarine," or artificial butter, and spoke of the new process of using that substance to improve skimmed milk for cheese-making as a fraud.

Views of Others in Skimming.

In regard to making skim cheese and butter from the same milk, Mr. Real was endorsed by Mr. D. H. Burrell, of Little Falls; by Mr. John Shattuck, of Chenango, Crocker, of Broome, and others. They spoke of the practice as injurious to the cheese interest of the country, and urged its abandonment. Some of the speakers thought the dealers were to blame, and ought to reject the cheese and tell the makers that they will not buy it; then there would be little made. Mr. O. C. Crocker, of Broome county, dared any man to rise and advocate skimming. Mr. Munson, of Delaware, accepted the challenge. He advocated the practice simply on the ground of profit. In regard to the statement made by Mr. Real that Boies allowed forty cents per 100 pounds as the value of skimmed milk for making pork, he thought the value too high; yet for the same quantity of skimmed milk made into skimmed cheese sixty cents could be realized. He did not care to have many rush into the business, but there could be no doubt that the creamery practice yielded the most money. He referred to the statement of John Shattuck, who realized $1 34 per 100 pounds milk carried to a whole-milk cheese factory, and said his (Munson's) creamery had returned better results to patrons. The question was discussed at some length, and with a good deal of feeling.

Thursday's Session.

The first address in the morning was by J. V. S. Scoville, of Oneida, on an experimental dairy farm. Mr. Scoville gave an account of the results obtained at the experimental stations in Germany, and the advantages which the farming interest has gained from well-conducted scientific investigation. His address was replete with valuable information, and was accompanied by a chart of the state, showing where the dairy lands are located. He presented statistics showing the number of acres required to carry a cow in each county, the product of cheese per acre, and the amount of cheese per capita. He advocated the plan of raising funds for meeting the expenses of the movement by soliciting contributions from the various agricultural societies in the State.

Prof. Wickson, of Utica, spoke of the influence of the market in determining the quality and form of the product. There is a commendable disposition among factory-owners and cheese-makers to adapt their cheese to the wants of the market, but the methods which now exist for learning the exact features of the demand were pronounced insufficient and sometimes untrustworthy. The trade can do the manufacturers good service by spreading a more definite idea of what kind of uniformity would be most desirable. This work can be done by a congress of dealers at a great centre where the wants of the trade are exactly known. He said that Prof. Cairns draws from his study of market prices the conclusion that agricultural products of vegetable origin are subject to sudden and considerable fluctuation, while the commodities of animal origin rarely rise rapidly, but when an advance is established it is commonly held for a long time. The speaker next treated at some length the improved methods of marketing which have been devised by the dairymen, tracing the steps from the old-fashioned sale in the fall at the factory to the recent Board of Trade plan, and claiming that the development in the trade has been as marked as in manufacture. He urged salesmen to take a wider view of the trade, and study not quotations alone, but all influences which can bear on the trade.

MR. E. R. PHILLIPS, of Thurlow, made 440 pounds of cheese the other day from 3,620 lbs of milk, and Mr. Brantnell's (Union Factory, Canifton) 534 lbs of milk.

☞ Secretaries of Agricultural Societies throughout the country will confer a favor by sending us the date and place for holding the Agricultural Shows for 1875. We shall also be glad to receive notices of Agricultural meetings, sales of stock, and other items of information suitaed to these columns.

☞ The Agricultural matter published in the WEEKLY GLOBE is *entirely different* from that which appears in THE CANADA FARMER. The Editorial staff of THE CANADA FARMER is quite distinct from that of THE GLOBE.

The Canada Farmer

TORONTO, CANADA, JANUARY 15, 1874.

1875.

For many years the Government of Canada—with wise regard to the national importance of improving the system of agriculture throughout the country—permitted all agricultural journals published in the Province to pass through the Post Office free of postage. The result of this liberality was the publication of excellent agricultural papers at so low a price as to place them within reach of the most close economist, either directly from the publishers, or through the ageney of the Township and County Agricultural Societies. In 1868 this policy was changed to one of direct antagonism to agricultural publications by the imposition of so onerous a postage rate on monthly journals as to prohibit their distribution at the low prices of previous years—and the wide circulation of such papers was in consequence seriously affected. It is now rumoured that the Postmaster-General proposes to ask the assent of Parliament during the coming session to the adoption of a more just system of newspaper postage than that existing since 1868.

In full confidence that this measure of justice to the agricultural interest will be presented to Parliament and adopted, the publishers of THE CANADA FARMER return this year to their old position and present their journal to the public as a monthly paper, at one dollar per annum, free of postage, and with large discount to agricultural societies subscribing for a number of copies.

THE FARMER during the coming year will have the advantage of a staff of editors, contributors and correspondents, surpassing in ability and experience that of any previous year. Some new and interesting features will shortly be added to its pages, and no pains will be spared to render it a thoroughly efficient agricultural journal.

We ask all our old friends to aid in extending the circulation of the FARMER for the coming year.

The Month.

A greater variety of work can perhaps be done by the Canadian farmer in January than during any other month of the year. The threshing and disposal of last season's crop will, in most instances, have to a very large extent at least, become a thing of the past; stock put up in the fall for the christmas fat cattle market will have exchanged their stalls for the shambles; and, in short, nearly all, if not the entire surplus products of the farm will have taken the shape of those crisp Canadian bank notes, or glittering American eagles which expand the wallets and countenances of all other "children of men" as well as the "horney-fisted" farmer.

While, however, the larger proportion of the work originated during the past year has thus been brought to a satisfactory close, there still remains a good deal to be done. Many persons are at this moment feeding stock for the Easter market, a work which involves a continuation of the labor and anxiety already experienced. To all such we would recommend a perusal of the article on "Oil-cake," which appears in another column, reiterating the advice there (and so frequently in these pages) given, to feed liberally and let the animals have ample and comfortable accommodation. Few persons have anything like a correct idea of the increased ease and rapidity with which beef can be "laid on" when the conditions last mentioned are faithfully attended to, or of the all but criminal wastefulness which invariably accompanies their neglect; and we may state in this connection, that whilst fully convinced that stock raising is destined at no distant day to be the main-stay of Canadian farming, we feel equally assured that before that devoutly to be wished for era arrives, there must be very material advancement made in those branches of rural science which pertain to the care and management of farm stock.

month.

The first and perhaps the most important duty is the proper disposal of manure. This, whether barn-yard manure, swamp-muck or other material should be hauled out on the sleigh and deposited in heaps ready for distribution in spring. It has been shown that little or none of its fertilizing constituents are lost by this course of treatment, whilst the facility with which it can be handled now, is a vast saving of expense.

Farm implements of every description should be overhauled, and when practicable oiled and painted. Bolts, breaks of all sorts, gaping joints, &c., should be put to rights, without any delay. The plough you left sticking in the furrow last fall, will have a nice looking mould-board to commence operations with next spring. And the mowing machine that the old sow is rubbing herself against will have a set of such beautiful bright, sharp knives to do duty with in the hay field by and by! What do you say to putting a nail into the upper hinge of that drooping gate, and wheeling that overflowing ash-barrel to the manure heap? The tire of that waggon requires setting, and if left till spring the probability is that you will have some re-loading to do when you least wish or expect it. Put the bars of that hay-rack a little closer together, and replace the one you tore out at hog killing time to make a "gambel" of.

One of the great advantages of our long Canadian winter evenings is the opportunity they afford for mental improvement, and the laying of plans for future operations. In this age of cheap, wholesome literature there can be no excuse on the former score. But what of the latter? Have you followed the directions so repeatedly given in these columns about making a map of the farm? Have you thoroughly mastered the peculiarities of soil, &c., in each field, and are you perfectly satisfied as to the crop or crops best adapted for each and the proper course of rotation? Can you show an intelligible balance sheet of your last year's farming transactions, and have you opened a regular farm account for the current year?

Lastly, have you subscribed for the CANADA FARMER and induced all the neighbors within your reach or influence to administer to their own advantage and our encouragement by doing likewise?

THE ENGLISH CROPS OF 1874.—From official reports recently published, and other reliable data, it appears that the English wheat crop of the past season is the largest that has been secured in Britain for many years. Out of an aggregate of 432 returns, 328 or about 76 per cent of whole are over an average. During the eleven months, ending 30th of November last, the imports of wheat and flour exceeded the importations of the corresponding time of 1873, by over 1800 tons, and to this increase must be largely attributed the "glut" and consequent depreciation in the market. The price of wheat is very low, so low, indeed, that the economy of feeding it to stock, is engaging the attention of farmers' clubs and breeders, in all parts of the country. The barley crop, although a partial failure in some cases, owing to the early drought, is likely to prove, on the whole, the most remunerative of the cereals, being quoted in the market at one dollar per quarter higher than the best red wheat. Oats, peas, &c., are very much below the average, and prices rule high.

Commerce and the Farm.

It seems to be a prevalent idea with many farmers' sons throughout the country that farm life is a kind of drudgery, an incessant toil from day to day, and year to year, yielding as its only profit just what the soil pleases to produce; and the agriculturists' position they regard as one of wearisome, monotonous waiting for something better to turn up, his business transactions being mainly that of selling a crop as soon as it is threshed, or holding it over until he is obliged to sell at a sacrifice. Out in the world they imagine they see numberless inducements and chances for making fortunes. They envy the merchant, the manufacturer and the mechanic, and, comparing lots, imagine themselves entirely in the back-ground both financially and mentally. No speculations to test the ingenuity or draw out the mind; no circumstance connected with their calling calculated to enlist even a passing degree of interest; whilst in the cities and towns all things combine to develop the pocket and mind of a man, and give him his proper place amongst his fellows.

Now, there is scarcely a quality of activity, shrewdness or skill which gives success to the commercial man, but could be even more profitably employed on the farm. There is really more speculative genius required in the latter than in the former position, and much greater facilities afforded for its development. A merchant may be deceived in a purchase, and his goods may in consequence lie for months, perhaps years, in the shelves. But the farmer's purchase means simply the production of his soil, and a mistake here means not only an immediate loss directly, but also a continued and augmented series of losses from the same by repetition, if not properly and opportunely remedied. A poor farm implement may not only consume the time necessary to replace it by a better one, but may also hazard an entire crop by its failure at the required time. Again, in the selection of animals for the moulding and formation of a herd, where can greater skill possibly be exercised. All these require foresight, taste, judgment and wisdom, which no man ought to despise. But the farmer being more a seller than buyer, it is in the latter capacity he is called on to exercise more than an ordinary degree of commercial skill. He should not only know how to sell, but when to sell, and the training requisite to give him such knowledge, implies a much greater breadth of research, observation and calculation, than is usually attained by the ordinary merchant. An intelligent and successful farmer ought to be, and indeed most frequently is, a man of much deeper thought and penetration than an equally successful shopkeeper. The one draws his knowledge direct from nature's storehouse, and traces the commerce bearing upon his particular branch to its source; implying an acquaintance with the crop-standing of all the leading countries of the world, its probable results as affecting that of his own country, and the consequent figure which should to a large extent rule the market. The latter's stock of information is much more superficial and transitory; here to-day, away to-morrow. The one replenishes his store ever from the fountain source, the other mainly from the chit-chat of his customers as they drop in from day to day. Can there be any question then as to which position offers the greater chance and opportunity for the practice and development of all those qualities which combine to mark the perfect man?

Hints on Constructing Walls and Partitions.

We apprehend that the great points to be considered in this country in the construction of a building, are two in number, other considerations being equal, viz., to have it first, warm in winter, and, second, cool in summer. Now, by the simple study of the principles of conduction and radiation, we could, in great measure, secure these two boons with scarcely any extra expense; at least, we could render our buildings fifty per cent. better in these respects than they are. It is a well known fact that light, porous substances are much worse conductors of heat than those that are hard and compact. Go for instance on a winter day and lay your hand on a piece of iron or steel, and the chances are that it will be frozen in a very short time; next lay it on a piece of hard wood, beech or maple for instance, the cold is not so great, but still it is very uncomfortable; try pine next, and the feeling is more tolerable, and so on down to feathers, if you like, when you will feel no cold whatever. Now, in each of these different articles the intrinsic temperature may have been, and most probably was, precisely the same, but the reason you did not feel it so was that iron is a better conductor than wood, that is, iron extracted heat more readily out of your hand than did wood. In like manner, hard wood is a better conductor than pine, and pine than feathers. The first lesson then is obvious: build your walls and partitions (if your house is to be a wooden one) of pine, and if you desire to carry the principle still farther, make your walls all double and fill the recesses or intervals with sawdust or tan-bark. The results will surprise you. Another principle is that those articles which are the worst conductors are the best radiators, that is, while they serve to retain what heat is already within, they are very loth to admit any more. This is the reason that sawdust is one of the very best preservatives of ice in the heat of summer. Confined air has also been found an excellent thing for purposes of warmth in winter—hence our double-window system, and hence it is that many are now purchasing hollow bricks for building purposes. Snow is a very bad conductor and herein we see one of the wonders of Creative Wisdom, that the very severity of cold, by producing those feathery crystals, spreads a covering over the earth which protects from its own freezing effects the tender herbage buried beneath its ample shelter.

National Association of American Short-horn Breeders.

The third annual convention was held at Springfield, Illinois, commencing on Wednesday, the 2nd December. There were about one hundred Short-horn breeders in attendance, representing nearly all the principal stock growing States and Canada, and the meeting appears to have been a useful and harmonious one. An interesting address by the president, Dr. A. C. Stevenson, Greencastle, Indiana, will be found elsewhere in these columns. Mr. M. Briggs, of Iowa, read an essay on the Short-horn family of cattle, demonstrating their superiority for all classes of stock breeders, and W. R. Duncan, Towanda, Illinois, two papers, one on General Breeding and the other on the proper conditions and management of Short-horns for breeding purposes. Both gentlemen were listened to with marked approval. The other essayists were Dr. Spragen, of Iowa, and W. S. Bailey, of Buffalo, N.Y., the former reading a paper on the barrenness of high bred cattle and how to prevent it, and the latter an equally instructive article on the color of cattle, showing the fallacy of fashion in this respect, backed up by a huge volume of statistics, showing that the light colored Short-horns, by a very large per cent. have proved the superior cattle in the prize ring and on the butcher's block.

The election of officers for the next two years resulted as follows:

President.—J. H. Pickrell, Illinois.

Vice-Presidents.—William Warfield, Kentucky, and David Christie, Canada.

Secretary.—S. F. Lockbridge, Indiana.

Treasurer.—Claude Matthews, Indiana.

Directors.—Gen. L. Desha, Kentucky; T. C. Jones, Ohio; M. Miles, Michigan; J. R. Page, New York; Stephen White, Ontario; M. H. Cochrane, Quebec; Clint Babbitt, Wisconsin; A. J. Dunlap, Illinois; George Sprague, Iowa; J. H. Kissenger, Missouri; Harvey Craven, Indiana; Cyrus Jones, California; D. W. Crane, Kansas; M. S. Cockrell, Tennessee.

Toronto, Canada, was selected as the place, and Dec. 2d., 1875, as the time for the next meeting of the Association.

A committee, of which the President, J. H. Pickrell, Harristown, Ill., is Chairman, was appointed to collect statistics of the Short-horns in the United States.

A committee made the following important report, which was adopted:

Your committee, to whom was referred resolutions in relation to pedigree, respectfully report that, while they recognize the importance of purity of blood in Short-horns, it is believed that it is not within the province of this association to publish a herd book or to lay down arbitrary rules for the guidance of the proprietors and editors of herd books, which are private property. Your committee is likewise satisfied that the constant discussion of the subject of recording pedigrees is productive of harm, by interfering with the rights of individuals. We therefore recommend that the resolution referred to be indefinitely postponed, and that each man be allowed to judge for himself of the purity and authority of pedigrees.

American Short-Horn Sales for 1874.

During last year 62 sales of Short-Horns came off in America, at which 528 bulls were sold for a total of $140,768, and 2,064 females for $863,091. Grand total, 2,592 head, for $1,004,159. Kentucky held 24 sales, Illinois 19, Canada 8, Indiana 3, Ohio 2, Maryland, Minnesota, Michigan, New York, Missouri and Wisconsin, each 1. Kentucky sold 1,263 head for $445,829; Illinois 650, for $230,656; Canada 232, for $80,594; Indiana 162 for $43,260; Ohio 57, for $16,325; Maryland 48, for $23,085; Minnesota 79, for $126,990; Michigan 19, for $14,985; New York 36, for $14,560; Missouri 40, for $17,105; Wisconsin 6, for $790. Illinois averaged $366 per head, males and females; Kentucky $353, Indiana $243, Canada $347, Ohio, $281, Maryland $481, Minnesota $1,621, Michigan $262, New York $404, Missouri $428, Wisconsin $132. Average of all, $387. The bulls averaged $267, and females $413. Col. King's sale, in Minnesota, more than doubled any other in amount, and he received the highest price for a single animal, $14,000. E. G. Bedford received $7,000 for one bull, and J. H. Spears & Sons of Illinois, $5,800. The highest priced cow brought $6,000, at E. G. Bedford's sale. The lowest price paid was $10 for a bull. We deduce the above from the *National Live Stock Journal*.

In 1870 the *Country Gentleman* recorded the results of 16 sales at which 495 head of Short-horns, of both sexes and all ages, were sold at auction for the aggregate sum of $169,557—being equal to an average of $343 per head.

In 1871 the same journal recorded the results of 15 sales, at which 407 head were sold, for the aggregate sum of $117,914—being an average of $290 each; in 1872, 29 sales, at which 1,014 head were sold for the aggregate sum of $317,256—being an average of $312,87 per head; in 1873, 49 sales, at which 1,836 animals were sold for the aggregate sum of $976,527—being an average of $312.87 per head; and in 1873, 49 sales at which 1,836 animals were sold for the aggregate sum of $976,527—being an average of $531.88 per head.

Its record for 1874 embraces:—

	No.	Average.	Total.
58 Sales in United States	2,412	$392 77	$947,369
10 Sales in Canada,	264	316.99	83,685
68 Sales—Total	2,676	$385,30	$1,031,053

The aggregate for the five years embraced above, is as follows;

	Sales.	Head.	Average.	Total
1870	16	495	$343	$169,557
1871	15	407	290	117,914
1872	29	1,014	313	317,256
1873	49	1,836	532	976.527
1874	68	2,676	385	1,031,053
Total, five years,	6,428.		$407	$2,612,307

We believe that neither of the above statements is absolutely correct, but of the two, that given in our Albany contempory is decidedly nearest the mark.

Capacity of Cisterns.

The capacity of cisterns may of course at any time be calculated by following the ordinary arithmetical routine, which has already been fully explained in the columns of the CANADA FARMER. But a very great number of persons, perhaps the great majority, are unacquainted with these arithmetical rules, and still more so with the operations they involve, such as the extraction of roots, &c., &c. We therefore propose in this paper to give a simpler method of computation, which any one having the slightest acquaintance with figures may apply for himself. Cisterns are usually, indeed we might almost say always, constructed of a circular form. The following is the mode of computation for such forms. First, find the *depth* and *diameter* in *inches*; square the diameter, *i.e.*, multiply it by itself; then multiply this square again by ·0034, and the result will be the number of gallons *for each inch* in *depth*. Multiply this by the depth and divide the product by 31½; the result is the number of barrels in your cistern.

For example, a circular cistern is 6 ft. or 72 inches in diameter, and 4 ft. or 48 inches in depth—find its capacity:

72 × 72 = 5184, the square of the diameter.

5184 × ·0034 = 17·6256 gallons to each inch in depth of the cistern.

17·6256 × 48 = 846·0288 gallons in the whole cistern.

And 846·0288 ÷ 31½ = 26 4-5 or very nearly 27 barrels in the cistern

By a calculation such as the above we may construct a table showing the number of barrels answering to each foot in depth at any diameter. The process then becomes

one of simply multiplying that number of barrels by the depth in feet, which gives the whole contents. Thus:

For	5 feet in diameter,	the number of barrels per foot in depth is		4·66
"	6 "	"	"	6·71
"	7 "	"	"	9·13
"	8 "	"	"	11 93
"	9 "	"	"	15 1[illegible]
"	10 "	"	"	18 65

Considerable trouble could be saved by simply cutting out this table and inserting it in your pocket-book.

Professor Pratt's Exhibitions.

A few evenings since we had the pleasure of witnessing one of a series of lessons in "horse education," given by Prof. Pratt, to a class of over 1,000 members, now under that gentleman's instruction in this city.

On entering the "School"—a spacious and well lighted amphitheatre, situated directly in rear of the Rossin House—our first impulse was to look about for the chains, ropes, curb bits, blue beeches, and other persuasive appliances usually employed in bringing the equine race under subjection, but in this we were agreeably disappointed; nothing of the sort was to be seen, the entire apparatus used during the course of the evening being of the mildest and most simple character.

Previous to entering upon the real business of the hour—the handling of a strange animal—Mr. Pratt gave a public exhibition of his training powers; the subject being a middle-size, dapple-grey horse, which he "drilled" in a manner that would have put to the blush some of the most popular experts of the circus ring.

An untutored animal was then introduced in the shape of a light, lank, nervous and kicking bay, and a pacer into the bargain. In less than ten minutes, the Professor had the animal prostrate on the ground and a lad busily employed tickling its hind legs and quarters with a stout pole, another cracking a whip in close proximity to its body &c; and all this without the slightest signs, on the part of the horse, of either fear or resentment. In order more fully to test the efficacy of the lesson on kicking, the animal was next hitched, *without hold-backs* to a sulky, and driven rapidly round the ring, being suddenly stopped at intervals, to occasion the vehicle's coming forward with great force against his heels. The ordeal was endured without the slightest tokens of anger or impatience, and the cure was considered complete.

Mr. Pratt concluded the performance by changing the natural pacing gait of the animal to that of a trotter. We are not permitted, of course, to reveal the means adopted for the purpose, but we may state that they were marvellously simple, and that within ten minutes from its first fearful and ludicrous attempt the animal could *trot* round the ring with all the dignity of a Dexter.

We have seldom passed an evening so pleasantly, or with so much real profit, and our advice to every farmer and farmer's son in the country is, to take a course of lessons if possible, but at all events to attend one of Professor Pratt's public exhibitions. We feel perfectly satisfied that a couple of hours spent in witnessing one of these performances will impart a better idea of the nature and management of the horse than is possible to obtain by any course of reading on the subject, and in this respect alone one such entertainment is worth fifty times the amount charged for a life membership.

North American Ayrshire Cattle Register.

The importance of a correct registry for the preservation of a breed in its purity, is too well recognised to require argument or explanaton, and the appearance of a trustworthy register has invariably added saleable value to the stock registered therein, whether of the Jersey, Holstein, Short-horn, or other breeds.

The following scheme of registration is submitted by Sturtevant Bros., of South Framingham, Mass., for the approval of breeders of Ayrshire stock:

There are two forms of blanks. White for animals bred in this country, and brown for imported animals. A supply of these will be sent on application, for postage only.

No animal bred in this country is admitted to entry, unless both sire and dam are also entered, consequently the sire and dam must not be described on the same sheet with their progeny, only their names given with reference letters, referring to blanks of their own. The whole ancestry must be followed back, with a sheet for each animal, until reference is made to a brown (imported) sheet.

Every sheet is an application for entry, and will be preserved by the editors in a manuscript volume for the benefit of breeders.

The entrance fee is one dollar for each animal recorded by the owner; the fee for any animal not owned by the applicant for registration, and necessary for the completion of the pedigree, is twenty cents. Any animal not living, and necessary for the completion of a pedigree, will be entered gratuitously by the editors.

Color, breeder and owner, and the date of birth or importation, must be furnished with the pedigree, and each blank must be signed in the proper place, by the applicant.

The breeder is the person that owns the cow when served by the bull.

A transfer book will be kept by the editors, and all changes of ownership will be recorded, for a transfer fee of ten cents, but *only on the written application of the former owner* Whenever a new volume is published, record of transfers up to date will be given.

Tying Knots.

The mere tying of a knot would appear at first sight a very trifling matter, and yet how much valuable time might often be saved, and what a vast deal of worry and annoyance might be avoided were every one familiar with exactly the sort of knot required to meet every contingency.

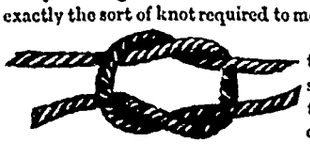


Fig. 1.

For the benefit of those who may wish to still further perfect themselves in an accomplishment which every farmer's son ought to have at "his finger's end," we give the following drawings and description of the knots most generally used. Fig. 1, known as the "reef knot," is that made use of by sailors in joining the ends of ropes. It is one of the neatest, as it is also the most secure of all knots, and has the further advantage of being exceedingly simple and easy to learn. Fig. 2 represents another form of knot, resembling the former in appearance, but vastly inferior in practice. It answers very well, however, for tying up small parcels, when the cord has to cross at right angles.

Fig. 2.

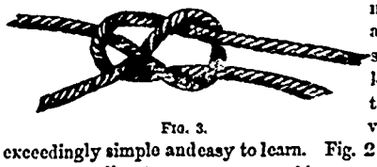


Fig. 3.

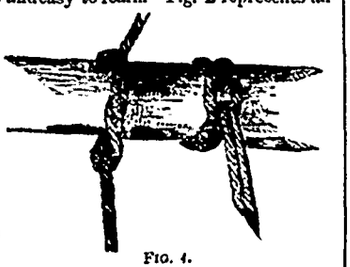


Fig. 4.

Fig. 3 is the celebrated "weaver's knot," and is made as follows: Lay the ends of the two cords to be united between the thumb and first finger of the left hand, the right hand end undermost; pass the right hand cord back over the thumb to form a loop, and bring it back under the thumb and hold it fast. Now put the end of the upper or left hand cord over the right hand cord and through the loop. Catch it with the thumb and finger of the left hand and tighten by drawing the right hand. Fig. 4 represents the "timber hitch," so useful in attaching a rope to a heavy piece of timber, tree, &c., where a continued strain is to be applied. The right hand part of the same figure shows the manner of forming a noose with a double rope. A simple and secure loop, much used by merchants and others who have to do up heavy packages, is shown in Fig. 5; and the best method of tying a halter is represented by Fig. 6.

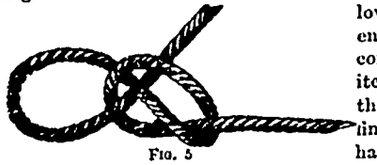


Fig. 5

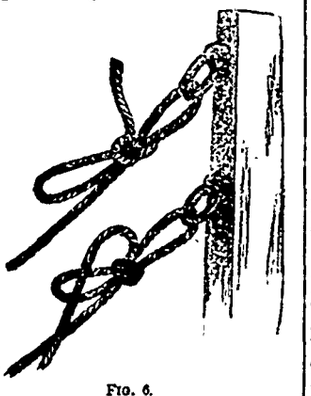


Fig. 6.

Agricultural Shows this Year.

The shows for the past year being all over, there are one or two lessons which we think might be drawn from them with reference to the future. The first conception of the idea of establishing fairs was that they should serve as schools of agriculture and mechanics, as occasions upon which farmers and manufacturers should meet, compare notes, hear and suggest improvements in this, that, or the other thing, and thus learn mutually of one another, to the general good of themselves and the country at large. The money voted by the Legislature and by Municipal Councils towards the furthering of such objects could not be better expended, and in so far as the advancement of the same is concerned, the sums might very wisely and very profitably be trebled. But it surely was not a part of the early show stipulations that they should be accompanied by the side-shows and horse-races which have become almost inseparable from them in modern days. These latter are innovations quite unknown in either the agricultural or family vocabulary, and since they have literally no interest whatever in common with the farming community, would it not be a decided improvement to do away with them; to forbid them the limits, and should they presist, charge them such an onerous license fee as will cure further attempts.

The Report on the Agricultural College.

After wading for several sittings through a mass of evidence characterized as "frivolous," and "consisting chiefly of gossip and petty scandals amongst the former officials and employees," the Parliamentary Committee appointed to investigate the difficulties connected with the management of the College Farm, at length came to the only sensible conclusion possible, viz., that they found "it was not in the public interest to pursue the enquiry farther." We heartily congratulate the country on the winding up of what has been, to say the least of it, an exceedingly nasty piece of business, and trust that, under the new management, the Institution will ultimately prove of more benefit to the Agricultural interests of the country at large than even its warmest admirers could expect. The following is the Report in full:

"1. That owing to the close of the session and the frivolous character of a large portion of the evidence adduced, consisting chiefly of gossip and petty scandal amongst former officials and employees of the Institution, this Committee is of opinion that it is not in the public interest to pursue the enquiry further.

"2. That from the evidence adduced, including the evidence of Professor McCandless, it appears that injurious dissension and dissatisfaction occurred in the said Institution while it was under the management of the said Professor McCandless.

"3. That in the opinion of this Committee the Government were fully justified, on the facts disclosed, in dispensing with the services of Professor McCandless as Principal of the said Institution.

"4. That in the opinion of this Committee the present condition and management of the said College are satisfactory.

"5. That the evidence adduced and proceedings of this Committee be reported to this House."

Ontario Veterinary College.

The examination of the students attending the autumn session of this institution was commenced on Wednesday the 15th ult., and closed on the 17th.

The Board of Examiners was composed of Mr. Edward Hagyard, V. S., Campbell's Cross; Mr. Robinson, V. S., Pullamore; Mr. Lloyd, V. S., Newmarket; Mr. Ceasor, V. S., Port Hope; Mr. Cowan, V. S., Galt; Mr. Wilson, V. S., London; Mr. Sweetapple, V. S., Brooklin, and Drs. Thorburn and Barret and several gentlemen, members of the Arts and Agricultural Association.

The following students passed a final examination and were awarded the diploma of the College:—Messrs. B. Stirling, Pine Grove; V. T. Atkinson, Nelson; John Aikenhead, Clinton; Wm. Anderson, Sandhill; F. Campbell, Toronto; Wm. Felseter, Paris; J. W. Fasken, Elora; Thos. Hodgson, Toronto; F. W. Lepsell, Campbell's Cross; William Somerville, jr., Buffalo, N.Y.; M. H. Teneyck, Woodburn. Mr. Swinburn, of Montreal, passed a primary examination in anatomy and materia medica.

A large meeting of graduates of the College took place, when they organized the Veterinary Medical Association which was spoken about in May last. The following were elected office-bearers: Mr. A. Smith, V.S., President; Mr.

Ed. Hagyard, 1st Vice-President; Mr. J. W. Wilson, 2nd Vice-President; Mr. Wm. Cowan, Galt, Treasurer; Mr. C. W. Sweetapple, Brooklin, Secretary; Committee—Messrs. Elliott, Bond, Lloyd, Grange, Coleman, Duncan, Ceasor and Robinson. A constitution was submitted and adopted by the assembly.

Dr. Smith, V S, read the paper on convulsive ergotism in cattle, which appears in the veterinary department of our present issue. This is a disease of recent experience in the veterinary line, and is caused from the animals feeding on sprouted barley or the refuse from breweries and distilleries. Mr. Hawkins read a paper on splenic apoplexy in cattle. These were followed by an interesting discussion on subjects connected with the profession. The Association will meet again at the close of the present session, which opened on the 7th inst.

Large Purchase of Short-horns by the Hon. M. H. Cochrane.

The rumor of the intended sale in April of the Slausondale Short-horns, the property of Mr. George Murray, Racine, Wisconsin, has had the effect of arousing Mr. Cochrane to a sense of "the situation," and accompanied by Mr. Simon Beattie, the former gentleman recently made a raid on the Slausondale herd, purchasing twelve of the choicest cows and heifers, including the six Duchesses—one of the most important private sales ever made in the United States.

Mr. Cochrane does not propose to give up the Booth branch, but buys this lot to fill the "aching void" caused by previous sales. The Duchesses are all a good, healthy, useful looking lot, and the purchase places the Hillhurst herd in a very high position.

Since writing the above, we notice in the *Country Gentleman* a dispatch from Mr. Page conveying the intelligence that *Mr. Cochrane has also bought of Col. W. S. King the bull Second Duke of Hillhurst, for fourteen thousand dollars*, the same price at which this bull was bid off at Col King's sale last spring to the Englishman who failed, as will be remembered, to complete his purchase; and still later, a dispatch from Mr. Cochrane stating that the animals purchased at Slausondale had arrived in Montreal, and that the Duke was to follow in a few days.

The new Principal of the Model Farm.

It is stated upon what we believe to be very good authority that the Government have at length secured the services of an able and eminently practical gentleman to fill the position of Principal of the Agricultural College.

Mr. Roberts, the gentleman referred to, has, for several years past, been engaged in the improvement of lands in the county of Surrey, England, and is well-known as an active member of the Royal Agricultural Society.

Commencing his career at Cirencester, in February, 1863, by securing a valuable scholarship, he pursued his studies with great success, and in December, 1864, obtained the Haygarth gold medal, and the College diploma. Since that time his career has been an exceptionally brilliant one, and he to-day occupies some of the highest positions that it is in the gift of English Agriculturists to bestow.

We sincerely trust that the negotiation pending may be brought to a successful issue, and then, under the management of Mr. Roberts, the Model Farm will soon become a credit to the country.

The English Short-Horn Herd Book.

The Committee appointed in July last to negotiate with Mr. Strafford for the purchase of "Coate's Herd Book," having failed to come to terms with that gentleman, it was unanimously resolved that a Short-Horn Society be formed with power to "re-enter upon the negotiation with Mr Strafford for the purchase of his copyright whenever any reasonable opportunity may arise, and shall in the meantime collect and carefully verify information as to all current transactions as regards short-horn breeds, pedigrees, sales, &c., this information for the present to be recorded and preserved in manuscript, and to be available for the use of members of the society." We are now glad to learn from late English exchanges that the differences between Mr. Strafford and the Committee have been satisfactorily arranged; that the agreement by which the Committee become provisionally the purchasers from Mr. Strafford of the Herd Book has been signed by both parties, and that the society when duly formed will become possessed of the stock and copyright generally.

Agricultural Intelligence.

Patrons of Husbandry.

This organization, although in existence in Canada only since last Spring, is extending rapidly, and there is little doubt that before the end of the present year, Granges will be established in every part of the country. The following is a Report in full of all Granges in operation on 1st January, 1875:—

Dominion Grange

S W. Hill, Master, Ridgeville; Thomas W. Dyas, Secretary, Toronto.

Division Granges.

1. LONDON.—Wm. Little, Master, Lambeth; W. L. Brown, Secretary, Hyde Park.
2. GREY.—M. Gardner, Master, Woodford; A. Gifford, Secretary, Meaford.
3. NIAGARA DISTRICT.—Robert Green, Master, Attercliffe; Peter Learn, Secretary, Ridgeway.
4. SIMCOE.—F. Strangway, Master, Bond Head; G. J. Gaviller, Secretary, Bond Head.
5. LAMBTON.—John Hutchison, Master, Sarnia; Silas Mills, Secretary, Sarnia.

Subordinate Granges.

1. INTERNATIONAL.—A. P. Ball, Master, Stanstead; G. G. Field, Secretary, Stanstead.
2. BARNSTON.— ——, Master, ——; ——, Secretary.
3. GOLDEN.—A. E. Damon, Master, Drew's Mills, P.Q.; ——, Secretary, ——, ——.
4. SHIPTON.—L. Leet, Master, Danville, P.Q.; R. M. J. Barnard, Secretary, Danville, P.Q.
5. AYLMER.—Lord Aylmer, Master, Melbourne, P.Q.; John Main, Secretary, Melbourne, P.Q.
6. FRELIGHSBURG.—C. C. Abbott, Master, Frelighsburg, P.Q.; Zeno Whitman, Secretary, Frelighsburg, P.Q.
7. DUNHAM.—R. G. Galer, Master, Dunham, P.Q.; B. Terril, Secretary, Dunham, P.Q.
8. VICTORIA.—E. B. Mithell, Master, St. Armand, Stn., P.Q.; ——, Secretary, ——.
9. MAPLE.—H. H. Hibbard, Master, Abbott's Corners, P.Q.; L. R. Whitman, Secretary, Knowlton, P.Q.
10. LOUGNEUIL.—J. F. Cass, Master, L'Orignal; C. A. Cass, Secretary, L'Orignal.
11. ADVANCE.—Wm M. Beattie, Master, London; J. H. Elliott, Secretary, Wilton Grove.
12. WINCHESTER.—Jos. L. Holmes, Master, Cass Bridge; C. A. Cass, Secretary, Cass Bridge.
13. GEORGIAN.—A. Gifford, Master, Meaford; William Clark, Secretary, Meaford.
14. SYDENHAM.—J. F. Rogers, Master, Woodford; Mathew Gardner, Secretary, Woodford.
15. ST VINCENT.—Henry Palmer, Master, Meaford; H. M. Marshall, Secreeary, Strathnairn.
16. DELAWARE.—Wm. Weld, Master, London; R. C. Hammond, Secretary, Delaware.
17. PELHAM.—S. W. Hill, Master, Ridgeville; W. Pemberton Page, Secretary, Font Hill.
18. LUNDY'S LANE.—Anson Garner, Master, Drummondville; Walter Ker, Secretary, Drummondville.
19. ELGIN PIONEER.—Stephen Wade, Master, Union, E. D. Scott, Secretary, Union.
20. ROYAL OAK.—James Burgess, Master, London, W. L. Brown, Secretary, Hyde Park.
21. FOREST CITY.—Harry Bruce, Master, London; Jno. Dyas, Secretary, London
22. PLYMPTON WIDE-AWAKE.—Jas. Armstrong, Master, Uttoxeter; Thos. Doherty, Secretary, Uttoxeter.
23. PROTECTIVE.—Wm. Cole, Master, Sarnia; S. Mills, Secretary, Sarnia.
24. LAKESIDE.—Major Daniels, Master, Kincardine; G. C. Ross, Secretary, Kincardine.
25. VICTORIA.—Johnson Leader, Master, Meaford; Jacob Wilcox, Secretary, Meaford.
26. WESTERN STAR.—John Waddell, Master, Sarnia; John McWhorter, Secretary, Sarnia.
27. NORTH NORWICH.—Elias Mott, Master, Norwich; D. S. Butterfield, Secretary, Norwich.
28. EAST WILLIAMS.—W. J. Anderson, Master, Fern Hill; Wm. McCallum, Secretary, Fern Hill.
29. MAPLE LEAF.—John McGlashan, Master, North Pelham; Peter Metler, Secretary, North Pelham.
30. DARLINGTON.—Jesse Trull, Master, Bowmanville; Wm. Wilson, Secretary, Oshawa.
31. BRANT.—W. S. Campbell, Master, Brantford; F. P. Strickland, Secretary, Brantford.
32. MUTUAL.—John H. Little, Master, Lambeth; Eli L. Davis, Secretary, Tempo.
33. SMITH.—Alex. White, Master, Colinville; Clement White, Secretary, Colinville.
34. UNION.—David Paterson, Master, Copetown; M. C. L. Kitchen, Secretary, Copetown.
35. HALTON.—Robert Howes, Master, Drumquin; John Phenix, Secretary, Drumquin.
36. NORTH OXFORD.—Jonathan Jarvis, Master, Ingersoll; Edwin Jarvis, Secretary, Ingersoll.
37. ELM TREE.—James Manning, Master, Schomberg; M. C. Brandon, Secretary, Schomberg.
38. BEAVER.—Samuel E. Phillips, Master, Schomberg; Isaac Powell, Secretary, Schomberg.
39. RICHMOND.—Robert Thompson, Master, Napanee; Lydia Caton, Secretary, Napanee.
40. MOULTON.—Robert Green, Master, Attercliffe; Jno. Green, Secretary, Attercliffe.
41. WELLAND.—R. S. Garner, Master, Welland; J. S. Page, Secretary, Welland.
42. PENNVILLE.—Thomas Phillips, Master, Bond Head; Wm. Hill, Secretary, Bond Head.
43. MONTROSE.—Chas. Gurvey, Master, Paris; Wm. B. Underhill, Secretary, Mt. Vernon.
44. EUREKA.—Edward Jeffs, Master, Bond Head; Wm S. Fraser, Secretary, Bradford.
45. LAKE SIMCOE.—Charles Cross, Master, Lefroy; Jas. Allen, Secretary, Church Hill.
46. BERTIE.—Peter Learn, Master, Ridgeway; James Moore, Secretary, Ridgeway.
47. ARGENTEUIL.—G. W. Bond, Master, St. Andrews, P.Q.; Robert Gordon, Secretary, La Chute, P.Q.
48. BROCK HOLME.—Moss Olmstead, Master, Ancaster; R. S. Stevenson, Secretary, Ancaster.
49. PIONEER.—J. M. Mundell, Master, Palmerston; Wm. Keith, Secretary, Hammond.
50. WOODLAND.—A. Webster. Master, Jackson; Stephen Webster, Secretary, Jackson.
51. COLINVILLE.—D. McKellar, Master, Colinville; Jas. Fiddes, Secretary, Ossian.
52. TRAFALGAR.—H. Alberson, Master, Trafalgar; J. B. Marlatt, Secretary, Trafalgar.
53. PERSEVERANCE.—W. Burgess, Sr., Master, Burgoyne; W. Burgess, Jr., Secretary, Burgoyne.
54. HORNBY.—C. P. Preston, Master, Hornby; Wm. S. Hall, Secretary, Hornby.
55. SUGAR LOAF.—J. Scholfield, Master, Port Colborne; D. G. Stone, Secretary, Port Colborne.
56. BOND HEAD.—J. D. Fraser, Master, Bond Head; Geo. Gaviller, Secretary, Bond Head.
57. STAR.—H. McLoughlin, Master, Spring Bank; Jno. Herrington, Secretary, Keyser.
58. OSBORNE.—James Duncan, Master, Osborne; John Rainsberry, Secretary, Osborne.
59. PROSPECT.—Thos. Houston, Master, Paisley; Wm. Bradley, Secretary, Paisley.
60. DOWNSVIEW.—Robert Clarke, Master, Downsview; Wesley Clarke, Secretary, Downsview.
61. THOROLD.—Peter Cook, Master, Thorold; H. P. Swayze, Secretary, St. Catharines.
62. SWITZERVILLE.—R. N. Switzer, Master, Switzerville; P. E. R. Miller, Secretary, Switzerville.
63. MAYFLOWER.—W. P. Paterson Master, Lucknow; Peter McKenzie, Secretary, Lucknow.
64. TURNBERRY.—Samuel Black, Master, Bluevale; Thos. Hislop, Secretary, Bluevale.
65. ROSE.—W. J. Beel, Master, Brantford; W. Howell, Secretary, Brantford.
66. NEWBURGH.—James Daley, Master, Newburgh; John Jackson, Secretary, Newburgh.
67. KENT BRIDGE.—W. A. Everett, Master, Kent Bridge; G. B. Langford, Secretary, Kent Bridge.
68. HOWICK.—Henry Smith, Master, Gorrie; John Stewart, Secretary, Gorrie.
69. CLINTON.—R. S. Merill, Master, Beamsville; Geo. Bush, Secretary, Jordan.
70. ALBERT.—R. T. Marshall, Master, Moore; A. Johnston, Secretary, Moore.
71. STAR OF THE WEST.—J. McLean, Master, Chatham; Wm. Somerville, Secretary, Chatham.
72. YONGE STREET.—Chas. C. Webb, Master, New Market; Oliver Stevens, Secretary, New Market.
73. PINE GROVE.—Geo. Douglas, Master, Streetsville; Amos McCurdy, Secretary, Hornby.
74. OAK LEAF.—Thomas Clarke, Master, Brantford; Ralph Crawford, Secretary, Brantford.
75. MOORE CENTRE.—Wm. Nesbit, Master, Moore; Wm. Gray, Secretary, Moore.
76. GLASGOW.—A. R. McIntosh, Master, Spring Bank; R. J. Coulton, Secretary, Spring Bank.
77. FOREST ROSE.—M. Wallace, Master, St. Thomas; J. F. Davis, Secretary, Glanworth.
78. PRIDE OF BLANCHARD.—Jas. Highet, Master, Anderson; John Irwin, Secretary, Anderson.
79. MOUNTAIN.—T. M. Houser, Master, Campden; S. N. Fry, Secretary, Jordan.
80. CREDIT VALLEY.—N. Steen, Master, Streetsville; A. McKinnon, Secretary, Streetsville.
81. ORAN.—John Waddle, Master, Oban; Wm. Carrick, Secretary, Oban.
82. LOUTH.—John D. Crowe, Master, St. Catharines; Frank Hill, Secretary, St. Catharines.
83. FRUIT.—Job Hughes, Master, Oakville; George Hardy, Secretary, Oakville.

IMPORTANT TO ALL OWNERS OF SHORT-HORNS.—The National Association of Short-horn Breeders, which recently met at Springfield, Ill., having entrusted Alexander Charles, Cedar Rapids, Iowa, with the work of procuring complete statistics of all Short-horns now living in the United States and Canada, for publication in the report of their proceedings. We would urge upon every one of our readers who are breeding Short-horns either upon a large or *small* scale, to send in prompt and careful returns, and those who have not received blanks for that purpose, will be furnished them free of charge promptly, on application to Mr. Charles.

Sale of Mr. George A. Bean's Short-horns.

Mr. George A. Bean, of Winchester, Kentucky, sold at public sale his herd of Short-horns, numbering ninety animals, at Springfield, Ill., Dec. 4th, the day following the adjournment of the Breeders' Convention. With the exception of five well bred Rose of Sharons (two bulls and three females), and three Young Phillises, the herd was what might properly be called well but plainly bred, and the long journey from Winchester to the place of sale, at this unfavorite season of the year, made it impossible to bring the animals under the hammer in very attractive fix. Prices, however, were well maintained, as will be seen by the following figures, for which, with the foregoing comments, we are indebted to the *Ohio Farmer:*

COWS.

Rose of York, 2 yrs., Ed. Iles, Springfield, Ill.	$550
Geneva Last, 7 mos., T. M. Taylor, Decatur, Ill.	29.
Duchess of Illustrious, 2 yrs., Robt. Holloway, Monmouth, Ill.	55
2nd Rose of York, 2 yrs., S. E. Prather, Ill.	41
Airdries' Red, 1 yr., S. E. Prather	25
Roxana 4th, 4 yrs., George Colwell, Williamsville, Ill.	60.
Roxana 5th, 2 yrs., J. Highmore, Rochester, Ill.	21
Roxana 3rd, 5 yrs., R. Holloway	20
Cambridge Rose 2nd, 6 yrs., R. Holloway	1,00.
Cambridge Rose 5th, 7 mos., Col. J. B. Taylor, London, Canada.	1,30
Cambridge Rose 3rd, 2 yrs., C. E. Lippincott, Chandlersville, Ill.	1,55
Forest Queen, 1 yr., W. R. Duncan, Towanda	43
1st Phillis of Geneva, 5 mos., S. E. Prather	30
Twin Phillis, 3 yrs., G. Elliott, Harristown Ill.	25
Young Phillis, 2 yrs., James Hamilton, Jacksonville, Ill.	36
Florentina 4th, 10 mos., Geo. Colwell	30
Florentina 1st, 4 yrs., Geo. Elliott	23
Rosa Beauty 4th, 3 yrs., W. R. Duncan	35
1st Airdrie Duchess, 2 yrs., Geo. Elliott	60
Geneva's Cowslip, 1 yr., J. M. McElvain, Millwood, Ill	22
2nd Airdrie Duchess, 2 yrs., H. Trumbo, Springfield, Ill.	42
Josephine 2nd, 3 yrs., Elijah Iles, Springfield	25
Miss Clarence 4th, 1 yr., S. E. Prather	21
George Ann, 6 yrs., W. R. Duncan	25
Rose Taylor 3rd, 4 yrs., R. Holloway	30
Belle Overstreet, 3 yrs., Geo. Colwell	20

BULLS.

Grand Airdrie, 3 yrs., by Joe Johnson, 10,291; dam Mayflower 3rd by Airdrie, 2,473; J. H. Beaty, Nokomis, Ill.	$1,20
Master Airdrie, 9 mos., by Grand Airdrie; dam Cambridge Rose 2nd, by Duke of Mason, James Hamilton, Jacksonville, Ill.	56
Double Airdrie 2 yrs., W. A. Coddington, Ill.	23
Cherry Duke 2 yrs., M. Cloyd Chatham Ill.	14
Grand Duke of Thorndale, 2 yrs., B. B. Hopkins, Ill.	28

SUMMARY.

76 cows and heifers, average	$254 00	—Total $19 300
14 bulls and bull calves, do.	230 35	do. 3,225
90 head, average	$250 30	—Total $22,525

Sale of Mr. G. Paine's Short-horns at Great Braxted, Essex, England.

This sale took place at Braxted Hall on Thursday, Dec. 3rd. The prices ranged from $1,210 downwards; and to these were added a number of pure-bred Alderneys and Short-horns without pedigrees, besides other stock, the whole making up a large aggregate total. The following were among the best figures realized:

Fleda Gwynne, red, calved August 3rd, 1867; by Lord Claret, out of Fanny Gwynne by Fifth Grand Duke.—Mr Thornton	$241
Sweetheart 21st, roan, calved February 25th, 1868; by The Corsair, out of Sweetheart 9th by The Baron.—Mr Godwin	441
Frisky Gwynne roan, calved August 15th, 1868; by Thorndale Knightley, out of Fanny Gwynne by Fifth Grand Duke.—Mr. Blundell	971
Flora Gwynne, red and white, calved January 3rd 1869, by Oxford Gwynne, out of Fairy Gwynne by Fifth Grand Duke.—Mr. Godwin	73
Sweetheart 22nd, red and a little white, calved Oct. 6th, 1871; by Prince Lincoln, out of Sweetheart 21st by The Corsair.—Col. Bliss	421
Sweetheart 10th, white, calved Oct. 9th, 1871, by Prince Lincoln, out of Sweetheart 9th by The Baron.—Mr. E. Leney, Haddon, Hornet	294
Bell Gwynne, red and a little white, calved May 29th, 1872, by 2nd Duke of Wellington, out of Flora Gwynne by Lord Claret.—Mr. Leney, Wateringbury, Kent	1,076
Sweetheart 15th, rich roan, calved June 25th, 1872, by 2nd Duke of Wellington, out of Sweetheart 14th by Duke of Albemarle.—Mr E. Leney	430
Sweetheart 23rd, rich roan, calved Sept 13th, 1872; by 2nd Duke of Wellington, out of Sweetheart 1st by The Corsair.—Mr. D. R. Scratton	945
Violet Gwynne, red, calved March 4th, 1873, by 2nd Duke of Wellington, out of Fanny Gwynne by Thorndale Knightley.—Mr. F. Leney	1 152
Alice Gwynne, red and little white, calved April 29th 1873, by 2nd Duke of Wellington, out of Flora Gwynne by Oxford Gwynne.—Mr. W. J. Larkin	1,233
Dorothy Gwynne, red, calved May 29th, 1874, by 2nd Duke of Wellington, out of Flora Gwynne by Oxford Gwynne.—Mr McIntosh	896
Catherine Gwynne, red and white calved July 29th, 1874; by 2nd Duke of Wellington, out of Frisky Gwynne by Thorndale Knightley.—Mr. McIntosh	971

Summary.

8 Gwynnes	Average, $910.	Total,	$7,280
5 Sweethearts	do 512	do.	2,560
4 Bulls	do 190	do.	760
			$10,600

THERE ARE twenty-two cheese factories within a circle whose radius is ten miles and whose centre is Fulton. During the past season they have made over two million pounds of cheese.

Value of Farm Products per Acre.

The last volume of the United States Agricultural Report—which has been so long delayed—has just been printed at the Government printing office. The following table shows the average cash of farm products per acre in that country, according to the report of the statistician of the department:—

States.	Average value per acre.	States	Average value per acre.
Maine	$14 16	Texas	$12 84
New Hampshire	19 50	Arkansas	17 60
Vermont	17 87	Tennessee	12 70
Massachusetts	31 10	West Virginia	15 60
Rhode Island	34 00	Kentucky	15 50
Connecticut	33 94	Ohio	14 57
New York	22 90	Michigan	15 65
New Jersey	27 96	Indiana	13 50
Pennsylvania	20 80	Illinois	14 13
Delaware	14 24	Wisconsin	14 18
Maryland	15 22	Minnesota	11 80
Virginia	14 1	Iowa	8 9
North Carolina	11 38	Missouri	11 99
South Carolina	10 45	Kansas	8 9
Georgia	11 68	Nebraska	7 76
Florida	11 47	California	15 17
Alabama	13 77	Oregon	16 70
Mississippi	13 61	Nevada	44 30
Louisiana	16 57	The Territories	26 17

Sale of the Sittyton Short-Horns.

Mr. Cruickshank, Sittyton, disposed of a draft from his herd, of fifty young bulls, on Thursday the 10th ult. In former years, the annual sale of bulls did not take place until spring, and was generally about the last sale for the season. The herd at Sittyton, however, has attained to such large proportions that, in a season when keep is not over plentiful, it is a matter of some importance to dispose of half-a-hundred animals.

Of the fifty animals offered for sale, the first twenty-two were two-year-olds, and the rest were yearlings. Eighteen of the bulls were got by Royal Duke of Gloster, son of a very fine bull, Grand Duke of Gloster, and descended from the herd of the late Mr. John Rennie of Phantassie. Six are got by Masterpiece, a son of Champion of England, and possessing pure Bates blood; six are got by Lord Lancaster, a son of Champion of England; five by Lord Lansdownie, a grandson of Champion of England, and four by Viceroy, also a son of the same fine bull.

The average price of the animals was £34, 14s. 3d. The average price of the twenty-two two-year-old bulls was £35, 8s.; and of the twenty-eight yearling bulls, £31, 16s. 6d. The total proceeds of the sale amounted to £1735, 13s.

Great Poultry Fair at Berlin.

The annual poultry fair was held at Berlin on the 19th ult., in connection with the regular weekly market, and in every particular was a success. About $300 was given in prizes, ranging from one to ten dollars, the latter for the heaviest turkeys. The sleighing was good, the weather mild, and an unusual crowd of farmers, numbering between 3,000 and 4,000, were in town. The entries were, in all, over 500—greatly in excess of all former fairs; and over four thousand pounds of all kinds of poultry was shown, besides which a large quantity could be had outside at very fair prices. The heaviest turkey shown weighed twenty pounds, and belonged to Mr. David M. Shoemaker. A good business was done by the merchants. Prices ruled for live and dressed, from 6c. @ 11c. per pound. Dressed hogs, from $7 @ 8 50 per 100 pounds.

HOBBY HORSES are the dearest of all kinds of stock.

A KEY that fits everybody's trunk—turkey.

BETWEEN 40,000 and 45,000 Christmas trees are annually shipped from Catskill for the New York market.

THE HOP YIELD in Portage county, Wisconsin, this season, is estimated at 135,639 pounds.

ELEVEN Norman horses were sold at the Chicago exposition recently for $18,000.

MESSRS. BIRRELL & JOHNSON have paid Mr. A. Thompson $1,000 for a three year old imported mare.

MR. WM. LENK, of Darlington, recently sold to Mr. Boyd, of Toronto, a three year old geldling, for $300.

THE NEW ZEALAND Government has sent agents to collect British small birds for introduction into that colony.

A Kentuckian shipped a Christmas turkey to a friend in Boston, that weighed 35 lbs.

A J. Alexander has purchased the famous bull, 7th Duke of Oneida, of Mr. Griswold, for $10,000.

A MAN in California has raised sixty tons of cabbage on three acres of land, and got $4,000 gold for his crop.

MR. THOMAS PERRYMAN, East Whitby, sold a two year old Netherly colt to an American buyer for $310. It was a fine animal, weighing over sixteen hundred pounds.

PUSLINCH.—Mr. Chas. Skinner, of Puslinch, has purchased a very fine one year old Clydesdale stallion from Mr. T. R. Armstrong, Markham, for $1,250.

OUR CHEESE trade with England is every year assuming larger proportions, and more and more crowding the home-made article out of the English market.

A PARTY of thrashers in the vicinity of Rugby, claim to have threshed one hundred and two bushels of fall wheat in one hour, lately.

TWO WEEKS AGO, a valuable horse, owned by George Distler, near Brooklyn, was bitten by a mad dog at Flatbush. Thursday the horse became rabid and ate the flesh off his own legs. The animal was shot.

A COMPANY has been formed in Los Angeles, to plant 300 acres of forest trees for fuel and other uses, on the line of the Anaheim extension of the Southern Pacific Railroad.

Mr. Geo. Ayrault, of New York, is reported to have a high grade Short Horn cow that weighs nearly 3,000 lbs., and a steer that weighs 4,000.

England reports a total of 3,307,328 horses, 4,305,540 cattle, 19,859,758 sheep, and 2,058,781 hogs within her borders. Wales, 123,523 horses, 665,105 cattle, 3,064,696 sheep, and 213,754 hogs.

AT THE Michigan Agricultural College there are eight Short-Horns, twelve Devons, four Galloways, five Jerseys, twelve Ayrshires, and ten grade cattle. Of swine, three are Suffolk, seventeen Essex, and eight Berkshire.

KEEPING PUMPKINS.—To keep vegetable marrows or pumpkins for winter use, they must be fully ripe when cut and the stem sealed with sealing wax; afterward they should be placed in a bag to hang in a cool, dry place.

THE IMPERIAL DOGS and cats, which are kept for the purpose of destroying rats and mice in the imperial stalls and stores in the German Empire, are fed at an expense of 12,500 thalers a year.

THE *Western Farmer* notices an ear of yellow dent corn brought to the office, having twenty-six rows and over 1,300 kernels, several rows having over fifty kernels each. The ear is eight and one half inches long and two and one-fourth inches in diameter.

A FARMER named Robert Allan, residing near Chelsey, recently got a scarf which he wore round his waist caught in the tumbling shaft of a threshing machine. It was drawn in till he was almost cut in two, and he died next day in great agony.

A PINE tree was cut on Pine River, Mich., that turned out seven sixteen-feet logs, the top end of the log measuring twenty-four inches in diameter. Five logs out of the seven were surface clear, that is, clear from knots. The seven logs cut five thousand seven hundred feet of boards.

AT A THRESHING on the farm of Mr. W. Bollert, of the township of Ellice, Mrs. Bollert went out in the course of the forenoon to see how things were getting on, when she became entangled in the gearing of the machine, and, before it could be stopped, she was crushed and mangled in a horrible manner, and death ensued almost immediately.

IT IS STATED that the pestiferous potato-bugs were pretty effectually cleaned out of Prince William county, Virginia, last summer, by the wasps. In some other places, where partridges abound, they are claimed to be first-rate exterminators. We think it better to raise partridges than wasps; but then every one to his liking.

VALUE OF A PURE BRED BULL.—The value of a Short-horn bull for crossing upon common stock can be estimated with considerable accuracy. In any part of the Western Territories, the value of a Short-horn cross cannot be estimated at less than $5, for each calf at a year old, and double that at three years. A bull may be safely estimated to get 50 calves at two years and 75 calves per year for the next four years. This would show the bull to earn $1,750 in six years, or an average of $291 per year. And good pedigreed bulls from 6 to 12 months old can be bought for about $100. This looks as if it would pay every stock man in the West to use pure bulls.

VICK'S FLORAL GUIDE.—The January number of the beautiful publication issued quarterly by Mr. James Vick, the celebrated seedsman and florist, of Rochester, N. Y., reached us too late for notice in our last issue. It is, if possible, more handsome than its predecessors, and contains a vast amount of information for floriculturists. Mr. Vick's name as a vendor of reliable seeds has become almost a household word, and anything obtained from him is sure to give satisfaction. We notice that he offers this year four premiums, amounting in all to $35, to every State or Provincial Agricultural Society in the United States and Canada, for collections of cut flowers, raised by amateurs, and also a floral chromo for the same purpose, to every County Society in America. This is a liberal and praiseworthy offer, and our local floriculturists will do well to keep it in mind.

At the recent great fat cattle show at Islington, England, the Short Horns took the three leading prizes—Best ox or steer, Mr. Bult's steer, No. 65. Best cow or heifer, Mr. R. Scratton's Nectarine Bud, No. 81. The $500 cup to the best animal in the yard, "H. R. H." the Prince of Wales' white heifer, No. 170, bred by Mr Hugh Aylmer, got by T. C. Booth's British Crown. A fat ox exhibited by Mr. Wortley weighed, at 65 months old, about 2,700 pounds.

A MEETING of the Local Committee to make preparations for the Dairymen's Convention to be held the second week in February, was held in the Secretary's office, Ingersoll, on Monday evening, 21st ult. The business transacted consisted of a consultation as to what speakers should be invited to address the meeting and the questions for discussion. A sub-committee was appointed to make preliminary arrangements, who will report as soon as they are perfected.

SIR DUDLEY C. MAJORIBANKS, of Guisachan, has introduced into the Scotch Highlands a herd of Swiss cattle The intention is to maintain the breed in its purity Eight animals, including a bull, are now at Guisachan, and are thriving well, being suitable for the climate. The Swiss cattle are of dun colour, with white muzzle, have square frames, and are somewhat larger than the Ayrshire breed of cattle The females are excellent milkers and nurses, and take on flesh readily.

MR. DAVIDSON'S SHORT-HORNS.—A correspondent of the *Country Gentleman* describes at some length and with praise the recently imported Short horns belonging to Mr. J. I. Davidson, Ba'sam, Canada. They number 19 heifers, all in calf to noted sires in Scotland, and two young bulls. One of the latter jumped into the dock at Liverpool, but was fished out without injury. Crown Prince of Athelstane 2nd, the bull Mr. Davidson has at the head of his herd, this correspondent pronounces one of the very best bulls ever bred in Canada.

SALE OF ROYAL CATTLE.—The Christmas sale of the stock fatted on the royal demesne took place at the Prince Consort's Shaw Farm, under the hammer of Messrs. Buckland & Sons, of Windsor. There was a large attendance of buyers. The catalogue included 40 shorthorn and polled Scotch oxen, 360 fine wether sheep, and 160 bacon hogs and porkers. The oxen averaged £42 each, the highest price obtained being £56. Half-bred sheep fetched as much as 87s.; Southdowns, twelve month lambs, 88s. Porkers and hogs averaged £6 10s. The whole of the Prince Consort's breed sold at £7, 17s. 6d. each.

THE GREAT ANNUAL SHOW of fat cattle opened at Smithfield on Monday The exhibition is not so large as in some previous years, but the quality of the stock is of notable excellence. The Prince of Wales carries off the prize given for the best beast in the yard, with a fine short horn heifer. The Queen is a considerable prize taker: and the names of many of the nobility figure on the list For the Scottish breeds the first prizes were awarded to Sir W. Gordon Cumming, Messrs. Martin, of Aberdeen Mr. Read, Alford; and Mr. M'Combie, M.P. The competition in most of these classes was keen.

AT Messrs. Birrell & Johnson's recent sale of sheep at Greenwood, Pickering, 36 ewes were sold for $2,214, being an average of $51 50 each Six yearling rams offered brought $527, averaging about $76 each Four ewe lambs were bid off at an average of $45 each, but these were given up by the purchaser, as the prices were not satisfactory, and the buyer did not wish to hold them below their value. The best ram lambs had been all sold to customers before the sale, and the prices realized on those left were below their intrinsic worth. The fillies were not in demand, only two were sold at low prices. Seven grade heifers and heifer calves brought $530.

IMPORTATION OF GALLOWAY CATTLE.—Peter Davy, of Springbrook farm, Ashippun, received a car load of Galloway cattle, in a herd of four animals, at our depot yesterday. They were imported from Canada and comprise three heifers and a bull calf. The cost of these animals put down at Oconomowoc is $879 50, and Mr Davy is to be congratulated upon their safe arrival The improvement in stock to which our breeders are giving their attention is of first importance to the people of Wisconsin, and Mr. Davy is entitled to great credit in this direction, as he is ever in the van of all enterprise and every improvement.—*Oconomowoc Times, Dec 7th.*

A CAUTION TO A SUCCESSFUL EXHIBITOR.—At the Shropshire (England) Quarter Sessions, Oct. 21, John Tetley was indicted with obtaining by false pretences, on August 27, the sum of 37s. in prizes from the Shifnal Cottagers' Horticultural Society The prisoner had represented to the Secretary that he lived at Gorsey, within four miles of Shifnal, to which distance the operations of the Society were confined, and he was accordingly allowed to compete in vegetables, flowers and fruits. The prisoner obtained prizes to the extent of thirty-seven shillings. The Secretary visited Gorsey Bank, and ascertained that the prisoner did not reside there, but beyond the four mile line; he examined the fruit, flowers and vegetables in the prisoner's garden, and found that they were of a totally different and inferior character to those which obtained the prizes. The prisoner subsequently refunded the money. He had been led into the nefarious transaction by a gardener in the neighbourhood, who had supplied the articles and received a portion of the prize money. The jury found the prisoner guilty, and he was sentenced to 21 days hard labour.

Seeds.

Seed Department.

In order to make this department valuable it will be necessary that our readers aid us in three ways.

1st. By reporting all new kinds of grain sown in their locality, giving descriptions of their peculiarities, and when and by whom introduced.

2nd. By sending small samples, either in the head or pod or thrashed out.

3rd By reporting the success or failure of the different grains.

As is very well known to all *successful* farmers, continual change of seed is necessary Old varieties run out, and new ones must continually supply their place It matters not whether it be cereal, tuber or bulb, it matters not how profitable and productive it may be when first introduced, it gradually loses in vitality year by year, and finally has to be replaced The farmer who would now attempt to grow our old favorites the pink eyes or the cups, would soon prove to his own satisfaction that a change is necessary It is the same with wheat, oats, peas, and every seed that is grown. True it may have its day prolonged by a judicious change from clay to sand or sand to clay, or by a change of climate from north to south, and every farmer should take advantage of this fact, but even under the most favorable circumstances it will ultimately run out. It is for this reason that we desire to keep our readers informed as to the different varieties of new seeds, &c, which are being continually brought before the public. We wish to have your aid in giving opinions as to their various good and bad qualities, and we also wish to know for what locality they are especially adapted.

With these words of introduction we open our Seed Department, asking for your aid in order to make it of value to the whole Canadian Farming Community.

Spring Wheat.

In the western part of Ontario, spring wheat has been for many years but a poor crop, so poor in some places that many farmers have given up attempting to grow it.

It is quite right when a man finds that any crop does not suit his soil, that he should not waste money and time in trying to fight against nature, because if he cannot grow that crop with profit, he can some other, but a great many people decide too hastily and without giving their farms a proper chance.

It may be that you cannot succeed with bright first-class wheats, but there is a class of red wheats which, although selling at a smaller price in the market, yet make good flour and give good crops.

On many farms where other spring wheats are a failure, these red second-class wheats are a success, and although we always advise, where possible, to grow the best, yet there are circumstances under which it is advisable to grow red wheat.

So far as we have heard of it the "Red Chaff" stands best as a cropper among this class of wheats. True, many of our millers do not as yet know how to grind it to advantage, but they will know by and by. We know that this wheat yields well, and that is a matter of the first importance. It will not command the highest price as may be seen from the following extract, but the extra yield will much more than balance this loss:

"The millers of Waterloo, finding that the red chaff spring wheat introduced into this country a few years ago is far inferior as to yield and quality of flour to the Fife spring wheat, called a meeting which took place at Waterloo, attended by the majority of representatives of the villages in the county, to establish a fixed difference in the price of red and Fife wheat. They decided to make a difference of five cents per bushel."

Quantities of the seed may be obtained in the county of Wellington, where it has been grown for some years. If some farmer who has a good clean sample for sale will insert an advertisement of it in our pages, he will benefit himself and the farming community.

NEW VARIETIES OF POTATOES.—Will some of our subscribers who have experimented with new varieties of potatoes during the past year inform us of the results of their experiments? We wish to hear specially about COMPTON'S SURPRISE, BROWNELL'S BEAUTY and EXTRA EARLY VERMONT, which were introduced at such high prices.

The Smith Wheat.

The *Meaford Monitor* refers to our remarks on the Smith wheat as follows:

A correspondent of the CANADA FARMER quotes our paragraph noticing the purchase of this wheat by an American dealer through Mr. Charles Grant, of Collingwood township, and inquires whether the statements made are reliable. The editor is dubious and thinks "the whole thing is one of those periodical humbugs which by some means or other find their way into the press." Now, we can assure our unbelieving contemporary that there is no reason whatever to doubt the substantial truth of the statements made in the paragraph in question. The facts were supplied us by Mr. Chas. Grant in person, and we know him to be truthful and in every respect reliable. More, we have ourself seen samples of the wheat—have in fact two heads now in our possession which were given us by Mr. Grant. We might state further that that gentleman, we believe, intends sending a sample of the wheat to the editor of the FARMER, and is quite prepared to make affidavit to the truth of all he has told us. While on the subject, we may here make a correction or two in the published paragraph. The name of the grower was Mr. Thomas Smith (not Donald), and the sum paid Mr. Grant for his services was $150, instead of $50, the amount first promised him.

Will some of our subscribers who know the wheat have the kindness to send us the facts of the case, and also some heads of the wheat. If this new wheat is one which will be of value to the country, we wish to know all about it and to spread the information.

Threshing Machine Accidents.

Notwithstanding the very stringent but wise enactments passed for the purpose of preventing accidents from threshing machines, it is really extraordinary how many of these we still read of in most of our exchanges. Here a poor fellow is caught in the gearing, a cogged wheel, or something of that kind left exposed, and his arm lacerated so as to disfigure and perhaps disable him for life; there another, with one of his limbs destroyed by the tumbling-rod; and thus the accounts proceed. Now, law can enact, but law pure and simple can do nothing more unless the people see to its being practically applied The law expressly says that all exposed parts of a threshing machine likely to cause accident whilst in motion must be covered or boxed in. We venture to say that these regulations are not complied with in ten cases out of twenty, and who are to blame for the injuries proceeding from such neglect? Just the people themselves. Any one of them may at any time have the manufacturer or owner of an unboxed or unprotected machine indicted before the nearest magistrate, and handsomely fined for his carelessness or neglect. Did we have only a few examples of this kind they would prove beneficial, for we believe they are all that is wanted to have the matter properly attended to.

Seed and Plant Exchange.

The Queensland Acclimatization Society desires seeds of the following plants: 1. *Asimina triloba, A. Palustris,* and any other species. 2. The *true* Sisal Hemp. 3. *Lespedeza striata.*

Any seeds of Queensland, which the correspondent may desire, will be sent in return. The *Lespedeza* (Japan Clover) can readily be obtained in almost any neighborhood. *Asimina triloba* (American Paw-paw) is common enough in some parts of the South. Several smaller species are found in Florida and elsewhere. With *A. Palustris* we are not acquainted. Some reader in Florida may be able to send the true Sisal Hemp (*Agave Sisalina*). Parcels should be addressed to "the Queensland Acclimatization Society, Brisbane, Queenland, via San Francisco and Sydney."

CORRESPONDENCE is requested on the subject of spring wheat.

MACHINE FOR ASSORTING POTATOES.—This machine consists of long rollers, a hopper, assorting board and grading chutes, so combined and arranged that the potatoes being shovelled into the hopper at one end and caused to run along the assorting board and the rollers, the smaller potatoes will escape between the roller and the assorting board, while the larger ones will be discharged at the end. The distance between the roller or rollers and the assorting board increases from the head toward the tail, and the potatoes escape through the space, varying in size in the same measure, so that they can be separated into two or more grades by suitable partitions into receptacles below. The assorting board is adjustable toward and from the roller, so as to change the grade at will.

Miscellaneous.

The Champion Reaper.

MR. HALL'S WORKS AT OSHAWA.

(From the Oshawa Vindicator).

W. N. Whitely, Esq., of Springfield, Ohio, was in town all last week. Mr. Whitely is the inventor of the CHAMPION REAPER AND MOWER, and the owner of the most valuable Reaper and Mower Patents in the United States, Canada, England and the Continent of Europe. There are five immense establishments at Springfield, Ohio, all devoted exclusively to the manufacture of the CHAMPION REAPER AND MOWER, employing not less than 2,000 men in the Works and 500 salesmen in the field. 32,000 machines are being built for the harvest of 1875, the value of which, at the selling price, is over six millions of dollars, American currency. It is the largest, strongest, and most perfect combination for the manufacture of any kind of agricultural machinery in the world. Mr. Whiteley is the motive power of all this immense business. He is not only the inventor of the CHAMPION, but of very much of the special machinery used in its construction. With the highest grade of mechanical talent, Mr. Whiteley combines great business ability, immense energy, and in an extraordinary manner the power to organize and systematize his business, which, with great tenacity of purpose, has won for him his great reputation as the leading manufacturer in his department, in the world. The Hall Co., not only secures Mr. Whiteley's capital, and the exclusive control of his patents and future inventions, but the benefit of his experience, energy, judgment and prestige. For his reputation's sake, he must make the CHAMPION a success in Canada in the same degree as in the States, and knowing his great resources, we have not the least doubt but that he will accomplish it. Mr L. H. Lee, who has been connected with the CHAMPION in the States and in Europe for the past thirteen years, has come here to reside and take charge of its construction and sale in Canada. Mr. F. W. Glen has been trying to secure a Connection with Mr. Whiteley for the past six years, and we are very glad for Oshawa, that he has at last succeeded. We believe it to be the most important for the advancement of the town of anything Mr. Glen has ever done. About 350 hands are being employed at the Hall Works now, and we hear, after stock-taking, that at least 50 more will be added, about as many as all of our other factories combined, employ. We are glad to learn that Mr. Whiteley will be here again in February, and from time to time as needed, until the harvest is over, and a great success for the CHAMPION is assured. CHAMPION REAPERS from Springfield are this year being sent to France, Germany, Prussia, Austria, Poland, Hungary, Denmark, Russia, Egypt, Sweden England, East Indies, Chili, the Argentine Republic and Australia. The trade established in 1873 on the Continent by Mr. Lee, this year requires 3,000 CHAMPIONS to supply the demand. With the backing the CHAMPION will have here, and its real merit as a harvester, it cannot fail to be a great success, and as its success must have an important influence on the growth of the town, we say long live the CHAMPION, the recognized king of the harvest field.

The well-known firm of Messrs. A. Booth and Son are the General Agents in Nova Scotia, New Brunswick and Prince Edward Island for the Joseph Hall Manufacturing Company. They will have a very complete assortment of Machines with all improvements on exhibition in the hands of their Local Agents at an early day.

(From the Ohio Farmer.)

Only a few years have elapsed since the Champion Mower and Reaper was first introduced to the public. Many of its present unsuccessful rivals have been established for many years and seemingly fully occupied the field. But the manufacturers of the Champion are all practical men, and in the construction of this machine employed none but practical principles, carefully avoiding all the faults of others, and introducing many valuable ideas that belong to them alone and are to be found in no other. Their aim to combine strength, lightness, durability and adaptability to every grade and kind of work, has been fully realized in the Champion machine, and its superiority has been so rapidly demonstrated and appreciated, that even its sanguine and enterprising manufacturers have been surprised, and their estimate of supply over sold with each succeeding year, and the older it grows and the more extended becomes its acquaintance with the farming community, in every clime, State and country of the new and the old world, the more rapidly does the demand increase; and although the capacity of manufacture has been increased beyond a parallel in the history of any similar concern in the world, until it now covers a combined area equal to one mile in length by fifty feet in width, consuming annually upwards of twelve thousand tons of iron and steel, and turning out this year over twenty-two thousand machines, still the demand for this season warrants the assertion, that they will be unable to fully supply it. Previous to April 1st, the Champion folks had shipped from their works at Springfield, Ohio, three hundred car loads of machines to fill orders from their different agencies; fifty of these car loads were destined for European agencies. In addition to this over one thousand machines had been distributed in small lots, mostly in Ohio. This is simply a beginning of their business for this year, as the season for the sale of mowers and reapers had not fairly opened on April 1st, and the shipments up to that date number over six thousand machines. Since April 1st, one single shipment numbered fifteen full car loads, and another thirty full car loads, comprising an entire train loaded with Champion Mowers and Reapers to fill one order, from one agency, viz: at St. Joseph, Mo. This one shipment foots up a value of over one hundred and thirty thousand dollars, and with the shipment made a few days previous aggregates about a quarter of a million dollars worth of Champion machines to fill two orders. The farmers of Ohio alone took over three thousand Champion machines in the year 1873, and present indications justify the estimate that a much larger number will be needed to supply the demand from this State for 1874. Clarke county alone—the local county of the Champion factories takes over two hundred of these machines annually.

The preceding details simply prove that there is no limit to the demand for this everywhere popular machine. At home and abroad, in America and in Europe, wherever known, it is rapidly outstripping all others, and its manufacturers are justified in estimating that the time is near at hand when the sales of the Champion will be fifty per cent of the aggregate sales of all the mowers and reapers of this country. The certificates from intelligent and practical farmers in all parts of the country, who have used other machines, and cheerfully express their preference for the Champion, that could be published would fill this paper in solid type for many weeks, and a record of premiums awarded to it at fairs and exhibitions in this country, and abroad, and the field trials it has won would be nearly as elaborate. Why is this great success achieved by this machine? Simply because it merits it. The Champion combines more utility, durability, and genuine value than any other, and the practical farmers see it and demonstrate their appreciation of it by securing one of them at the first favorable opportunity, and they never regret their purchase. The manufacturers of the Champion machine are live, intelligent men, and unparalleled for enterprise and ability; they aim to make the best machine in the world, and spare nothing to accomplish this object. Their improvements are adopted only after patient tests in the field, and none but the very best materials and highest class of work is ever employed in their construction. They employ none but active, intelligent, responsible and honorable agents to introduce it in all parts of the world, and guarantee their machines to give entire satisfaction to every purchaser. Believing that they have the best practical harvesting machine made in America, they are always ready and willing for a trial or test in the field or at exhibitions in any manner or form, in the presence of any and everybody, and never back down or crawl out, but are on hand at the appointed moment ready for business, and seldom fail of victory.

The many thousands of farmers who have tested the Champion in their harvest fields, will join us in wishing it an unlimited success and the brilliant future which it so well deserves.

(From the Whitby Chronicle.)

The Champion Reaper is destined beyond a doubt, to revolutionize the Reaper trade of Canada, as it has done in the United States and is doing in Europe.

Twenty years ago, Messrs. Whitley, Fassler & Keily began in a small two-storey shop, 40x50, by building fifty Champions, without any capital but their energy, high character, and mechanics ability—all being practical men.

At that time other leading machines were being built, by the thousand. The Champion was brought to such a state of perfection that this house could not meet the demand for the machines, and Champion Machine Company organized with a capital of $500,000 for the building of Champion Reapers alone. A few years later the old established wealthy house of Warder, Mitchell & Co., gave up a very large trade in various agricultural machines, including the Buckeye, New Yorker, and Marsh Harvester, and began to manufacture exclusively the Champion Reaper. Meanwhile the original shop has been enlarged until it is now 100ft. long by 50ft. wide and four storeys in height. Warehouses have also been erected by these Companies with storage for 18,000 machines, and last August stock was purchased by the three concerns for the manufacture and construction of 30,000 Champions to meet the demand for the harvest of 1875. Enormous Malleable Iron Works, employing 200 hands, have likewise been erected for the purpose of making malleable castings *exclusively for the Champion*. A further immense workshop, which will employ 400 hands, is nearly completed, and in which will be manufactured the guards, chains and knives for the Champion. When this latter is in full working order the Company will be able to turn out the guards, chains, and cutter-bars with knives for 50,000 Champions a year, and the other shops are being enlarged to the same capacity. The cause of this truly wonderful progress is the real merit of the Champion as in every respect the most perfect reaper and mower in the market. The frame is made of wrought iron, the shafts are steel, and so also is the drawbar. The greatest possible care is used in its construction. It is easily adjusted to all kinds and conditions of grain or grass. It is now made as a Single Reaper, Combined Reaper and Mower, and Single Mower. There is no better evidence of the superiority of the Champion than that manufacturers of inferior machines are using the name "Champion" to give their machines a position. The Champion is *patented in Canada, and built only by the Joseph Hall Manufacturing Company of Oshawa*, who are working under the special directions of W. N. Whiteley, Esq., the inventor. Mr. Whiteley, as well as the Hall Company, are determined to supply the Canadian farmer with a Champion Harvester *in every respect a perfect duplicate of the American machine*, and fully equal to it in mechanical construction and quality of material used. TWENTY-FIVE HUNDRED MACHINES ARE BEING BUILT AT OSHAWA FOR THE HARVEST OF 1875.

Convention of American Short-Horn Breeders.

The following is a synopsis of the address delivered by Dr. A. C. Stevenson, of Greencastle, Indiana, President of the American Short-horn Breeders Association, at the meeting held at Springfield, Illinois, Dec. 2nd. After some preliminary remarks, Dr. Stevenson said:

Gentlemen, you meet to-day to consider a great interest, not only to yourselves, but of the greatest national importance. Food is th efirst demand of nature. To supply a nutritious article is the object of cattle raising. This great interest of producing the best beef and milk, butter and cheese, is the end in view. Our objects are real and substantial. The rearing of Short-horns is no fancy work, intended for show or a profitless display. No charlatan will find this an agreeable association. And should the work of charlatanism be found devoting itself among our breeders, it will be sure to find an exposition here.

The great object that we propose, is to increase the quantity of beef and milk, 1st, by increasing the numbers of cattle, and 2nd, by increasing their size and quality for beef and milk. The number of our cattle may be many times doubled by occupying the limitless fields of prairie lying immediately west of us, reaching to the Pacific coast. A vast amount of worn lands east and south would be profitably changed from tillage to pasturage, with great benefit to the land and profit to the owners.

Two years ago I purchased 100 calves. They were of all grades, from scrubs to high grades. At the same time I had a few refuse thorough-bred calves that were not such as I desired to keep as breeders, and consequently trained them, and wintered them with the lot that I had purchased. They were so kept until a few weeks since (altogether), when fifty-one choice steers were selected and sold, two thorough-bred Short-horns included. The lot averaged 1,370 pounds. The Short-horns were again weighed, to see how they compared. One weighed 1,570 and the other 1,600 pounds, or about 14 per cent. more than the whole lot, including themselves. One of the scrubs was then re-weighed, and made 1,150 pounds, or about 28 per cent. less than the Short-horns. This lot were all three-year old steers, and had the same fare from calves. I can make much better showings than this from my own raising, and also from that of others. This case is referred to more on account of its late occurrence than for anything very remarkable, yet sufficiently to show the superiority of Short-horns over common cttle. But this is not quite all. The purchaser of these cattle, Mr. A. Y. Bryan, placed the value of the Short-horns at $1.50 above the value of these common steers, which, at least would be 30 per cent. Now 30 per cent. in value and 28 in size would make 58 per cent. in favor of the Short-horns. This advantage is due entirely to the superiority of the Short-horns as a breed, their keep being the same from calves. And this is not quite all, for a part of the scrubs are yet unsold, not being fit for market.

The magnitude of the cattle interest of the United States is quite large; with a rapidly increasing consumption the demand is likely to increase rapidly. No flesh is so generally relished as good beef. No articles of food are more in demand than milk, butter and cheese. Of all the domestic animals, the cow is first. What lady can feel at ease at the head of her table, without a good plate of butter? Milk is indispensable in childhood. What a convenient luxury cheese is—always ready for the table without cooking? There is no waste in the bullock; we eat his flesh, his hide protects our feet, his horns make numerous ornamental and useful articles, his bones are a good substitute for ivory in various manufactures, his hair is indispensable in the construction of buildings, and finally, his refuse, whatever it may be, is used in fertilizing our soil.

We have no means of ascertaining the number of Short-horns in the United States or Canada, nor have we the means of ascertaining the number of neat cattle in Her Majesty's dominion. The number of neat cattle in the United States at the last census was: Beeves and store cattle, 13,566,005; of milch cows, 8,935,333; of work oxen,

1,319,271. Of this number, Texas is credited with the largest number, 2,933,588, and Illinois next, viz. 1,055,499, This number is largely increased at this date.

We have no reliable means of ascertaining the number of beeves slaughtered annually. The number of beeves and store cattle, which is 13,566,005 are all slaughtered probably in four years, which would be 3,391,338 annually. A part of the store cattle will doubtless be added to the number of milch cows annually, but it is probable as many milch cows will be slaughtered, which will not materially affect our calculation. The value of beeves per head in New York in 1872 was estimated at about $75. Now, to put the 3,391,338 at ten dollars less, and we have for the yearly slaughter of beeves $220,437,970. Now we hold that fifty per cent. may be added by the substitution of Short-horns for the cattle that are now sold as beeves, viz.: $110,218,985. In other words, it would be equal to adding half the number of cattle to the amount now on hand.

Every farmer or cattle raiser who will substitute Short-horns for the common cattle, or even high grades, will certainly realize fifty per cent. in value over what he was receiving for common cattle, which is well worth the consideration of every farmer, and for the truth of this statement we will refer him to any shipper, feeder or butcher.

I may congratulate you, gentlemen, on what you have accomplished, and also on the prospect of what you have the prospect of accomplishing in the future. Your annual reports have already awakened public attention. This is manifest in the increased demands and increased prices paid for Short-horns. And the demand is still increasing, and should continue until our 25,820,608 cattle are all Short-horns, or some other breed equally good.

It is quite a large work to change our present stock of cattle to high grades, and this should be accomplished as speedily as possible. The number of milch cows being 8,935,332, and supposing them all common cattle, it would require, at fifty cows to the bull, 178,706 Short-horn bulls to bring them up to grades. From this it may be seen that there is little danger of an over-supply, shortly, of Short-horns.

Combined effort has ever been the most successful mode of accomplishing ends. We have the most flattering prospects of great good being accomplished by this association. The field before you is a large one. The breeding, raising, summer and winter care of cattle—food, and the best modes of preparation, etc. These subjects, with many others, are worth the consideration of breeders generally. You will pardon me, gentleman, for detaining you so long, and I conclude by reminding you that the country is looking to you for important truths upon the subject of cattle-breeding, knowing that this association is composed of the breeders, not only of the United States, but of many of the most eminent breeders of Her Majesty's (Queen Victoria) dominions of North America.

English Scientific Agriculture.

Mr. J. J. Mechi, now well known for his enthusiasm in improved processes in agriculture, and which in many instances are necessary to success, in a recent letter to an English contemporary says:

What changes are coming slowly, but surely, over the agricultural mind. The man who twenty years ago chaffed Mechi for recommending straw as food for cattle, is now found chaffing his own straw for his own cattle; so that we have in reality, a great increase of agricultural chaff. While the steam engine hum of our threshing machine was in full play to-day, and into the pulper went cabbages, mangolds, with their tops, kohl-rabi, ditto; said I to my cattle feeder, "Georgie, hand power wouldn't do for this." "No," said he, "nor horse power neither." So that we came to the conclusion that every arable farm of 150 to 200 acres should have a fixed steam engine, with its accompaniment of pulpers, crushers, chaff-cutters, pumps, sack elevators, millstones, threshing machine, cake-breaker and grindstone—a circular saw would be of no use to us, as our timber departed some twenty five years ago. How can agriculture progress without steam power? And yet its use is very partial and limited.

When I began farming here twenty-seven years ago, guano was unknown, steam was a myth, iron sheep hurdles were condemned as an extravagance, and even to this day nine farmers out of ten do not deepen their cultivation by following the first plough by another drawn in the same track.

Deep draining in strong, non-calcareous soil is the exception not the rule, the argument being that there is a good surface fall for the water to pass away; of course, they do not reflect that water will not run off the surface until the soil is super-saturated, and they would condemn such a practice as folly in the case of flower pots having a plug in them to stop the drainage.

Altogether, Britain is not half manured nor half farmed, and our land-owners and farmers conjointly must accept this as a true proposition, and conclude that there is an immense field open and awaiting the joint actron of increased intelligence and capital to produce more abundantly and more profitably food for the British people.

I know thet I have in my time shocked many prejudices and excited much anger; but has not every man done so who attacks antiquated customs and advocates changes and improvements; the supporters of the old spinning wheel, distaff and flail destroyed the newly invented cotton machinery and threshing machines. It was natural, though a mistake; the conservative sentiment in favor of old institutions is an honest and undesirable one up to a certain point, but it is the fight for progress and improvement which introduces us to a new state of things more suitable to our welfare.

Why Johnson's Ram Failed to get a Premium.

Our country fair is just over; but Johnson's Cotswold ram did not take the prize that was offered for the best animal of that kind. Judge Pitman was chairman of the committee on rams, and he manifested the deepest interest in Johnson's ram; indicating clearly that if any sheep ought to take a prize that one ought to. Johnson's ram was by itself in a pen with a high board fence, and before readjudicating the prizes the Judge thought he had better go in and make a close examination of the animal for the purpose of ascertaining the fineness of its wool, etc. As soon as the Judge reached the interior he walked toward the ram, whereupon the ram began to lower his head and to shake it ominously. Just as the Judge was about to feel the fleece, the ram leaped forward and planted his head in the Judge's stomach, rolling him over on the ground. Before the Judge had time to realize what had happened, the ram came at him again and began a series of promiscuous butts, each given with the precision and force of a pile driver. It butted the Judge on the back, on the ribs, on his arms, on his shoulder-blades, on the bald place on his head, on his shins; it butted his nose, it butted his watch into a mass of loose cog-wheels, it butted his spectacles off, it butted his high hat into black silk chaos; it butted him over into the corner and up against the fence, then it butted four boards off the fence; butted down another of the committee, butted three small boys into fits, butted the money-taken at the gate, and then fled out into the air. The Judge did not distribute the prizes that day. When they collected him from various parts of the pen they wiped the mud from his trousers and the blood from his nose, and sent him home with a perennial stomach-ache and a determination to start after that wandering mutton the first thing in the morning with a shot-gun.—[Max Adeler.

Communication Between Bees.

I was staying in the house of a gentleman who is fond of trying experiments, and who was a bee-keeper. Having read in some book on bees that the best and most humane way of taking the honey without destroying the bees was to immerse the hive for a few minutes in a tub of cold water, when the bees, being half drowned, could not sting, while the honey was unmured, since the water could not penetrate the closely waxed cells, he resolved on trying the plan. I saw the experiment tried. The bees, according to the recipe, were fished out of the water after the hive had been immersed a few minutes, and, with those remaining in the hive, laid on a sieve in the sun to dry. But, by bad management, the experiment had been tried too late in the day, and, on the sun going down, they were removed into the kitchen, to the great indignation of the cook, on whom they revenged their sufferings as soon as the warm rays of the fire, before which they were placed, revived them. As she insisted on their being taken away, they were put back into their old hive, which had been dried, together with a portion of their honey, and placed on a shelf of the apiary, on which were five or six other strong hives full of bees, and left for the night. Early the next morning my friend went to look at the hive on which he experimented the night before, but, to his amazement, not only the bees from that hive were gone, but the other hives were also deserted—not a bee remained in any of them. The half-drowned bees must, therefore, in some way or other, have made the other bees understand the fate that awaited them.—*London Spectator.*

Facts Worth Remembering.

One thousand shingles laid four inches to the weather will cover one hundred square feet of surface, and five pounds of shingle nails will fasten them on.

One fifth more siding and flooring is needed than the number of square feet of surface to be covered, because of the lap in the siding and the matching of the floor.

One thousand lath will cover seventy yards of surface, and eleven pounds of lath nails will nail them on.

Eight bushels of good lime, sixteen bushels of sand, and one bushel of hair will make enough good mortar to plaster one hundred square yards.

A cord of stone, three bushels of lime, and a cubic yard of sand will lay one hundred cubic feet of wall.

Five courses of brick will lay one foot in height on a chimney, six bricks in a course will make a flue four inches wide and twelve inches long, and eight bricks in a course will make a flue eight inches wide and sixteen inches long. —*Prairie Farmer.*

A BEET SUGAR FACTORY at Soquel, Cal., is now running day and night, using two sets of hands—about sixty-six men. Their entire force numbers 200 men. The mill has a capacity of sixty tons of beets per day. They have 900 acres of their own land in beets, besides large quantities of rental land. The machinery cost $17,000.

J. WINSTOW'S corn-canning establishment in Fairfield, Me., closed for the season on the 7th ult., after canning the products of 170 acres, or 225,000 cans, being less by about 150,000 than last year. Not an ear of all this yield was injured by frost, which is something unusual.

I HAVE KNOWN farmers who toiled all day and almost every day in the field, when a daily half-hour spent in the house and garden in making home attractive would add more to their real happiness than all their toil. For, after all, home is the true source of lasting joys. Fortunate are they who have happy homes—blessed are they who make them happy.—*Geo. Booth.*

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