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THE CANADA FARMER.

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The Field.

The Colorado Potato Beetle.

EDITOR CANADA FARMER:—The Colorado potato-beetle appears to be increasing very rapidly in this part of the country. About three weeks ago a strong southerly wind brought myriads down the Owen Sound Bay. The beach at Presqu'ile was covered with them, but a week later I was unable to find one there.

It is useless to think of evading their ravages by planting potatoes this year in a different place from where they were planted last year. In ploughing some fall wheat stubble, this spring, in a field where potatoes were never planted before, and at some distance from where I have had potatoes these last few years, some beetles were noticed. I have never used Paris Green, as I prefer walking between the drills with a can half full of water or ashes in one hand, and a short stick in the other, and knocking them off the potatoes into the can, as they do not adhere very firmly; and if any fall on the ground they should be picked up and thrown into the can.

They are not easily provoked to bite, but when they do, a leaf of tobacco, moistened with water, and laid on the bitten part, is said to be effective in preventing any ill effects. One of my neighbours has told me that he has often crushed them in his hand without experiencing any harm, but I think if there had been any abrasions on the skin of his hand, he would have smarted for his temerity.

I was last year thinning out some early cabbages in my hotbed, and amongst them I found a Colorado-beetle. As it presented a peculiar appearance, I placed it on the palm of my hand, and found the appearance was caused by a number of small beetles which left the old one and commenced running about my hand, which of course I closed and consigned the whole brood to the fire. This seems to prove that they can produce their young alive, and may account for their being so very numerous in the spring before the early potatoes afford them a supply of food, and a convenient place of deposit for their eggs.

They appear not to be so bad on the Early Rose as on the late potatoes and I prefer to plant the Early Rose, as soon as the frost is out of the ground, say about the 15th May in this township, and if the season is favourable they will be fit for the table by the 1st July and dead ripe by the first week in August, when they may be taken up, and the ground sown with white globe turnips. Should there be a shower or two about that time the turnips will soon be up, and even if not large enough for winter storage, they would afford a good bite for the cattle in October, but in a very dry season it is of little use to sow turnips in August, at least on a clay loam.

SARAWAK.

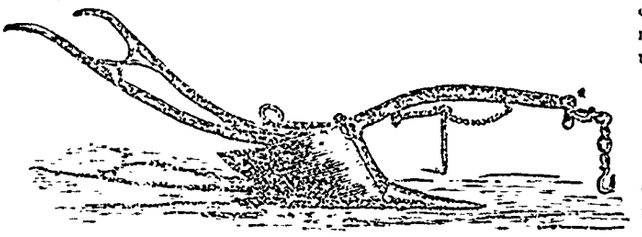
The "small beetles" noticed by our correspondent were probably some of the numerous parasites which prey upon the potato-beetle, and not young ones, as he supposed. This way of picking them is a good one, and can be still further improved by the use of a folded newspaper to hit with instead of a stick. A blow sufficiently hard to dislodge the vermin can be struck, but the vines can not easily be hurt.

How to Grow Turnips Cheaply—Hoeing—Remedy for Turnip-Fly.

It is somewhat late in the season to be talking of sowing turnips, but the season has been of so exceptional a character that many farmers will not have got in their white turnips by the time this reaches them—and the lateness will render all the more valuable any hints by which time and trouble may be saved.

For root crops, the soil should be ploughed in the fall, turning under as much good, rich, well-rotted manure as can be spared, up to, say, twenty loads to the acre. In the spring, after the rush of seeding is over, pass a harrow over the land intended for roots, and, *after harrowing*, cross-plough it. Many may be inclined to question the utility of harrowing *before* the spring-ploughing. To such objectors we simply say, try it before you condemn it. Many of our most advanced farmers practise it, and find that they are well repaid for their trouble. After ploughing, harrow again.

The soil having been brought to a fine condition, free from lumps, moist and mellow, apply such artificial fertilizer as may be determined upon. Here, again, there is a way of doing it cheaply, easily and efficiently. If the fertilizer is applied in the drill row along with the seed, and unmixed with the soil, it will be apt to burn up the seed, and if applied in the drill row and mixed with the soil, a costly amount of labor is required. Therefore, we say, sow your superphospate or other fertilizer broadcast and proceed in the following manner to bring it within reach of the young plants: Use a ridging or double mould-board plough, of the form of which the engraving below will give an idea to those who may not have used them. The mould-boards of these ploughs can be expanded to any desired width. Attach a marker to the plough, and run it so that the ridge formed by the one journey of the implement nearly but not quite reaches the ridge formed on its return journey, leaving a little depression as shown in the cut. The fertilizer which has before been sown broadcast, is by this process mixed with the earth as thoroughly as could be desired, and is rolled into the



channel on the top of the ridge. Along this channel run the seed drill, which should be one of the modern pattern fitted with a concave following roller that will close the drill row, and compact the earth upon the seed.

It is a very common thing to hear farmers say that "Root-crops are uncertain in Canada," or that "Roots do not pay because they take so much high-priced labor to grow them." There are some farmers however, who always succeed in getting good root-crops, and it will be found, upon investigation, that these farmers are most careful about the condition of the soil—that they plough and harrow, cross-plough and harrow again till they have got their land into that condition of fineness of tilth in which roots delight, and from which alone can a crop be expected with certainty. And those farmers who object to roots on account of the expense of the process of cultivation, will see that, by the mode we have given above, the expense of production is reduced to a minimum.

It is essential to the cheap cultivation of roots that the hoe be applied to them immediately upon weeds becoming visible, and while they are shallow-rooted. And here, again, there is a cheap, expeditious and efficient way of getting through the work. Some farmers, while hoeing, will face down the row and cut on one side of two ridges. It will be found a quicker and better plan to get a proper turnip-hoe—which has a broad but shallow blade, set on almost at right angles to the handle—and stand facing across the rows. By doing so the hoe can be used both *from* and *to* the person, thus utilizing motions of which, in facing along the row, half are lost entirely.

In this connection, we may as well give a preventive against the depredations of the turnip-fly which is stated to have succeeded admirably:—Take fourteen pounds of sulphur, one bushel of fresh lime, and two bushels of dry road-scrapings or road-dust. Mix them well together, and apply at night, either by means of a drill, or strewed along the rows by hand. If the fly continues troublesome, repeat the process.

Cool Water in the Field.

There is nothing new in the following method of keeping water cool, for the principle is used by the Egyptians at the present day, and, as may be seen by their inscriptions, has been used by them for thousands of years. They keep their water in unglazed vessels, through the pores of which the water forces itself. The evaporation of this leakage on the outside carries off the heat from within, precisely in the same way that the evaporation of perspiration from the human body enables it to stand a heat which would otherwise be fatal.

If the pail or large vessel containing the water be enveloped in cloths that are kept constantly wet, and be placed in the shade, the water will be found to keep as cool as water for drinking ought to be. Each person on drinking should empty what is left in the dipper or drinking cups upon the cloths, so that they will be kept from drying. Water kept cool in this manner will be more grateful to the palate and less dangerous to the system than ice-water.

The Effect of Plaster.

It is generally conceded, says the *Rural New Yorker*, that Plaster (gypsum) produces its best effects on land that is high and dry rather than that which is wet and low. Fields which are always wet from springs or tenacious subsoils are rarely benefited much by the use of gypsum. But drain them thoroughly and they respond to its use as fully as any others. In years gone by we have frequently heard farmers say that plaster did little good excepting on sandy soil. This was before the era of under-draining, when none but sandy soils were dry enough for profitable working. Of late years these farmers have learned that heavy uplands or lowlands, if made dry enough, need plaster for clover, and after that for other crops. The effect of clover roots in penetrating the subsoil is to leave it porous and friable, often partially superseding the necessity for underdraining. Hence we find that farmers who grow clover largely are most strenuous in advocating the use of gypsum. This is commonly explained by saying that this fertilizer is specially adapted to clover; but the effect extends beyond the first crop. Corn or other crops on clover ley are much more benefited by plaster than on a timothy or blue grass sod. And herein is one important advantage in growing clover rather than other grasses. The roots of clover decay rapidly and give off large quantities of ammonia, while timothy sod contains less nitrogenous matter and decays more slowly, yielding ammonia very gradually. With blue grass the case is still worse, and unless well turned under and kept under, much of its sod will scarcely decay appreciably during the first summer. The fertilizing elements in clover are thus immediately available, and the farmer who grows it experiences the advantages of the nimble sixpence over the slow shilling. In fact, the advantage is even greater, for clover in contrast with other grasses is rather the nimble shilling as opposed to the slow sixpence.

The use of gypsum on decaying clover is to fix the ammonia, changing the sulphate of lime to a sulphate of ammonia, a manure worth twenty-five to thirty cents per lb. It is easily seen that buying gypsum at five dollars per ton and getting from it a manure worth two hundred times that price ought to be a paying operation. That veteran farmer John Johnston was fully justified in saying that rather than do without plaster he would pay forty

dollars a ton for it. The lime in plaster is as valuable as any other, while its sulphuric acid combined with ammonia always present in the atmosphere and over decaying vegetation is probably the most valuable of all nitrogenous manures. We believe most the good effect [illegible] of lime, but not a little of the effect of [illegible] phosphates is due to the proportion [illegible] (gypsum) which they all contain. We [illegible] freely not only on clover in spring, but [illegible] and manure heaps, both winter and summer, [illegible] waste and make manures more quickly available. [illegible] all sow and grow clover largely not only for the [illegible] will be to the soil, but because it [illegible] crop, demands the use of plaster.

Dissolving Bones

The annexed, from the last [illegible] number of the [illegible] *Messenger* will supplement the [illegible] in the last number of the CANADA FARMER to a [illegible] who enquired for a way to dissolve bones:

The method I adopted in 1856, and [illegible] have found satisfactory, [illegible] a sufficient quantity of any kind of ashes, and make as many pans of them round the heap as may be required; spread double the weight of bone dust or half-inch bones of a carboy of acid in a pan; sprinkle them with water from a watering can with a rose on, and make them quite wet, then back a cart to the pan, and let one or two men empty a carboy of acid on the wet bones, another man should, at the same time, with a manure drag or other suitable implement, keep moving the bones and acid until they cease to boil freely; after the mixture has remained one or two days, turn it and the ashes together into a conical heap to dry, and after a few weeks turn over the heap, break the lumps well, and all will be fit to drill. The men must take care not to let the acid touch their clothes, as the least spot touched will be burned. The strength of the acid should not be less than 18·48. On one occasion, I found the acid did not act as usual at the time it was put on the bones, and by inquiry I learned the strength was only a little over 17·00; this accounted for its not taking proper effect.

When the lumps of newly-made superphosphate are dry, probably some of the larger pieces of bones will not be quite dissolved, but I think the action of the acid upon them is sufficient to make them crumble away after they are drilled.

As it is necessary to wet the bones for the acid to take effect, probably if they were thoroughly sodden [illegible] with water there might be no portions left undissolved.

HOW TO HANDLE HARDHEAD STONE. The cheapest way to break cobble-stone is to burn them; and the best way to burn them is to lay down two parallel rows of stone, of about an even size, and so far apart that the larger cobble-stone can be rolled on top and reach across from wall to wall. You can roll large stone up a strong plank on top, and you may put another tier top of these; then build a fire under. It forms an arch, and an hour's fire will heat almost any of them so they will break quite readily with a stone hammer. We had a couple of cords broken in twenty minutes after so heating. We use them for concrete walls, and don't care how fine they break. It costs ten times as much to drill and and blast them. *Live Stock Journal.*

CHARLOCK OR WILD MUSTARD.—Says W. J. F., in the N. Y. *Times*.—Charlock will not grow in sod, but the seed, after lying dormant for years, is ready to spring up in oats or barley, often in such quantities as to make it economy to plough under the crop rather than weed by hand. Something may be done by destroying it in corn or potatoes the first year, and none should ever be allowed to seed in any hoed crop; but comparatively little charlock will grow on a freshly turned sod, and it is only the second year that it comes on in quantity. Charlock seeds by the million, and whenever a fresh surface is turned, a fresh supply is ready to germinate. The only way is to plough in Spring the same as for barley or oats, and cultivate once in two weeks through the season, seeding with wheat in the Fall. As there will be no sod to plough under, this kind of summer fallow is not advisable except to kill weeds. To get as much benefit from it as possible, sow oats after each ploughing, and cultivate them under when six to ten inches high. Five bushels of oats per acre, costing three dollars, will give three green crops to be ploughed under in one season, worth much more as manure than the cost of the seed. Besides, I think charlock and other weed seeds more liable to grow with a thin seeding of oats at each cultivating than if the ground is left bare. The oats shade the ground, while the heat and moisture from the decay of the succulent leaves of young oats is the best preparation [illegible] as a seed-bed. Care should be taken not to harrow wheat in Spring on ground infested by charlock, as the harrowing will cause much to germinate that would otherwise have remained dormant.

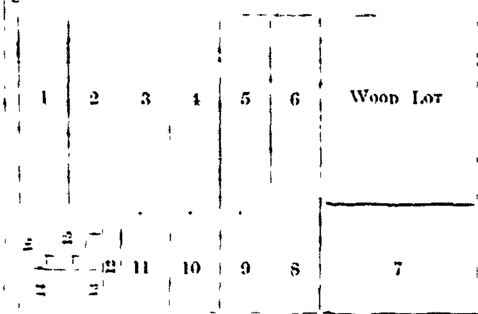
Laying-Out a Newly-Cleared Farm.

EDITOR CANADA FARMER.—In your March number, I [illegible] a letter from a farmer in this county asking for a plan for laying out his farm; but as such a plan with [illegible] information he has given respecting the surface [illegible] of his farm is [illegible] for backs without [illegible] the straw. He should have stated whether his [illegible] rolling, whether it is intersected with [illegible] creeks, whether any part is swampy, as all these [illegible] should be taken into consideration in adapting [illegible] laying out of the fields to meet those various requirements. I therefore assume that his farm is level or nearly [illegible] and also that the buildings are to remain in their present position.

There is a difference of opinion among farmers with [illegible] to the size of their fields. Certainly twenty-acre fields require less fencing than those of half that size; still [illegible] ten acre fields are in some respects somewhat con[illegible]. Unless the land is level and low, the snow is generally drifted away from the middle of the large fields to the injury of fall wheat and clover which are often winter killed in such situations.

"Farmer" raises four different kinds of grain and two of root crops. These kinds of grain ripen at different times, and it is of some consequence to get the pigs into the grain stubbles before they are shut up to fatten, and as soon as the grain is safely secured in the barn. "Farmer" has one hundred and ten acres of land cleared, which will allow sixty acres for crops, twenty acres for meadow, and twenty acres for pasture; and the remaining ten acres will allow three acres near the barn divided into two fields for calves and pigs, five acres for orchard, and the remaining two acres for buildings and a garden between the house and concession road.

The only permanent road, as shown in the plan, leads from the concession road back to the wood lot, and, as all the fields open on that road, the stock can be removed from one field to another without having to cross other fields, and a gate may open from that road into the barn-yard, whilst a foot path might lead from the house, through the garden, to the concession road.



EXPLANATION.—1, 2, 3, 4, 5, 6, Fields of ten acres each, including road. 7, Meadow, twenty acres. 8, 9, 10, 11, Pasture fields, five acres each. 12, Calf field. 13, Pig field. 14, Orchard, five acres. 15, 16, Barn yard, garden, two acres.

By dividing the twenty acres intended for pasture into five-acre fields, they may be more profitably grazed than if the same amount of land was in one field. When the grass is sufficiently advanced in the spring, the cows might first be turned into No. 11 and kept there for a week, then removed to No. 10, and the horses turned into No. 11. At the end of another week, the cows would be removed to No. 9, the horses into No. 10 and the sheep be turned into No. 11; so that by grazing the fields in succession with different kinds of stock, one field would always be unoccupied and so will have time to make a fresh start. Besides the fields will be better grazed, as what the cows don't like, horses do, and what is refused by the horses is acceptable to the sheep.

If this amount of land were laid down at first with different kinds of grass, it might be kept as permanent pasture, and, being near the barn and stables might be readily top-dressed with fresh manure late every fall, the seeds of weeds in the manure would drop out amongst the grass and germinate early in the spring, but, as their roots would have no chance to penetrate the soil, they would soon wither under the fierce rays of our summer sun; besides the cows would not have far to travel when brought home to be milked in the mornings and evenings.

If the house and barn are frame buildings, and the ground level or nearly so, they might be removed to a more central position, but this would necessitate an alteration in the plan, which, to be useful, would require a greater amount of local information than "Farmer" has yet been pleased to afford.

SARAWAK.

HOME-MADE SUPERPHOSPHATE. The *Maine Farmer* says: Mr. A. C. Emery, purchased one hundred pounds of ground bone, placed it in a half hogshead tub and applied forty pounds of sulphuric acid, adding water as desired. In five days' time the whole mass was reduced to a consistency of thick jelly. Water was then added, and three hundred pounds of plaster used as a dryer, the whole being worked and shovelled over until it could be readily handled. The phosphate so made was applied to one acre of corn and one of potatoes, both being manured sufficiently, and a small quantity was left which was applied to his wheat field and to a plot of grass ground just to see what it would do. The result of this manure in the two latter instances was most marked, while the corn was heavy, the growth being dark colored and stout, and the potatoes good. The entire cost of the phosphate was $7.50 and Mr. Emery thinks it the best expenditure in the way of purchased manures he ever made.

ROPING HAY.—As haying will soon be on, I will give you the method of harvesting which I noticed in some parts of the country last year, which I consider a great saving of labour. The hay, when cured, is raked into windrows, then a rope or chain, about 30 feet long, is laid with the centre on the end of the windrow; the horses are placed one on each side and hitched one to each end of the rope; the checks are let out long, so that they will not trample over the hay. One person stands on the curve of the rope on the hay; with a fork he smoothes the hay down, and keeps it from falling over the rope. A boy can drive the horses up the windrow until they get a sufficient quantity, or as much as the horses can draw. Then, if it is to be stacked in the field, it is taken direct to the stack, or barn if near by. One man and boy this way will draw as much as four men will stack or mow away. If the distance requires the hay to be loaded on a wagon, three heaps put together this way, will make a load; or, in case of threatening rain, with a little topping up, will stand a a great deal of rain without much injury. Hay put together this way will pitch much easier than out of the windrow. The boy can ride also on the hay while drawing it together.—*Cor. Country Gentleman.*

AARON'S ROD.—As to killing it by cultivation, it is impossible; I have a large patch about one-half acre well stocked with it. I have tried various remedies, all of which have failed except one, and all my remedies but this one have improved its appearance. I find rock lime put upon it in large quantities the wet slacks with so much venom that it will kill; and until I find lime on or near my farm, I shall give it an awful letting alone, as experience has taught me that the least particle of root or branch dropped on the surface of the ground, either in grass or ploughed, will root, as also it will seed and scatter itself for some distance. If you will mow grass and dry it, in which some of it is left in, then burn the lot and wait two weeks, and you will find Mr. Aaron growing the better for it. Furthermore, if you will cut a branch of it when eight or ten inches long, and hang it within one foot of your stove funnel with the top end down, it will turn and grow up for weeks and blossom in your face. If any one don't believe this, I will send you a sample that you may have the evidence, but don't plough nor harrow amongst it until you are satisfied.—*Cor. Massachusetts Ploughman.*

BUCKWHEAT. A Pennsylvania correspondent says, in the *American Farm Journal*.—We have two varieties of buckwheat in this State, namely: the common or gray buckwheat, and the Merino buckwheat. The latter is only fit for pig feed, and is inferior to the common variety for this purpose; but it yields enormously when sown upon good ground, and is not attended with the same difficulties in raising it. It can be sown any time from the first of April to the middle of July. The gray buckwheat should not be sown earlier than the 25th of June, nor later than the 10th of July. If sown too early it is liable to be injured by the hot rays of the sun, while in blossom, and if sown too late, it may be injured by early frosts in autumn. Even greater care should be taken to fit the ground before sowing than for other small grain. From my experience I would choose high, clayish soil, in preference to bottom lands. The ground should be ploughed early in the season, say the first of May, and stirred just before sowing. The ground should be well pulverized, or the harrowing should all be done before sowing. Then going over it with a light brush or a light harrowing will be quite sufficient. If care is taken with this crop, it will prove as remunerative as almost any crop we can raise. The flour has sold for more than wheat flour for the past year, and indeed is looked upon as quite a luxury by the town people.

Grasses and Forage Plants.

The Meadow Fescue—Festuca Pratensis.

The meadow Fescue, *Festuca Pratensis*, is a grass that is highly thought of in England, and that always forms an important one of the many varieties there used for seeding. We are not aware that it is ever sown on this continent, but it is indigenous here, and is found in almost every pasture and meadow. Stock, especially sheep, are fond of this grass, and it has excellent nutritive qualities. Chemical analysis places its constituents at:—Water, 74.8; albuminous matter, 24; fat, 0.8; heat-forming principles, 10.2; woody fibre, 10.1; and ash, 1.7. It grows about two to three and a half feet high; the leaves are broad, flat and rough on the under surface, and about a foot long; the root is perennial and fibrous.

It succeeds best in low-lying moist ground, though it is often found on high lands. It flowers in June, and consequently has lost some of its value for hay, when it is left till the timothy is ripe. Its seeds weigh about fourteen pounds to the bushel.

Its comparative value will be seen at a glance by the following table from the famous Woburn experiments. Mr. George Sinclair examined 1,950 grains of the leaves of each of the following grasses gathered in the early part of April, and found them to contain:

Grains of Nutritive Matter.

Tall Oat Grass	120
Darnel-like Fescue	110
Sheep's Fescue	102
Burnet	100
Meadow Foxtail	96
Meadow Fescue	93
Tall Fescue	91
Creeping Fescue	90
Lucerne	90
Crested Dogstail	88
Smooth Brown Grass	84
Timothy or Meadow Catstail	80
Broad-leaved Clover	86
White or Dutch Clover	64
Sweet-Scented Vernal Grass	52
Creeping Bent or Florin	42

Timothy Meadows—When to Mow Them.

Timothy, all will agree, is the prince of artificial grasses for hays. An examination of the plant and a comparison with other grasses, will show the critical observer that it is the only grass that has a bulb. This will be found just where it springs from the soil into the atmosphere. In this respect timothy may be called a "cousin German" to an onion. Below the soil and partly above it, are found the delicate rootlets branching out in all directions, to seek sustenance for the plant from the nutritious elements in mother earth. When a timothy seed is sown and germinates, it first appears as fine as a cambric needle. In its growth and progress to maturity, it continues a single spire, forming first its joints, and along with each joint its long, pendant leaves, and then its head, and next its variegated bloom, and finally its seed. When the seed have become thoroughly ripe, an examination of the plant at the surface of the earth will show that the bulb has become formed, and is mature, keeping pace in its growth and progress to maturity even with that of the head and seed, thus following the law of nature in the execution of her grand purpose of reproduction, in the perfect and complete execution of which, all that is done is essential, for nature does nothing in vain.

It has been stated that this plant may be called "a cousin German" to the onion. What is the object of the gardener in cultivating the onion? It is to get the bulb as large as he can, and then preserve it as food for man; not for instant use, but for consumption in the future. For this end he does not permit the plant to fulfil entirely the law of its nature and become matured; nor does the grower of oranges, or lemons, or apples, permit them to attain thorough ripeness, but he plucks them when they have attained their full size and before perfect maturity, because when that is attained, decay, in accordance with the law of nature, next ensues, as the means of reproduction. And the gardener, when he finds the seed forming on the head of his onion plant, breaks the stock, in order to check the operation of the law of nature in the progress of the plant to maturity, and to prevent the bulb of the onion from ripening, as it would speedily do if full play were allowed to every force and element that nature has provided to the plant. If the onion plant be left undisturbed in its growth, we know its reproductive power is not confined to the seed or "buttons" that are found in the head, but the bulb sends forth sprouts all around its circumference, which each in its turn becomes a new plant. So also with the timothy plant; if it be left to attain thorough maturity without molestation by man or beast, its bulbs will send forth sprouts, and these will form the "aftermath," to make the crop in the next season.

After the plant has attained this complete maturity, the grass may be cut and saved without injury to the reproductive power of the bulbs. A practical test of this state is found in the tendency of the head to "shatter," or lose its seed; another in the hardness of the seed. If the hay be cut before the perfect maturity of the plant, that is done for it which the gardener does for the onion, and the reproductive power of the bulb is proportionately diminished, although, if cut at any time after it has blossomed, its reproductive power will not be entirely destroyed. An examination during the succeeding Autumn of plants cut at different stages between the bloom and entire ripeness, will show in the early cut plants two, three, or four shoots springing from its bulb, and six, eight, ten, or twelve sometimes from the thoroughly ripened bulb. What a difference in the yield of the next year's crop! The conclusion is, that in order to preserve and keep for a succession of years a timothy meadow in full yield, the grass should not be harvested until the plant is perfectly ripe.

The Meadow Fescue.

In conversing upon this matter with my neighbours, I am told by them that it is their practice to let the seed get ripe and shatter the first harvest after seeding the meadows, but after that, as the land has become sufficiently seeded by the shattering, they cut the hay early. This practice is good so far as it goes, but the reasoning, it is submitted, is unsound. The shattered seed may aid in supplying spaces of some size where there was no "take" from the original seeding, but if fresh seed be sowed at or after harvest, amid the yearling plants, the strength of the latter will smother the new spires, even if they sprout, and will prevent them from growing. Experience proves this; and it is not perceived why the shattered seed should do better than that fresh sowed or resowed.

The better theory is that the second year's crop, which my neighbours say will be increased by a late reaping of the first crop, is attributable to the great number of sprouts springing from the thoroughly matured bulbs—so matured by not being molested till the first reproductive power of the bulb is attained. No danger need be apprehended of the grass becoming too thick from the offshoots from the bulbs. If the land be taken to the exclusion of all other growth, whether good or vile, so much the better. No more can grow than the fertility of the soil admits. Another conclusion is that a timothy meadow grazed by stock, whereby the plants are never permitted to attain maturity, must in a few years "run out," and other grasses or weeds supply the place of the timothy plant. The experience of every grazier will accord with and sustain this proposition.

It is maintained by many (indeed, the opinion is very general) that early-cut timothy hay is much more valuable than that cut at maturity. Accident supplied the writer with the following test: A portion of a lot near the dwelling was mowed when the timothy was in bloom. The hay was cured and stacked. The exigencies of farm work prevented the mowing of the other part of the lot until the hay was so ripe that the manager thought it was only "woody fibre," and advised turning the stock upon it. This would have left the lot as unsightly as a half-shaved face, and it was ordered to be mowed and the hay stacked with the other. No rain fell upon either mowing. In the following winter, during a severe snow-storm, all the yearlings and two-year-olds were given admittance to this stack-yard, where, contrary to all expectation, they were found to feed upon the stacks of the mature "woody fibre," and to leave comparatively untouched the sweet-scented bright hay cut when in bloom. "One swallow does not make a summer." It is hoped that other farmers will suggest this point to a test.

The writer, for information from practical men interested to arrive at a sound judgment, inquired of a livery stable keeper in a city, which he preferred the early or the late cut timothy hay. His reply was characteristic, viz: "It depends on what I want it for." Of course, it was stated for consumption of horses in your stable. "Well," said he, "for horses that I have to keep in fine order—my boarding horses and my hack horses—I prefer the ripe, late cut hay. It is more nutritious and they eat it more heartily. But for the mass of transient customers that put up for the day only, I buy the early cut. It looks better than the other and gives satisfaction to those that examine it, and less of it is consumed." He took me into his stable and showed me how he managed it. The boarding horses and his roadsters were kept in the back part, and over that end he stowed away through a door in the loft their hay, and over the front where the transient customers were accommodated he stowed the bright sweet-scented early cut hays.

These considerations have brought my mind to the conclusion that the preservation of the timothy meadow and the quality of the hay should induce farmers to forbear to harvest timothy until it has become thoroughly ripe. I know the contrary opinion and practice prevails, and although fully appreciating the proposition that what is generally done by persons engaged in a business is apt to be right, because it is usually the result of the experience of those capable of forming a sound judgment, yet I submit these views for the consideration of agriculturalists.—*Cor. New York Tribune.*

We fancy that few farmers will be found to assent to the ideas above laid down. Common sense would indicate that, in cutting grass for hay, it should be cut at the time when there is most nutriment in the stalk, and not when the nutritious principles have gathered in the seeds and left the stalk woody and comparatively worthless. The correspondent cites the usages of livery-stable keepers as authoritative on the question. We always thought that the reason those gentlemen prefered ripe hay to that cut in a green state was, not because they thought ripe hay more nutritious, but because it is *more filling* and because there is nothing in it to tempt the horse to eat largely and thereby damnify the profits.

THE PRICKLY COMFREY.—Since our last issue, we have seen in the London *Farmer* a correspondence about the Prickly Comfrey. That journal publishes the following, in reply to a British Columbian enquirer, from K. B. Edwards, Burbage Hall, Hinckley, Leicestershire, the authority on the plant:—"A stiff clay or soil suitable to cabbage tribe suits Comfrey best. A sandy light soil is not nearly so suitable, although it will grow well in any soil. I believe it is raised from seed occasionally, although root cuts are far better. The plant does not require storing for the winter. No doubt the roots could be dug up and stored, if so desired, and planted again in the spring. The leaves only are used, and in a green state. I tried to propagate from seeds a few years ago, but they failed to germinate."

LUCERNE.—Mr. Simmers has, at his residence at Yorkville, a patch of Lucerne, about half an acre, seeded last fall, which has been cut twice this year—once at the end of May, and again about the 8th July. Each cutting gave a large quantity of good feed, the Lucerne averaging about two feet high. He has also some Lucerne seeded this spring which is almost ready to cut; and a patch of Lucerne and Hungarian which is in a thriving condition. It was sown broadcast in all cases. In England, and, we believe, in California, it is usually sown in drills, and kept clean by cultivation. Former attempts to grow Lucerne round Toronto have been unsuccessful, but as it succeeds, with care, in New York and Michigan, we see no reason why we cannot grow it.

Implements.

A Weeding Machine.

They have a new agricultural implement in England, which is designed to exterminate weeds among growing grain crops, and it is made on the principle of the small tooth comb. It is used in the grain at the time when the weeds to be pulled have heads but before the crop has arrived at that stage of development. The teeth allow the headless grain to pass through, just the same as the hair of infantile humanity passes through the teeth of the small toothcomb; and, pursuing the parallel, when anything that has no business there comes between the teeth, it is caught and jerked out.

The weeding machine is the invention of Mr. Jurgenson of Newcastle-on-Tyne. It has for its principal part a horizontal cylindrical drum being between two wheels, which carry it and its attached appliances. This drum carries at three points equidistant on its circumference, three sets of projecting teeth or "iron combs" running horizontally along the length of the drum from end to end. By appropriately arranged gearing as the machine progresses along, the drum is made to revolve, and the iron teeth or combs are at the same time made to recede to and from the circumference of the drum or to work in and out of slots in it, and over or along the top of the corn which is being cleared of the weeds. Should the soil have recently fallen and rendered the soil loose and friable, or should it be in this condition otherwise, the teeth catch and pull the weeds fairly out of the soil; but should the soil be so hard and firm set as to take such a grip of the roots that this easy extraction of the weeds cannot be made, then the combs or teeth pull the heads off, so that they are prevented from "seeding," leaving the stems in the soil. As the drum revolves, and the teeth are drawn in towards its centre, the weeds or their heads, as the case may be as above stated, come against the circumference of the drum, and not being pulled in through the slots, they of course drop off to the ground, or are left to wither and die amongst the crop. At the same time as we have already stated, the combs or teeth exert no action upon the grain plants, the blades of which pass between the teeth; and, so that no hurtful action will be exerted by the combs upon the blades, the teeth are carefully rounded. To allow of the wheels easily passing through the crop, wedge shaped guards are placed at the sides which enter amongst and gently put the crop aside.

Novel, and even comical as is the principle of the weeding machine, it is stated to have been completely successful at many trials of its capabilities. Its principal use in Great Britain will be found in exterminating the Charlock or Wild Mustard with which some districts are so yellow that a stranger might be excused for doubting whether the Charlock were not the crop in cultivation and the cereals the intruding weeds. This same Charlock is spreading in Canada, and it being as prolific and persistent as it is impudent, we may yet be compelled to call in the aid of the patent tooth-comb process. But we recommend Canadian farmers not to allow the Charlock to multiply just for the fun of combing it out in years to come.

We do not see why the same principle cannot be used with thistles, at certain stages of their growth and with certain conditions of the soil.

Unprotected Threshing Machines.

EDITOR CANADA FARMER.—Since the threshing machines began to travel around among the farmers, last fall, scarcely a week passed during the winter, without the occurrence of some accident owing to the unprotected state of the machines. I am quite aware that a law came into force on the 1st September last, which imperatively requires all threshing and sawing machines to be protected. Of course the farmers ought to enforce the law, but how are they to do it? Those who own the machines will not incur the expense of protecting them, unless they are obliged to do so, but if only one or two farmers in each township were to refuse to employ them, they would not get their grain threshed at all.

I would, therefore, suggest that the farmers in every township should combine together, and agree not to hire any machine unless it is protected in every respect as the law requires. I understand that the manufacturers of first-class machines will not send them out unprotected, but there are many men who bought the unprotected machines a year or two ago, and they will persist in running them until they are worn out. Hence combination amongst the farmers for their own safety is necessary in the meantime.

SARAWAK.

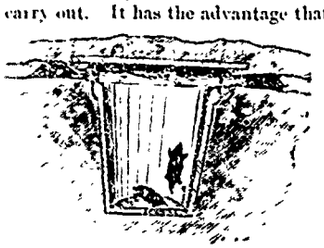
Trapping Moles.

Leaving aside the questions as to whether moles should ever be trapped at all, and whether they ever do any harm to vegetation, let us suppose that the farmer has decided to trap them, friends or enemies. There are several ways of doing this. One commonly in use in England is, the insertion of a noose in the runway. This noose is attached to a stout, springy sapling which is stuck into the ground a little distance off. The sapling is then bent down and the noose is tied in the runway, and fitted with a trigger. On this trigger being touched by the mole, the bent sapling is released, the noose tightens, and the unfortunate mole is hoisted aloft and there hangs, a victim of misplaced confidence and a warning to all depredators, supposed or real.

It is stated that rags dipped in gas tar and placed in their holes will cause moles to vacate the premises; also that smoked fish, similarly placed, will do the same; but we have no positive knowledge on the subject.

An effective trap is in use in Belgium, the principle of which is the suspension aloft of a heavy block of wood, armed with long sharp spikes, which drops between two uprights placed on each side of the runway. The mole in passing along touches a trigger which releases the weight, and the mole is transfixed by the spikes.

Another and more simple plan is one invented by a New Jersey market gardener and by him contributed to the New York *Tribune*. There is no patent right attached to it, and it is one which every farmer or owner of a lawn or garden can carry out. It has the advantage that no reset-



ting is required, and that the catching of one mole does not block the runway. The contrivance is simply a large flower pot—an old tin pail will answer the purpose excellently—sunk beneath the ground, upon a level with the floor of the run. A flat piece of board is laid over the run and the earth heaped upon it, so as to exclude the light completely. In the perfect simplicity of the thing its success chiefly lies. The moles, seeing or feeling nothing, with the highly sensitive "feelers" upon their snouts, run very readily into the trap, from which there is no escape. Every fresh arrival adds to the company, for there is no resetting needed, and there is no disturbance of the ground to excite suspicion. Doubtless the movements of the moles themselves attract other unfortunates to their ruin, for one who has tried the trap with eminent success says that he caught seven moles the first day, and three the second day, after setting it.

Another Potato Planting Machine.

We observe that a potato-planting machine has been under trial in Scotland with, apparently, favourable results. The information we have does not state whether the planter opens the drill row and covers the sets at one operation as is done by an American implement of which we lately witnessed a trial; and we should judge, from the non-mention of these features that the Scotch machine does the planting only. The *North British Agriculturist* says of the planter —Mr. Ferguson, Kinnochtry, Coupar-Angus, has designed and got constructed a new potato-planting machine, which promises to effect a considerable saving of labour. The machine plants two drills at a time. The inventor planted the whole of his potato-break this season with it, and never had the work better done. One man and a girl, with one horse, carted the sets and planted at the rate of six acres in seven hours. The machine is easy in draught, and can be made at a very moderate price. It is, we understand, to be exhibited at the forthcoming show of the Highland and Agricultural Society at Glasgow, and will likely there, along with anything else partaking of novelty, be set aside for trial. In these days of excessive high and rising cost of labor, any implement or invention calculated to lessen the farmer's dependence on manual labor is worthy of the closest attention of all concerned in the ownership and occupation of land.

A New Turnip-Thinning Machine.

The *Ayr* (Scotland) *Advertiser* says:—We have had an opportunity of seeing lately Mr. Dickie's new turnip thinner put to a practical test, and the favorable anticipations formed regarding it have been fully realized. We have seen it working on all kinds of land in the Girvan district, from the lightest sand to the stiffest clay, and the manner in which it performed its work was highly creditable. On well-pulverized land, free from weeds,, with turnips of a moderate size, the machine works admirably—in fact, leaves little to be desired. The circular hoe sweeps the plants into the drills as lightly as a brush, leaving the clumps as small as may be wanted. On stiff land the lessening of manual labor is also very great, the hoe breaking effectually the hard crust, saving the hands of the weeder, and enabling him to get over his task much more lightly. Although the machine certainly makes the prettiest work in small turnips, still it is quite effectual although the turnips are a considerable size.

On the farm of Girvan Mains the thinner was used over several acres, in a field with a drill of 600 yards. The turnips were very large, and not affording the most favorable condition for good workmanship. On a part of the field the thinner was not used at all. Mr. Hannah's foreman, who was in charge of a large band of weeders, carefully noted the difference of speed with which the turnips gone over with the machine were singled compared with the others, and his estimate was that it took exactly one-third less time to finish them, and that they were much better done, being more regular, than those singled in the usual way. Slight modifications may be made, and beneficial alterations in the shape of the hoes, as experience may direct, but we are of opinion that it will prove the greatest practical boon to the arable farm since the introduction of the reaping machine.

Champion Reaper and Mower Still a Grand Success.

We noticed on the Fair ground, last week, the celebrated Champion machine, the same as was shipped through our town to Wm. J. Hall, Keene, and from all appearances, and what farmers and mechanics and others tell us, we believe it to be the leading and best machine of the day. The "Champion" men being nearly all strangers amongst us except Mr. Hall, they showed to the immense crowd they had around all day the strength and durability of their machines, the strength of their rakes being unsurpassed. They don't seem to fear anything; they drove over the roughest ground of any machine present; they sailed over obstructions which none of the others attempted to, carried their points, and explained their machines to the farmers; and all the agents that could find fault did all they could, but the "Champion" men seemed to carry the day all through. Any one needing a reaper or mower this season would do well to see the Champion and give it a trial before purchasing, as Mr. Hall informs us they give a guarantee with every machine.—*Peterboro Review, June 11th.*

The agent of the Joseph Hall Works is now in Town, and will exhibit the celebrated Champion Reaper on the Market Square this forenoon. This machine has now attained a world-wide reputation and is acknowledged to be the best Reaping Machine now made. It has no equal; every one should see it to-day.—*Port Hope Guide, June 19th, 1875.*

CAOUTCHOUC IN HARNESS.—The new "wrinkle" mentioned in the CANADA FARMER for May, p. 64, of introducing Caoutchouc in the harness of draught animals, is wrong in principle. Any elastic medium between the horses' collar and the axle of the carriage, will operate against the advantage gained by the momentum acquired, which helps it over the stone or other impediment placed before the wheel. There should be no yielding in the line of traction, if there is, the wheel is left behind, as it were, when it comes to a stone, because the momentum and the power of the horse are in a degree separated, and the horse has to lift the wheel over the stone by increased muscular exertion.

J. F. W.

BUG CATCHER.—A novel machine which I think will be of great value to all who grow potatoes, is intended to catch live Colorado potato bugs. The machine is made somewhat like a wheel-barrow, and is drawn by one horse. It runs between the drills, and has two revolving fans which are driven by a belt from the axle of the wheel, this belt driving a wooden shaft two feet long, with beveled gearing at each end of the shaft to drive the fans, which revolve and knock and shake the live bugs into troughs. The fans can be raised or lowered to suit the height of the potato vines. A barrel with hot water, or a solution of Paris green or weak lye, made from ashes, is placed at one end of the field, to empty the bugs into. A boy and horse will clean from three to four acres per day.—*Cor. Country Gentleman.*

Horticulture.

THE ORCHARD.

Cultivating Orchards - Pro and Con.

"Who shall decide when doctors disagree?" And who shall be taken to be the best guide to the orchardist—the one who says that orchards should not be cultivated, and adduces the result of long experience to support his dictum; or the equally certain expert who also has tested the point and found that cultivating is the only means by which fine results can be obtained?

On the one side can be cited Mr Thomas Meehan, who is justly considered an authority on all matters relating to gardening and arboriculture. He says that the time spent in cultivating orchards is time thrown away, and in support of his position, cites his experience. He prepared a piece of hard, rocky soil, by ploughing under a heavy old sod and planting potatoes, followed with rye; and set in the fall on stubble, 1500 fruit trees of all kinds and sorts, for his own use—dwarfs and standards. The work was done by common laborers in a rough manner, and the land seeded; since which he had mowed from two to three tons per acre yearly for four years. All varieties seem to do well, and make a large current year's growth. He has applied surface soil, taken from along hedge rows and highways, each year about the trees, as far as the roots extend; but the next year leaves the place where applied the year before, and puts the mould outside the former application thus getting the tree-food farther and farther from the trunk and placing it where the feeding-roots can get it. He also applies to the grass $6 or $8 worth of phosphates per year. He prunes but little, and grows fine fruit with little expense.

Per contra, "Agricola," in New York *Herald*, says that, as a general rule, orchards should be cultivated, or at least kept clean and free from vegetation till the trees are at least ten years old. Experience, as follows, is adduced to support his views: The best orchard of bearing peach trees we ever saw was on ground kept perfectly clean and mellow by cultivation, no other crop being allowed to occupy the soil; and we have no doubt that those who own orchards of fine fruit would find it greatly to their advantage to discard every other crop on ground thus occupied, in order to keep it perfectly mellow by successive ploughing and harrowing: this would certainly be the case where, as in many cases, the orchard proves more valuable than all the rest of the farm. A part of a neighbor's young standards grow on ground occupied with field beets, a part with carrots, and the rest with young fruit trees only a few inches high, in rows about four feet apart. The latter, of course, made much less draft on the soil than the others, covering, as they did, but a small part of the surface, all being kept thoroughly cultivated. The trees on this part consequently made a most vigorous growth; on the carrot ground the growth was conspicuously diminished, while on the ground occupied by beets the young shoots were not more than one-half the length of those first mentioned. This experiment is the more interesting from the fact that these root crops, if well hoed, as they were in the present instance, are found to be incomparably better for the trees than the common way of planting them in grain fields or in grass. Potatoes were not tried; but we have seen a row of peach trees growing in potato grounds, none of which had made shoots of less than a foot and a half, while, side by side, in wheat, under circumstances otherwise precisely the same, none of the trees had grown more than three inches.

Enemies of the Apple-Tree.

The apple-tree numbers among its enemies not less than seventy-five different species of insects. Of these, the blight-insect (*Eriosoma pyri*), and the young of the cicada, prey on its roots. The former is a near ally of the *Phylloxera* that does such great harm to the vine. The roots of a tree infested with it should be dipped in soap-suds, and, when replanted, a shovelful of ashes should be mixed with the dirt. The young of the cicada—commonly called locust—lives sixteen years in the ground, and, though usually sucking the sap from the roots of the oak, it sometimes attacks the apple tree, and during this long period, proves a serious drain on the tree.

The trunk of the apple-tree is subject to attacks from a number of beetles that bore into the bark and wood. Among these pests the most prominent is the common apple tree borer (*Saperda candida*.) This may be kept down by cutting out the worms, or by pouring hot water into their holes, in the autumn; or by applying soap to the trunk, or surrounding it with tarred papers, in the spring. Two Buprestid borers, the *Chrysobothris femorata* and the *C. Harrisii*, are also conspicuous foes, and are to be treated in the same way as the *Saperda*. Other boring beetles infesting the apple-tree are the white-lined *Pseneocerus*; the cylindrical bark borer, or *Tomicus mali*; the apple-twig borer, or *Amphicerus bicaudatus*, the prickly leptostylus (*Leptostylus aculiferus*); and the apple leiopus.

Next to the borers, the most destructive enemy of the apple-tree is the scab insect (*Mytilaspis pomorum*, Bouche.) The best remedy for this evil is to scrape the bark of the tree in autumn, and again in June, when it should be washed in whale-oil soap.

The leaves of the apple tree are liable to the ravages of the American tent caterpillar (*Cheiocampa Americana*), the canker worm (*Anisopteryx vernata*), the apple-sphinx (*Sphinx gordius*), the swallow tail butterfly, (*Papilio turnus*), the apple moth (*Nola Malona*), the bud-worm, the palmer-worm, the twin spotted leaf-miner, the apple-aphis, etc.

The codling-moth attacks the fruit, laying its eggs in the calyx of the blossoms, just as the petals are falling. The worm hatches in a few days, and burrows into the core. In three weeks it is full-sized, and the apple it feeds upon withers prematurely, and drops to the ground. The worm then leaves it and creeps under the bark of the tree, where it weaves a cocoon. A few days after a moth appears to reproduce a crop of caterpillars before winter, and thus the round of life of the codding-moth is sustained from year to year, and the crop of apples is seriously diminished, or entirely cut off, by its mischievous depredations.

Bird-Scarer.

The following device for scaring birds from fruit trees or vegetable seeds is an old one, but is none the less valuable on that account. Get a glass bottle and cut off the bottom, which can be done by tying around it a string saturated in turpentine or kerosene and burning it. A slight touch will detach the bottom if it does not part without. Make

a hole in the cork and suspend by a string or fine wire coiled two or three times to give it a little spring. A good sized nail, a stone or anything will make a clapper for your glass bell. Then drive in the cork securely or wire it down, and leave wire enough to hang the bottle to some delicate bending twig or to a pliant sapling thrust in the ground. The bell will ring by the motion caused by the wind or by the birds alighting on twigs near it.

Experience in Pear Culture.

At a meeting of the Massachusetts Board of Agriculture, Dr. J. R. Nichols, of Haverhill, gave his experience in growing pear trees as follows:

I have a plantation of pear trees numbering some three or four hundred, some twenty years old and some three or four; and I have endeavored to observe pretty carefully both my own trees and those of my neighbors in the northern part of the county; and some peculiar and interesting experiences have come up in the course of my connection with those trees, showing the contrary influences which govern men in their judgment as regards trees. For instance, year before last, in one plantation, where there were ten pear trees of ten different varieties, the trees were apparently in very good condition in the autumn. When I mulched round them with manure in the fall, I left them in very good condition, as I supposed. In the spring I found that every tree of the Stevens Genesee variety took the blight, and every one was entirely destroyed. Of course my prejudices were immediately raised against the Stevens Genesee.

The past winter I found that precisely the same influences had been at work upon the Flemish Beauty. Every one of that variety in this plantation was destroyed in this way. The bark became black, there was a little black spot upon each leaf, which gradually extended, the leaf turned yellow, and the trees died, and I was obliged to dig them all up; so that my prejudices were immediately raised against the Flemish Beauty. What will happen next year I don't know. So that, as regards fixed facts in the culture of fruit, it seems to me that we have not many of them.

There are, however, two facts that are forced upon my mind very particularly with relation to pears; first, that the pear must have a deep soil; and secondly, protection. I am inclined to think that pears will not flourish and bear fruit if you are deficient in depth of soil; and I am inclined to think so from the fact, that a neighbor of mine, who pays no attention to his trees at all, has abundant and most excellent crops; but his trees were set out in deep soil, and are protected from the northerly and the easterly winds. I therefore think, that in setting out a plantation of pear trees, no matter what the variety may be, we can rely on these two things as fixed facts or principles—protection and deep soil; and I think we can, if we keep in mind these two things, reckon with great confidence upon our crops.

As regards the kinds which should be planted—that is, which are the most hardy—my experience leads me to think that all varieties will take a fancy to die, in spite of all we can do; and if I was asked which I would choose, I should hardly know what to say. I might mention the four varieties that have lived with me, and borne largely and continuously; but I should hesitate, because some other man might rise up here and say he had had exceedingly bad luck with those trees.

CORRECTION.—In the article on p. 105, last issue, on "Plums at Owen Sound," the compositor made "Sarawak" say that certain plum orchards in England, where he used to go for plums nearly *thirty* years ago, are still flourishing. It should have read, "*fifty* years ago." The writer has resided in this country since 1830.

SAVE YOUR SOAPSUDS.—A person who would throw away a barrel of soft soap, or a boxful of hard soap, would be called wasteful, as such material will operate like an excellent fertilizer when spread around fruit-trees of any sort, or berrybushes. After a barrel of soap has been diluted, and has passed through the washtub, the elements of fertility in the mass will be even more valuable to growing trees and plants than if applied in any other manner.

TO PROTECT TREES FROM THE FLAT-HEADED BORER.—The following is the recipe recommended by Mr. Henry Shaw, proprietor of the celebrated gardens at St. Louis, bearing his name, for protecting trees from the flat-headed borer:—To a barrel of water put 10 pounds whale or fish-oil soap and 5 pounds Paris-green. Applied during the Summer months to ash and other young trees with smooth bark in the recently planted Tower Grove Park, it prevented the entrance of the insects, which had previously done much harm.

MCINTOSH RED APPLE.—This is an apple found by a correspondent of the *Vermont Farmer* in Matilda, Dundas Co., Ont. The parent tree originated near where it now stands some seventy years ago, and has borne every year since the oldest inhabitants can remember, and is still perfectly hardy, the apple also being good in every respect. It has been propagated from, and distributed in the neighborhood, and evidence is given "of the most positive character as to hardiness, productiveness, and longevity of the tree, and quality size, and keeping properties of the apple. Also, there is another peculiarity about this variety—the limbs seem to come out like pins, and never split down.

HASTENING THE RIPENING OF FRUIT.—Acting upon the principle that renewal of the earth immediately surrounding the roots increases their activity, and accelerates the maturing of all parts of the plant, including the fruit, a New Jersey grower removed the earth about an early pear tree, eight weeks before the normal period of ripening, for a space of 13 to 15 feet in diameter, and to such an extent as to leave a depth of earth over the roots of only 2½ inches, which would be thoroughly warmed by the sun. He was surprised, not only by the ripening of the fruit in the middle of July, but also by its superior juiciness and flavor. In another experiment, the removal of the earth from the north side of a tree, alone, causes the fruit on that side to ripen several days earlier than that on the south side. Frequent watering was of course necessary in the above experiments.

TO PREVENT FRUIT TREES FROM SPLITTING.—It frequently happens, in very fertile regions, that trees split limb from limb through sheer weight of fruit. We saw many instances of this wherever a small garden had been planted in the foothills of the Sierras in California. The common mode of prevention is to prop up weighty branches with a piece of shingle. Isaac Lewis, of Hopkinsville, Ky., gives in the *Prairie Farmer* another plan:—"When I find a forked tree that is likely to split, I look for a small limb on each fork, and clean them of leaves and lateral branches for most of their length. I then carefully bring them together and wind them round each other, from one main branch to the other. In twelve months they will have united, and in two years the ends can be cut off. The brace will grow as fast as any other part of the tree, and is a perfect security from splitting. I have them now of all sizes, and I scarcely ever knew one fail to grow."

THE FRUIT GARDEN.

The Phylloxera—Vine-Louse.

The Report of the United States Department of Agriculture for June contains some extracts from a late publication of the Austrian Minister of Agriculture with reference to the *Phylloxera Vastatrix* which has been imported into Austria from the United States by means of some vines taken from New Jersey to the experimental garden of pomology at Klosterneuberg. The Minister's paper recites the various methods experimented with in France for the destruction of the pest. No less than 124 methods of poisoning were tried, and some of them were efficient where the necessary contact could be obtained, but that contact was difficult to get. An attempt was also made to exterminate the insects by the introduction of their natural enemies, as lady bugs, psolaphus, chrysopa, ants and spiders. None of these methods, however, were completely successful. In 1869, flooding the vineyards was tried and it proved successful. But this mode can only be practised on level grounds where the necessary supply of water can be obtained; and, recently, flooding is said to be effectual only on sandy soil with clay subsoil, a condition not always obtainable. It was also observed that the insect was not found in sandy soil.

The following is the natural history of the vine-louse as far as is known.—

The vine-louse, *Phylloxera vastatrix*, Planchon, belongs to the class *insecta*, order *Hemiptera*, sub order *Homoptera*, family of plant-lice, *Phytophthires*, tribe of leaf lice, *Aphidiæ*, in which are numerous genera, as *Aphis*, *Lachnus*, *Eriosoma*, *Chermes*, *Lachnus*, *Aleh*, &c. The vine-louse appears to belong to this last, though Cornu places it between *Aphis* and *Coccus*. It is so small as scarcely to be distinguished by the naked eye, oval, with a thick body, and blunt abdomen composed of seven rings, six slender legs with short feet, a small, beak-shaped, incurved head, with a probos is composed of four sucking-tubes, that usually lie on its breast. Full-grown insects are somewhat warty, and are a bright yellow.

Like other leaf-lice, they increase parthenogenetically; the males first appear just before winter in small numbers in the last brood of the season, and after impregnation the females lay eggs which develop the following spring. These eggs produce only females, called nurses who without further commerce, lay eggs, and are also, to some extent, said to be viviparous. This last fact has rarely been observed in the *Phylloxera*, and is doubted by the French Academy. This method of propagation continues until the power of a sexual increase is exhausted, when males, usually winged, are again developed. At the same time the so-called "nurses" become nymphs, or dark-colored, winged, and perfect insects. By this alternation of generation the increase of numbers is enormously rapid. Réaumur places it at 6,000,000,000 from one female in a summer, but this is too low; for if a nurse *Phylloxera* lays 30 eggs, which produce perfect insects, their descendants in the twelfth generation will number 17,714,700,000,000,000 individuals. The injury caused by a single puncture such as they make in the bark of the roots, or even several, is very slight, but when multiplied by such immense numbers, is ample cause for the serious damages which have been inflicted on the European vineyards.

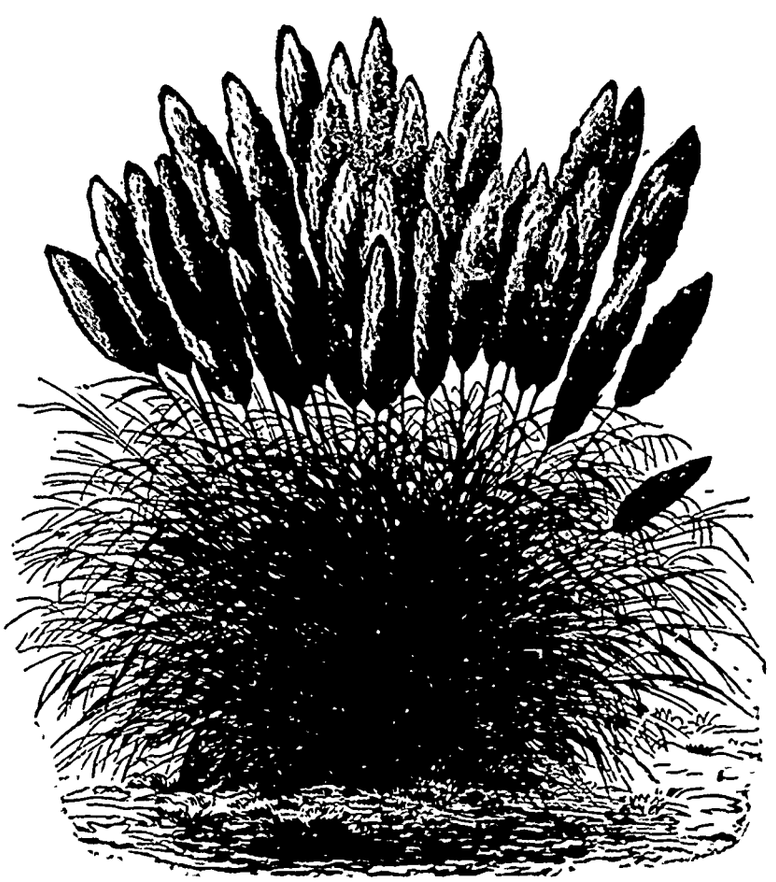
The food of this class of insects is the sap of plants, which they usually obtain from the leaves, on which they form galls. Some of the species change their host-plant with each change of form, the perfect insect feeding on a different plant from that on which its nurse-mother fed; and this fact is said by Lichtenstein to have been observed with regard to the *Phylloxera*, but it cannot be considered as fully established.

The full-grown insect sits motionless on the roots, having inserted its sucking tubes, of which, according to Rosier, it uses two to withdraw the sap, and the other two to pour into the wound a liquid excrement, which, perhaps, is more injurious than the wound itself. The resulting semi-transparent swellings are the most certain indication of the presence of the *Phylloxera*, and they speedily decay. The insect first attacks the surface roots, and, when these are exhausted migrates to those which are larger and deeper seated. They prefer the angles formed by branching roots, and lay their eggs in curved lines by swinging round their abdomens. Planchon saw one lay 30, Rosler 42, and Signoret 200, which hatched in from two to three days. Unlike the parent, the young *Phylloxera* is very active, and runs about till it finds a suitable spot on which to begin sap-sucking. It now rapidly changes its skin; how many times is uncertain. But the oak *Phylloxera*, its nearest relation, changes four times.

They begin to lay eggs when from eight to fifteen days old, different observers not agreeing as to the exact time. The yellow color of the living insect changes when dead to a light brown, as also the eggs, and when destroyed by carbon bisulphide it becomes a dark grey, almost black. By the loss of sap, perhaps also by the effect of a poisonous excretion introduced into the wound made by the trunk of the *Phylloxera*, the vine is injured. If but few are present, or if it is endowed with strong powers of resistance, like the American vines, the presence of the enemy will hardly be noticed. But if they increase, as usual, by the second year the vine will show that it is diseased. The leaves turn yellow, the stock becomes spindling, the shoots wither, the berries shrivel, and, finally, the whole plant dies.

Of all the substances hitherto employed which do not injure the vines, phosphuretted hydrogen and ammonia, liberated in the soil, have been most successful. To use the first, a hole is bored in the ground and filled with lime, on which water impregnated with phosphorous is thrown, and immediately covered with earth, all openings near being also closed in the same way as soon as steam is seen to issue from them. Among other experiments, the effect of dynamite in loosening refractory subsoils was tried and proved successful. Cartridges exploded four feet deep loosened the soil so that it absorbed twenty large pails of water where previously half of one would stand for a long time.

The French government in 1874 offered a reward of 300,000 francs for the discovery of a certain preventive against the *phylloxera*. It seems, from a letter dated May 5th, 1875, to the assistant Secretary of State at Washington, that an effectual remedy has been discovered by Prof. Dumas of the French Academy. It is potassic sulpho-carbonate, which, in a dry form is strewed upon the soil whence a rainfall carries it down in solution, thus bringing it contact with the diseased roots. Experiments made by English and French growers are stated to have been crowned with complete success. Prof. Dumas will be entitled, in addition to the large sum given by the government, to many smaller sums offered by local societies throughout France.



THE FLOWER GARDEN.

The Pampas Grass—Gynerium Argenteum

The ornamental grasses are among the most effective of garden beauties. Their graceful growth, grand in some species and delicate in others, serves as a foil to the more gaudy hues of the flowers with which they may be combined. These grasses are especially valuable for indoor ornament. When properly dried, the flowerheads of some varieties will make decorations for the mantle-piece, unsurpassable in elegance and airiness.

The illustration below (for which we are indebted to Mr. Simmers of Toronto) is of one of the most striking kinds that can be grown in our latitude—the Pampas Grass, *Gynerium Argenteum*. It is a native of South America. It forms large tufts of leaves, three feet in length, which recurve very gracefully, and are of a glaucous-green color. It flowers with large silvery plumes on stems from seven to ten feet in height. The flower stems are furnished with leaves for a portion of their length, and are terminated by silvery, silky, branching panicles of flowers, the panicles being from 12 to 20 inches in length.

The *Gynerium* is *dioecious*, that is, some plants produce male flowers, and others female flowers; the latter are much the more beautiful. There are some eight or nine varieties grown, three of which have variegated leaves; one has light rose-colored and another violet-colored plumes. In our latitude the *Gynerium* requires protection during the winter. It should be treated as a half-hardy perennial. It should be sown in April or May.

TO DISCOVER INSECTS.—If the leaves of the plant turn reddish or yellow, or if they curl up, a close inspection will generally disclose that the plants are infested with a very small green insect, or else with the red spider, either of which must be destroyed. For this purpose, scald some common tobacco with water until the latter is coloured to a yellow, and when cold sprinkle the leaves of the plants with it; but a better plan is to pass the stems and leaves of the plants between the fingers, and to then shake the plant and well water the bed immediately afterward. The latter operation destroys a large proportion of the insects shaken from the plant. This latter method is the only infallible one.

DOUBLE PYRETHRUMS.—The *American Garden* says:—Within the past seven or eight years there has sprung up abroad a new set of candidates for public favour known as florist's flowers. These are the Double Pyrethrums belonging to what are known in English parlance as Feverfews. They are derived from two species, *P. carneum* and *P. roseum*, both natives of the Caucasus. They are hardy perennial plants, producing large double flowers resembling China Asters or Chrysanthemums, running through various shades of colour—white, yellow, lilac and red, from pale flesh colour to the deepest shades of crimson; some varieties combining two shades of colour, as white and red, in the same flower. The flowers of some varieties are strap-leaved or long, and ligulate; in others they are anemone formed—that is, the central florets are tubular and the outer florets are ligulate.

PRESERVING CUT FLOWERS.—Remove them from the stems with a sharp knife, and not with scissors, which crush and bruise the stalks. Put those with succulent stems into vases of water, where they will keep for 10 days if the base of the flower-stem is cut off every morning. Charcoal, camphor, sal-ammoniac, and salt are sometimes recommended; but the advantage of using them in the water is more apparent than real. If they have wilted, they may be temporarily revived by recutting the stalks, and plunging them into water as hot as the hand will bear it for a few minutes; then place them under a bell, glass, or inverted shade. Tin or zinc pans, with close fitting covers, must be used when flowers are to be kept fresh for a few days, a layer of moist sphagnum or hypnum moss being laid on the bottom. Flowers laid on wet moss in a tray covered with a thin, wet napkin may be placed on the cellar floor, and will keep fresh for a considerable time. Wet sand or wet moss may also be substituted for water in opaque vases. When cut flowers are to be kept, care should be taken not to allow them to be fertilized, as they seldom last long after this takes place. Before maturity cut out either anthers or stigmas; or if this will disfigure the flowers, gum the anthers. Rhododendrons, azalias, &c., are frequently prepared for bouquets and wreaths by letting a drop of gum arabic fall down into the centre of the flower. It hardens at the base of the petals and firmly unites them to the base of the stigma, so that the petals cannot drop out at some unlucky moment and disfigure the whole arrangement.—*New York Tribune.*

THE VEGETABLE GARDEN.

Peppermint as a Paying Crop.

Why should not mint be grown profitably in Canada as it is in Michigan and New York? It is not grown, as a crop, here, that we are aware of, but we know of no reason why it should not be, except, perhaps, the cost of the building and the still necessary to extract the oil. Such objection is not of much weight, for one set of apparatus would be sufficient for a large extent of country, and the factory principle might be applied just as it now is to cheese-maying.

Let us look into the matter a little. A New York grower says that it takes 16 to 20 days' work to set, hoe and cut an acre of mint, and more than that if the land be exceptionally foul or hard to till. The mint will last three years, and, in the two last years, much less labour is required. The product will be from 10 to 40 pounds of oil per acre each year, diminishing slightly in the last year. The wholesale price of oil of peppermint in Toronto now is $5.50 to $7.00 per pound. The profits from a piece of wet, low-lying, otherwise worthless piece of land in mint will frequently exceed the profits from a crop of cereals on the most fertile land.

The best location is land that is wet, but free from surface water. Mint is propagated by scattering the roots in furrows two feet apart. During its growth, it should be well cultivated. When in blossom, it is cut down and allowed to remain till wilted. It is then gathered into piles, there to dry till fit to move to the still.

There are thousands of acres of wet land in Canada of which the drainage would be too difficult or expensive to be remunerative, which might be applied to mint-raising. We repeat that we see no adequate reason why oil of peppermint should not become a leading article of export. The variety cultivated is, we believe, the *Mintha piperita*, a European species naturalized in many parts of the Continent. The native species, *Mintha Canadensis*, we understand to be quite inferior in its product of oil, and not worth cultivation.

The Cabbage-Worm (Pieris Rapæ) and its Parasite.

EDITOR CANADA FARMER:—As is well known, this butterfly is "from England," and like many of the waifs from that "land of queer fellows," thrives well in Canada. Its first recorded appearance on this continent was at Quebec, in 1859. Already it has reached Virginia to the south, Lake Superior to the north, and Sandwich to the west; and the injury it has done to cultivated cruciferous crops amounts to millions of dollars.

In August, 1872, I saw for the first time in Toronto, a few specimens of this insect. In 1873, they had increased very much; in 1874 they were by far the most numerous of all our butterflies, and in the larval form, had done great injury to our cabbage, cauliflower and turnip crops. Later in the season, the fences and walls of buildings wherever cabbage had been growing, became thickly dotted with the pupæ; in which form they pass the winter.

In April, or early in May, the perfect insect makes its appearance, and soon the female seeks some of our native or naturalized early *cruciferæ* on which to deposit her eggs. I have found the larvæ feeding on *Nasturtium palustre*, D. C., Marsh cress; *Dentaria diphylla*, L., Pepper root; *Cardamine rhombaidea*, D. C., Spring cress; *Arabis hirsuta*, Scop., Early cress; *Capsella Bursa-pastoris*, L., Shepherd's purse. No doubt this list will be enlarged by further research.

By the time the first brood is perfected, our cultivated crops are well advanced and supply food for the second brood. The larvæ, being the color of cabbage and very sluggish, easily escape detection. Thus the conditions in Ontario are favorable to their rapid increase, and increasing they were so that it appeared certain the cabbage crop of 1875 would be entirely destroyed by them. But towards the end of October it became apparent from a change of color in the pupæ that they were not "doing well." Closer examination proved that about 87 per cent. were killed by ichneumons, of that tribe which are quite perfected before leaving the withered skeleton of their victims; each butterfly pupa contained from 20 to 50 ichneumon pupæ.

I collected 100 infected *Pieris* pupæ from 20 different points in Toronto. The perfect ichneumons began to emerge on June 1st, and were all out by the 12th, and proved to be the *Pteromalus puparum*, one of their English enemies, which has "dogged" them across the Atlantic.

P puparum is a four winged insect about $\frac{1}{10}$ inch in length, and when magnified resembles a wood wasp; probably lives 2 months in the *imago* form, flies well and appears to be quite hardy. If it is hardy we need not trouble ourselves much about this *Pieris* pest. Evidently, the best method of dealing with this butterfly, as with many other injurious insects, is to expend our efforts in destroying it in the *imago* form and to let its natural enemies deal with it in the larval and pupal forms.

Toronto, Ont. W. BRODIE.

Irrigation for the Garden.

Four years ago this summer, when the drouth with the attendant plague of grasshoppers was desolating our fields, pastures and gardens, what would not some of us have given for a convenient brook, river or pond to let loose upon the parched and thirsty soil, for the double purpose of drowning the insects and invigorating the crops? Since that time the attention of many thoughtful and intelligent farmers has been turned to the subject of irrigation; for, while it has been generally admitted that whoever has a brook or stream of water which by artificial means he can turn upon his fields, has a certain fortune at his command, provided he has the courage and ability to take advantage of it—little has been actually done that I am aware of, even by way of experiment. In fact, I suppose that owing to the physical conformation of our fields, irrigation upon a large scale will be found impracticable in this State; still there are few locations where, in one form or another, it will not be found both possible and profitable in the garden. Its importance here will be well understood by those who raise garden truck for market. The profits of a whole season often hinge upon the ability of the cultivator to carry the plants through a sharp drouth. It is true that thorough drainage, deep culture and liberal manuring will do much to bridge over these dangerous gaps, but all of these sometimes fail, and the gardener has the mortification to see his highly cultivated and skillfully tendered plants wither under a scorching sun, for the want of a seasonable rain. To be able at such a time to irrigate, is to have assured succes at one's command.

How to irrigate our gardens in the best and cheapest manner is, then, the question. If you have a brook or a spring upon your farm, the source of which is a little higher up than your garden, the solution of the problem is easy enough. The brook, by forming a dam sufficiently high up, can, by ditching or sluicing, be led into the garden, which, if gently sloping to the south, or south-east, as it should be, can thus be readily and cheaply watered. Or, if only a spring, it can be led into a reservoir of sufficient capacity, a little higher than the highest point in the garden, whence it can be drawn as needed into a large tub or trough. In this case a common garden engine, or one of the many kinds of force pumps, with hose and sprinkler attached, will be found very serviceable in distributing the water to every part of the garden. But if you have neither brook nor spring, then a supply must be drawn from the rain-fall. Construct a cistern of liberal capacity, to hold say from 300 to 500 hogsheads, on the upper side of the garden. Make the sides of concrete or of flat stones and mortar, and line them with two or three coats of cement mixed with sand. Conduct the water from the roofs of the farm buildings into this cistern. It may be pumped up with a common force pump, or if the bottom be a little higher than some point in the garden, it may be drawn into a tub by simply laying a pipe and inserting a faucet. It can then be distributed with an engine or force pump, or on a small scale with a common sprinkler. If the slops from the kitchen, the soap suds, etc., can be conveniently conducted into this reservoir so made, the better. A cistern thus constructed need not be very expensive, and it would enable the gardener to carry his plants safely through pretty severe drouths. The water should always be drawn in the morning and allowed to become warmed in the sun, then apply just at nightfall. A thorough soaking once or twice a week will be found far more effective than a slight sprinkling every night. Probably the most convenient way is to go over a certain portion of the garden one day and another the next, and so on in rotation. My own experience has taught me that a mere sprinkling in a dry time, so far from benefiting plants, is an actual injury to them, since it stimulates them to renewed growth, which there is not moisture enough in the soil to maintain. Liquid manure applied at such a time in small quantities, is for the same reason injurious.—*Cor. Maine Farmer.*

The Use of Tan in Gardens.

Writing in the *Revue Horticole*, M. Baltet urges the use of tan in gardens, where, he states, it is most useful for covering the walks, the acidity in the material checking, or, indeed, preventing, the growth of weeds, especially where they have first been cleared away. The paths are likewise rendered more pleasant to walk on than on gravel or on the scoria and shingle frequently used. Too thick a coating should not be given, as this is likely to harbour damp after rain; but this can be remedied by previously spreading upon the ground a layer of cinders, upon which the tan will rest, and which will drain off the water rapidly and efficiently. The tan should be renewed upon the walks in the spring, as they are much worn in winter. The old material is scraped off and deposited on the borders, where it forms excellent mulching, and may subsequently be incorporated with the soil as a manure; for Strawberry or Raspberry beds nothing is better. In la Brie the white maggot attacks those plants that are mulched with tan less frequently than any others. On the edge of the footpaths the roots of Abies excelsa are fond of developing their spongioles in old tan, for it is left for several years upon the less used walks. Some time back, M. Baltet made the following experiment upon a plot of Asparagus. One part of the bed was covered with tan, the other with saltpetrous earth. In the latter portion growth was very vigorous, whilst in the former it was the reverse. Tan, therefore, it may be presumed, is not conducive to the health of Asparagus. An accidental circumstance also showed that a young tree, having its roots dried up or weakened by a long journey, will recover and even throw out young rootlets when the roots have been placed in a heap of tan. An arboriculturist of Troyes, M. Lanier, wishing to re-invigorate an espalier of Pear trees, used a mulching of dung, but being deficient of a proper quantity, he tried fresh tan; and all those trees to which the latter was applied assumed a robust aspect, whilst the others remained unhealthy. M. Baltet states that he still uses tan in hot-bed frames, mixing it with a load of earth, and that the kitchen gardeners use it to fill up the paths between the beds; later on, this tan is mixed with dung. At Saint Hubert, in Belgium, gardeners make a good thing out of the heaps of tan from the tanneries; and it seems probable that more will be heard of this vegetable substance.

To Keep Frost from Plants.

EDITOR CANADA FARMER:—For the benefit of my brother farmers, I beg to forward the following receipe for keeping the frost from seed and hot-beds during early spring. I have found it invaluable. Make for seed-bed a light frame of lath, subscribe to the WEEKLY GLOBE, tack the old numbers over said frame, and cover seed-bed. This will admit sufficient light to the young plants, and if the paper be doubled, will keep out frost at 5 below zero. For hot-beds, line the inside with the same paper, and tack paper on the underside of sashes.

Don't try any other paper than the WEEKLY GLOBE, as bad results might follow. I attribute much of the success of the above plan to its extraordinary warmth on Agricultural matters.

A SUBSCRIBER.

Orillia, Ont.

ASPARAGUS BEDS.—Do not exhaust the powers of the asparagus bed by cutting too late. Give the bed a good dressing of stable manure when the cutting is over, and let the tops grow until fall. Then, if the seeds are not wanted for sowing, cut and destroy them.

SQUASH-BUGS.—There is no efficient preventive that we know against the depredations of Squash bugs but hand-picking, systematic and persistent. If the bugs get too numerous for hand-picking, or time is too valuable, sprinkle the vines with ashes, soot or air-slacked lime.

NO PART OF THE FARM pays so much profit as the garden, and yet none is so generally neglected. It is generally ploughed under protest and hurriedly, and left to the boys or the wife and daughters to rake and prepare. But, on the contrary, the garden should be carefully and thoroughly ploughed and dug, drained and manured; for a quarter of an acre of garden crops and small fruits will return more actual money value than any other two or three acres on the farm.

BROCOLI.—The plants should have been transplanted out by this time, or should be so served immediately. They should be set in rows two feet apart, and the same in the row, and well watered. As soon as they have rooted, they should be well hoed, and the operation should be repeated several times during their growth. They must be kept growing by constant watering until the cool days come on. When they begin to flower, protect them from the sun by breaking the large leaves over the head.

The Breeder and Grazier

The Value and Characteristics of the Short-Horn Bull.

At the late convention of the Short-horn Breeders of Indiana, Mr. Chas. Sowder, of Plainfield, read a paper on "The Value of Short-horn Bulls and what are their Characteristics," from which we give some extracts. Mr. Sowder commenced by stating the self-evident truth that a bull is worth more in some hands than in others. If he were used on good cows, and the produce sold to other breeders, he might be worth $10,000; but if only used to a limited number of cows, and the produce be sold to the butcher at three or four years old, he might not be worth more than $1,000. Or if he should only have access to a few cows and the produce were sold as veal, he might be dear at $100. But that would not be the bull's fault but his owner's.

A good Short-horn bull, descended from pure ancestors, both male and female, that were themselves good, may be depended upon for producing good calves, even from very inferior cows. On an average it would be safe to say that his calves would at one year old sell to the intelligent grazier for $10 more than those sired by an ordinary low grade; and at two years old for $25 more, and at three years old to the butcher or shipper for $10 or $50 more. It would be safe to say that calves from such a bull, bred and kept by the well-to-do farmer, until three years old, would each net him at least $25 more than those sired by such bulls as generally run the public highways, and are to be found on many good farms. A little calculation would illustrate what a Short-horn bull would be worth. From the time he is one year old until he is two he could sire twenty-five calves, from two years old until three, fifty calves, and after that until ten years old, seventy-five a year. Suppose then a farmer having as many cows as one bull could serve, and he should buy a first-class Short-horn of only good pedigree, one year old, and should keep him three years, he would then have one hundred and fifty calves, that would be worth, when disposed of, the nice little sum of $3750, as a profit for the services of the bull. The bull earned it. The farmer would not have had it but for the use of the thorough bred bull.

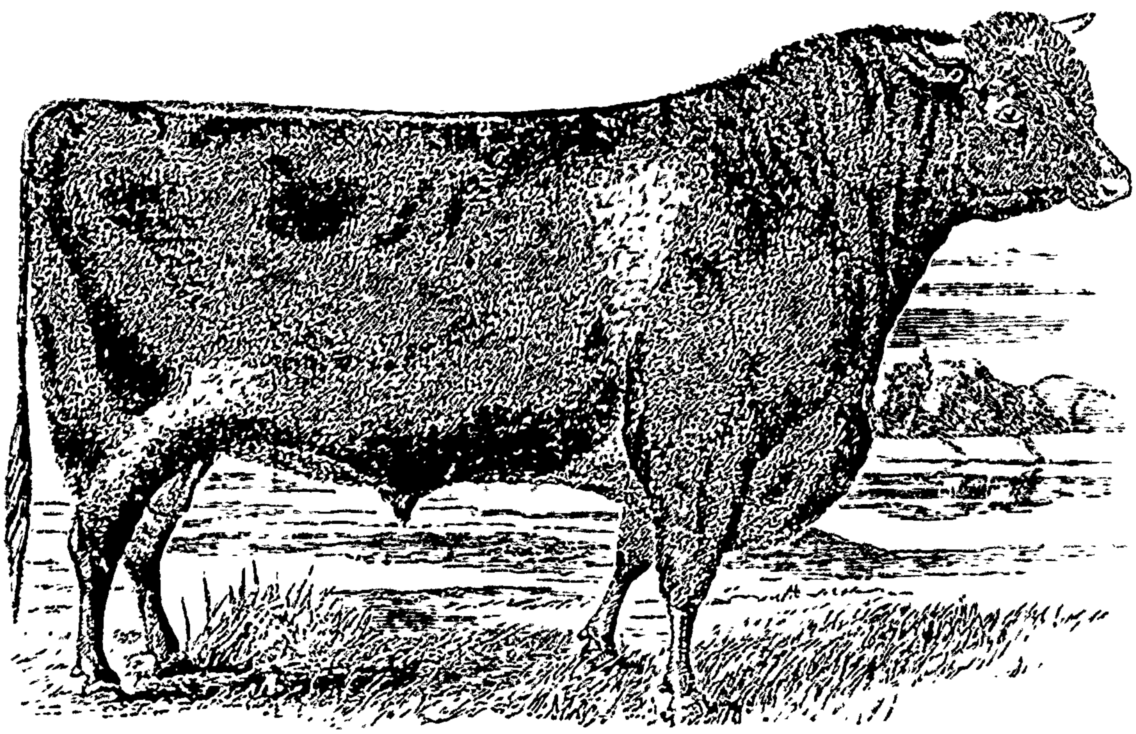
There were in Indiana, according to the last census, 393,736 milk cows. Allowing one bull for every seventy-five cows, and it would require 5,243 bulls. We have in Indiana to-day, 260 Short-horn bulls able for full service, or one-twentieth of the number we should have.

While I am free to acknowledge that an ordinary small farmer with only four or five common cows cannot afford to pay for his own use $200 for a bull, I wish to insist that while there is a lack of at least 5,000 thorough-bred bulls in Indiana that should be supplied, and at least 50,000 farmers in our state organized in Granges for the purpose of co-operation and mutual assistance in all things that pertain to their interest, no *good thoroughbred Short-horn bull* should sell in the state at public auction for less than $500. Though the assertion may not be believed by some of my hearers, yet I declare he is worth the money, and would earn the amount in one season, if properly used, simply in the production of steers alone. Then, when we consider that there are probably not less than 250,000 cows in Indiana that ought to be replaced with half-bloods or higher grades of thoroughbreds; and that by the use of thoroughbred bulls only the native and low grade cows can be replaced by the high grade or thoroughbred in a few years, the value of their services becomes more apparent. It is their known superior merit, in grading up the common stock of the country that brings them into such demand, and the comparative scarcity of good bulls contribute to the high price. The price is regulated by the supply and the demand. The farmer who proposes to wait until good Short-horns can be bought at beef price will never be the purchaser of a good bull.

Bulls are valuable only as they are capable of producing uniform good stock. The progressive farmer having come to a correct conclusion as to what constitutes excellence in a good steer, and knowing what kind of cows he has to breed from, would naturally inquire how shall I know a good bull? And what are the "characteristics of a good breeding bull?" As a law of nature "like tends to produce like." A bull tends to breed like himself. He transmits to his offspring that only which he has himself. If his ancestors, both male and female, were uniform in all that constitutes excellence, and he is individually good, he may be depended upon for producing good stock. But if part of his ancestors only were good and the others bad, he may transmit to his offspring bad qualities as well as good. He can transmit only what he has himself. What he has is mainly derived from his ancestors, yet he may have gained or lost by a good or a bad system of breeding, feeding and training. Hence, the pedigree of a bull should be good. This is of first importance. That is, as near all the blood in his veins as possible should be derived from good ancestors. A short pedigree with only five or six sires, if they were all good, may be worth more than a long pedigree descended from Favorite, if the last five or six sires were inferior bulls. A long pedigree is not necessarily a good one, nor a short pedigree absolutely a bad one. The value of a pedigree is estimated not only by its length, but also by its quality. In selecting a bull to breed from, the value of his dam should be taken into consideration as well as that of the sire; her milking qualities should not be overlooked. A bull from a cow that is a good milker is worth more, other things being equal, than one from a poor milker. As hinted above, the value of a bull depends upon his power to produce uniform good calves. Some bulls of great individual merit lack this power, while other bulls throw calves better than themselves or the cows to which they are bred. This latter is one of the characteristics of a good bull.

It is impossible for any one to always tell how bulls will breed until they are tested; yet the intelligent and careful farmer or herdsman can guess with approximate certainty as to the general character of the get. A good breeding bull must not only be like a bull, but he must look like a bull; that is, he must not look like a cow; but he must be masculine in appearance. And this holds good as well in the pure Short-horn as in the scrub or any other breed. A good bull is as much entitled to the peculiar eye, head, horn, neck, shoulder and chest that characterizes him as a male, as a man is entitled to his beard and the peculiar expression of the countenance. A bull with light jaws, narrow face and forehead, slim horns, thin neck and shoulders, is seldom an impressive sire of good things. He must be masculine in appearance. This does not imply that he must be coarse; on the contrary, he should be fine. Coarseness may be defined as unevenness, while fineness is the result of uniformity. Each part should be such that it fits smoothly and evenly to those adjoining it.

As has been said above, a bull is valuable only as his breeding is valuable. This depends, of course, to some extent, upon the cows to which he is used. Great extremes between sire and dam seldom nick well together. The intelligent breeder, in making selection of his breeding bull, will have regard to the cows with which he is to be coupled. If they are under size, he will select a bull of good size, one that is not too large. Great extremes don't mix well. If his cows are very large and inclined to breed too much bone for the amount of flesh, he will select a bull of rather compact form and good fleshy qualities, but one that is not too much under size. The skillful breeder, before selecting his bull should determine what he wants, and should be able to give an intelligent reason why he wants him; and, after having made his purchase, should know how to use him. The ability to answer intelligently to what, why and how, is as indispensable to the successful breeder of neat cattle as it is to the man in any other profession.



DUKE OF BARRINGTON FOURTH (IMP'D).
The property of the HON GEORGE BROWN, Bow Park Brantford, Ont.

Duke of Barrington 4th.

The subject of our illustration, Duke of Barrington 4th (30,924) 16,708, [3005], was bred by Mr. Henry James Sheldon, of Brailes House, Warwickshire, one of the most famous of English breeders, and was purchased from him in August, 1873, by Hon. Geo. Brown, Bow Park, Brantford, Ont. The bull is a grand-looking animal, having all the qualities which should belong to him by virtue of pedigree. He is a red and white color, and was calved 2nd May, 1872. His pedigree is:

Dam.	Sire.	Breeder of Sire.
	Got by 9th Duke of Geneva (28391)	Mr J. O Sheldon.
Lady Louisa Barrington	" Duke of Bra[illegible] (5724)	Mr H J Sheldon.
C'tess of Barrington 2d	" 9th Duke of Oxford (17758)	Duke of Devonshire.
Countess of Barrington	" 3rd Grand Duke (10282)	Mr S E. Bolden.
Laurel	" Grand Turk (12[illegible])	Mr. S E Bolden.
Lally	" Earl of Derby (10177)	Mr Thos Bates.
Olive Leaf	" Earl of Liverpool (9062)	Mr Thos. Bates
Olive Leaf 2nd	" 2d Duke of Cambridge ([illegible])	Mr R C Lowndes.
——	" Belvedere (1706)	Mr J Stephenson.
Lady Barrington	" Son of H[illegible] (304)	Mr Chas. Mason.
Young Alicia	" Wonderful (700)	Major Rudd
Old Alicia	" Alfred (23)	Mr. Chas Colling.
——	" Young Favourite ([illegible])	Mr Chas. Colling.

SALTING CATTLE.—Says a cattle raiser: Salt should be furnished to all animals regularly. A cow, an ox, or a horse needs two to four ounces daily. Salt increases the butter in milk, helps the digestive and nutritive processes and gives a good appetite. The people of interior Europe have a saying that a pound of salt makes ten pounds of flesh. Of course salt only assists in assimilating the food; it does not make flesh, nor bone, nor muscle

HOW TO MANAGE OLD POTATOES.—At this season of the year, some farmers are at a loss to know how to dispose of their surplus potatoes, and for this reason many are allowed to remain in the cellars until spoiled and are then brought out and thrown away. I will inform them of a method long practised by some of the best farmers in this town. In June the potatoes are taken out of the cellar, and carried into a shed-chamber, and spread on the dry floor, and allowed to remain through the hot weather. They shrivel, but do not rot nor sprout. In the last part of the summer, when the feed becomes short, these shrivelled potatoes are fed out to the cows; they increase the flow of milk very much, and are preferred by the cows to new potatoes.—*Cor. Boston Cultivator.*

The Management of Sows.

EDITOR CANADA FARMER:—The March number of the FARMER contains directions for preventing sows from overlying their young ones. For young sows with their first litter, such directions are doubtless good, but, when a is turned into pork the better. Some sows are very care- sow shows a disposition to overlie her young, the sooner she less, and lie down without manifesting the least regard for their pigs, while others are quite the reverse.

I once had a sow with a litter of eleven young pigs, and I have watched her lying down inch by inch, and, if a young pig got between her back and the wall, she would raise herself a little to allow the little pig to escape, and I have just such another careful sow at present. A few years ago one of my neighbors, one of the sort who let their sheep and pigs run about and get their living during the summer on the roadside, had an excellent store sow. She was allowed to make a place for herself in the straw stack, where in the fall she had a litter of eleven pigs, and early the following spring, thirteen pigs and reared them all.

Although sows especially of the improved breeds, should be rather under-fed most of their time, yet they should be well fed for about a fortnight before they are expected to farrow, to get them in heart, and secure a good supply of milk for their pigs. Some sows are naturally inclined to put all they eat on their own backs instead of giving it in the shape of milk for their young. Such sows are only fit to make pork of. Occasionally a sow will devour her young as soon as they are produced, when she will soon be in heat again, and should have a meal of fresh animal food the evening before she is expected to farrow. A man must watch all night, to prevent her following such an unprofitable habit.

When a farmer has a sow which is a good breeder and nurse and careful mother, I see no reason why he should not keep her as long as she continues to breed well, as he never can be certain that her progeny will inherit her good qualities in these respects. I once had a sow that produced sixteen pigs for her first litter, twelve alive and four dead, and reared eleven. The next litter she produced eighteen, all of which were found lying about the floor, dead in the morning. As I left the township where I was residing about that time, I sold her to a neighbour and afterwards heard that she twice produced large litters—twenty-four on one occasion, but always dead, so that her owner was, though unwillingly, obliged to fatten her. Some of the first litter I sold to neighbors who wished to get that breed, but none of them had more than seven or eight at a time. I do not know what breed she was, but she was from a stock brought from Newcastle, England, a year or two before.

SARAWAK.

Economic Horse Management.

(Continued from last month.)

Scientific and practical observation are thoroughly in accord as to this fact (viz., that the exclusive use of oats for very hard-worked horses is injurious and expensive), the truth of which was forcibly demonstrated at a colliery in Durham to which I was called some time ago. The output at this place was decreased from 15 to 20 score per day through the horses being unable, from want of condition, or I may say from positive debility, to get the work out. These animals were miserably poor, though allowed 16Slb. of oats and 154lb. of hay each per week. The oats were not crushed and the hay was not chopped. The horses were all large; none under 16 hands, many 16-2. They worked very long hours and took heavy loads, but I confess I was astonished at their appearance after many months of such apparently liberal feeding. On Sept. 1st their food was changed to the following:

	s.	d.
Crushed Peas, 35 lbs., at 34s. per qr	2	4
Do. Barley, 20 lbs., at 28s. per qr	1	3
Do. Oats, 40 lbs., at 28s. per qr	3	4
Bran, 14 lbs., at 7½ per stone	0	7½
Hay, 7 stones, at 9d. per stone	5	3
	12	9½

The old plan giving us

	£	s.	d.
Oats, 168 lbs., at 28s per qr	0	14	0
Hay, 11 stones, at 9d per stone	0	8	3
	£1	2	3

a difference of 0s. 5½ per horse per week.

Notice, too, that besides this saving in money, the digestive organs had 28 lbs. less hay and 50 lbs. less corn to digest; or

Mixed grain	107 lbs	Old oats	156 lbs
Hay	98 "	Old hay	154 "
	205 lbs.		322 lbs.

Within three months this stud of horses was in excellent health and condition, drawing out of the pit, with no application of engine power, from 20 to 50 scores more per day than when I first saw them. There were 149 horses on the colliery; so by this change a saving of £3,662 12s. 12d per annum was effected. With this one might be satisfied, but I claim that the increased work performed, and the increased value of the animals, must be considered, if not added in £ s. d. The marvellous change effected in this stud is to me conclusive evidence that oats can no longer usurp the position of being the best food for hard working horses. If our choice is limited to a single kind of grain, oats are certainly the best. Experience has settled this point, and science explains it by showing that the essential food constituents of oats are in better balanced proportions, and in a more digestible state, than in any other grain; but we find that there is a degree of work sometimes exacted from horses which oats are not able to meet, but which can be met by well selected mixtures of grain. Not only are these mixtures equal to the task of balancing the excessive waste of the system induced by hard work, but they do so at a less cost than that at which oats fail to preserve the balance.

But my plan does not rest upon this one case, nor is the question of feeding economically thus easily disposed of. I am not prepared to lay down a definite mixture as being in all cases and at all times the best and cheapest. We have just seen that not only must the chemical and physiological value of a food be known, but also its money value; and this changes constantly. So that we must thoroughly understand each article of food in its threefold aspect, and thus be enabled to take advantage not only of the best, but cheapest. Before, however, we consider each article of provender in detail, I will draw your attention to some rough analyses of various kinds of grain, which it is believed throw some light on the question of selection. At different times during the last six years we have engaged Messrs. Ferry's Steam Mills, at Essington, for the day, and have personally superintended the grinding, sifting, and weighing of the following grains, to ascertain the proportion of husk. The different results of each of the six years is so slight that I shall only offer the results obtained in 1868, as a fair average. I may just mention that in 1867 nearly all the grain experimented on gave a slightly less amount of husk than in any other year. It was all the produce of 1868, and I am disposed to think the difference is due rather to the husk leaving the kernel cleaner and easier than to a positive decrease in its quantity. This idea derives some force from the fact that 1868 was very fine and hot; corn was well ripened and well gathered. In carrying out these experiments we found it necessary to use three stones of each kind of grain, because the miller would not allow all the grain to run off the mill stones before adding more, which caused the grain to be more or less mixed with that which had preceded it in the mill. To prevent contamination we first allowed about 20 lbs. of each lot of grain to run through, then swept it away and collected 14lbs. of the pure grain. This was carefully sifted through a fine sieve, and both husk and flour separately weighed, so as to make sure that we had correctly got 14 lbs. of the sample.

TABLE SHOWING THE WEIGHT OF HUSK IN VARIOUS GRAINS.

		Natural Weight per Imp. Bushel.	Weight of Husk in 14 lbs. of each.	
		lbs.	lbs.	oz
1.	Libe oats	41	5	0½
2.	Swedish oats	39½	5	0½
3.	Danish oats	40½	5	2
4.	St. Petersburgh oats	40½	3	14½
5.	Short Scotch oats	41	4	6
6	English oats	41½	4	0
7.	Irish potato oats	42½	4	1
8.	Canadian oats	41½	4	12½
9.	English barley	50½	0	11
10.	Danish barley	54	0	15
11.	Tagarog barley	49	2	4
12.	English beans	62	1	6
13	Egyptian small beans	61½	1	8
14.	Egyptian large beans	59	1	10½
15.	Riga tares	68	0	10½
16.	Hamburg	57	0	11½
17.	English tares	68	0	10
18.	Canadian white peas	66½	0	7½
19	Koenigsberg white peas	64½	0	8½
20.	Koenigsberg blue peas	66½	0	8
21	Odessa maize	59½	0	5½
22.	Italian maize	60	0	5½
23.	American yellow maize	62	0	5

Now, remembering that the husk of grain is nearly, if not entirely indigestible, this table shows us at a glance which food contains the largest amount of indigestible material.

(To be continued.)

Lincoln Sheep.

EDITOR CANADA FARMER:—Would you or some of your subscribers give a description of the Lincoln sheep? In what do they differ from the Leicester and Cotswold? Are they smooth or woolly between the eyes? Woolly or smooth below the knees?

SUBSCRIBER.

The old Lincoln, which is probably now extinct, was an ungainly animal, with long, thin body, coarse bone, pot-belly, and razor-back; slow to mature, producing coarse-grained flesh. In those days they were prized only for the beautiful lustre of their wool, which lustre, it was found, was partly owing to the climate, as Lincolns brought from Lincolnshire partly lost their lustre, while other breeds taken into the country acquired it to some degree. It is doubtful if there be a pure Lincoln now in existence, the breed having been immensely improved fifty years ago by crossing with the Bakewell Leicester. By this means, a breed was obtained of better proportions, quicker to mature, and producing mutton of better quality. About the same time, the Bakewell Leicesters were used to cross the Cotswolds. They are woolly between the eyes and smooth below the knees.

Comparing the three breeds together, the Lincoln will average the most wool, and of the best quality; a fair average for a flock being eight and a-half pounds, against the Cotswold's eight pounds, and the Leicester's seven pounds. At fourteen months old, the Leicester will weigh 126 to 140 pounds; the Cotswold 168 to 182 pounds; and the Lincolns, 120 to 140 pounds. The Lincolns are not usually fit for the butcher at that age they being generally kept until they are 22 to 28 months old, when they will weigh 32 to 40 pounds per quarter, and will have given another fleece of from 10 to 15 pounds of washed wool.

PHOTOGRAPHING SHORTHORNS.—There appears to be a great discrepancy between the drawings and photographs of Shorthorns, caused partly by exaggerations of good points and a smoothing down of bad ones by the artist in the former case, but still more, I think, by reason of the different points of view from which they are respectively taken. In drawings a considerable portion of the back is given in fact, very much as the animal appears to a man who is standing at a short distance from it, we thus have partly an elevation and partly a ground plan, whereas your photographs are altogether elevations, consequently the body always shows a deficiency in depth, and the legs are more conspicuously displayed than is at all natural; and although they may really be in a measure truthful, still they are not satisfactory, being a representation of the animal from a lower point of view than is taken by an observer. *Mechi, in Agricultural Gazette.*

LUCERNE AS PHYSIC.—Any clover, or succulent plant of like nature, will act at first as a physic when horses and cattle, or for that matter even sheep and hogs, are turned upon it. The great value of alfalfa, or lucerne as it is called in English, is that it may be repeatedly cut the same season, after the first year. Cattle should not be turned upon it, but it ought to be cut one day and fed the next, or cut in the morning for the evening feed. Thus it is fed wilted and is more digestible, less bulky and better relished. It should be fed green to horses in small quantities, to cattle freely. Cut for hay, it should be treated like red clover, and allowed to grow to its full height and begin to blossom. You need have no fears of its hurting any animal that will eat it, provided it be fed dry or wilted, and moderately. No doubt horses allowed to feed off it would be thoroughly weakened and physicked; cattle unaccustomed to it turned upon a field would no doubt be bloated, and die of heave, as they would on red clover; but fed judiciously there is no better fodder crop when it succeeds well.—*N. Y. Tribune.*

TRANSFERRING CATTLE TO HOT CLIMATES.—Imported cattle, or cattle taken into an entirely different climate from that in which they were bred, seldom show the same degree of excellence as they possess at home, unless given special care. Old cattle frequently die before getting acclimated. This is strikingly illustrated by shipping them South, especially in the spring of the year, if the animal is fat. The arterial system first takes cognizance of the change; the pulsation increases to twice its normal rate, fever is engendered, and death ensues. Cattle to be taken from the far South to the North, should be shipped in May or June; from the far North to the South, in September or October; for the reason that the change of temperature is not so radical as it would be to reverse this order. The younger the animal, if old enough to wean, the less danger from these causes, and that danger is soonest past. To avoid this necessity of transportation and consequent risk, some enterprising farmer in every neighborhood could with profit and at reasonable rates raise bulls from pure stock of the different types or breeds, for the accommodation of the wants of the farmers of his vicinity. —*D. W. Dake.*

Veterinary.

Diseases of the Osseous System.

Sore Shins—Commonly called Buckshin.

Sore shins is a form of disease by no means uncommon amongst young race-horses, affecting the cannon or shank bones of the forelimb.

It usually affects both limbs, although the limb with which the horse leads off in the gallop is usually first attacked. Inflammation is set up in the periosteum, a fibrous covering of the bone, which becomes slackened and also an exudation takes place between the periosteum and the bone itself, and frequently there is also effusion into the tissue external to the periosteum. This is especially the case when the disease is quickly produced, and the swelling great.

Sore shins are most common in young horses, because the bones being in a state of growth and development, and also more vascular than in the more aged animal, cannot so well withstand the violent and continued concussion to which they are subjected in the course of severe trotting upon hard or heavy ground. If the horse is somewhat in a gross or plethoric condition when put into training, the disease is very easily brought on.

The symptoms of sore shins in an early stage, in some cases, are rather obscure, but soon become prominent. The horse is, perhaps noticed to go a little lame, but the lameness speedily disappears when he is put to work. When standing, he may be noticed to favor or point the foot forwards, and, if both limbs are alike affected, he appears restless, and shifting his weight from one leg to the other. These symptoms may last for a few days, without any visible alteration in the outward appearance of the limb. Another early symptom is the horse showing lameness in the trot, whilst his walk is apparently sound.

If the exciting cause is kept up, a swelling soon appears on the front of the bone which is hot and extremely painful if pressed; and, in very acute and severe cases, there is general fever, shown by the quickened breathing and accelerated pulse. The horse's action is now greatly impaired, and, if he is still kept in training, it is painful to notice his efforts to extend himself. In very acute cases, the pain appears to be intense. We have frequently met with cases, where the limb had been somewhat roughly handled, where the poor sufferer would at once rear or run backwards if you pointed your hand towards the affected parts.

In the treatment of sore shins, the horse should be kept perfectly quiet, and when the pain is severe, warm water applications are preferable to cold. In milder cases, the affected parts should be kept cool and moist by means of cold water and refrigerant applications; as nitrate of potash one ounce; sal ammoniac, one ounce, water, one quart; to be applied several times a day. Showering the limb with cold water has also an excellent effect.

Great relief will be afforded in painful cases by the use of an anodyne mixture, as:—two ounces each of laudanum and tincture of arnica, and tincture of camphor. When the heat and tenderness are removed, the judicious application of a blister tends to reduce the enlargement.

Occasionally, it is necessary to make subcutaneous incisions through the periosteum, but this mode of treatment should only be undertaken by some one conversant with the structure of the parts.

Sore shins, in many cases, could be easily prevented if trainers were a little more careful in not working young and growing horses too hard. Many a fine young horse is completely ruined from this cause.

Toronto. A SMITH, V.S.

DRY FOOT-ROT IN SWINE.—This complaint is mainly due to filth, though various other causes are known to produce the same effect. As soon as the soles are discovered to be in a dry cheesy and scaly condition, the animals should be removed to well-littered quarters. The decayed parts should be carefully pared and scraped off with a knife not too sharp, as it is necessary to avoid wounding the sensitive parts of the foot. The feet should be examined daily, or every other day, according to their condition, and a small portion of the following mixture should be applied: Creosote, half an ounce; spirits of turpentine, one ounce; olive oil, four ounces. Shake before using, and apply with a small brush.

Heat as a Disinfectant.

EDITOR CANADA FARMER:—Robert Angus Smith, Ph.D. F.R.S., F.C.S., in his work on Disinfectants and Disinfection, page 57, says:—"A Veterinary Surgeon of Germany, W.E.A. Erdt, of Coslin, in a Pamphlet on Die Veterinær-Polizei, classifies infectious diseases into 'Volatile at all temperatures,' 'slightly volatile' and fixed'. So, one disease may be propagated by the air at one temperature, and only by contact at another. 112° F. to 120° destroys most, so that hot-water destroys nearly all. Glanders is destroyed at 131° F.; Hydrophobia about the same; none are destroyed below blood heat, but some are reduced only at a lower temperature, for example that from dead bodies. The cold cannot destroy contagion, it can only bind it, lay it, or render it inactive. So, in the north, the infectious diseases are milder or disappear, and contagious are more active, whilst in polar regions the two are destroyed."

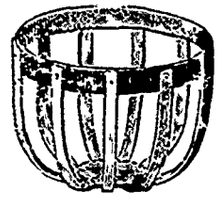
This suggests the value of the hot air (Turkish) bath as a curative agent. At 140° F. Vaccine matter lost its power, the heat being continued for three hours. At this point something peculiar happens to animal matter, and, amongst others, it begins to be cooked. Dr. Henery found it needful to heat the clothes of fever patients to 200° F. in order to produce disinfection. Heat "promotes putrefaction and its consequences, especially between 54° and 120°, but this must be in the presence of water. If it is dry heat, it arrests at all temperatures."

Probably many valuable horses that have been attacked by Glanders, may be restored to health by keeping them for two or three hours in a room in which the air is gradually raised to 140° F. J. F. W.

Mount Radford, Exeter, England.

A Muzzle for Biting Horses.

It is not nearly so easy to cure a horse of the habit of biting, as to prevent it. This dangerous habit is taught by thoughtless owners or drivers, by teasing the animal when full-grown, or by playing with it when it is a colt. Sometimes it may be cured by giving the horse a smart cut with a switch, across the muzzle, when he attempts it. For incurably tricky, or vicious horses, there is no remedy



but muzzling them. The muzzles may be made of leather, or of strips of light hoop iron. A band of leather is made to encircle the muzzle, and to this are attached straps by which it is buckled to the headstall; the leather or iron straps are riveted with ordinary copper rivets. The strips are about 9 inches long, and are riveted at the bottom, where the ends meet on to a round piece of leather two or three inches in diameter. When the horse is fed, the muzzle must be removed. This muzzle will meet the difficulty experienced by several of our readers, who have asked for a remedy for this dangerous vice.—*American Agriculturist.*

Stretches in Sheep.

Stretches is the animal's instinctive remedy for a disease or displacement) of the intestines, termed in veterinary science *intra-susceptio*, which is the insertion of a portion of the intestines into another portion, producing inflammation, putrefaction and sometimes rupture of the intestines; for the latter there is no remedy. This disease is produced by too long continued feeding on dry fodder which produces constipation of the bowels, causing *volvulus* (rolling up of the intestinal tube, and usually occurs in the small intestines. Take a glove finger, commence in the middle and turn it partially wrong side out, and you have a perfect sample of the case we are treating of.

Nauseants sufficient to produce vomiting are sometimes used with success, but injections are the safest and surest remedy that can be used. Take three or four gills of warm water, one large spoonful of soft soap, mix well, and with a common block-tin syringe inject this into the rectum; repeat if necessary. Never give powerful doses of physic in case of stoppage, which is often done to the human subject, which only makes a bad case worse. Nauseants, lubricants and injections are the only safe medicinal remedies.

If the shepherd discovers a sheep stretching and has no medicinal remedies at hand, he must resort to the following mechanical operation to relieve the animal, which often proves successful:—Lay the sheep carefully on its back, holding the fore end with one hand, and with the other rub the belly, allowing him to kick and struggle with the hind legs. This operation will also assist much in relieving the animal if resorted to in about ten minutes after administering clysters. Preventive—When you begin to feed on dry fodder, commence feeding roots once per day, carrots are the best, turnips will do, and here I will give a general rule to be *always* regarded in feeding any kind of roots to any and all kinds of stock. Begin with small quantities, and as the animal becomes accustomed to eating them, increase to the desired amount. Why? Because some roots are slightly cathartic, others slightly diuretic, and over-feeding may prove injurious and thus prejudice the mind against these valuable crops, which every man that keeps stock ought to raise.—*American Farm Journal.*

FOOT-ROT IN SHEEP.—To treat this malady, take a box, 16 feet long, and 3 feet wide, about, put in dry, fresh-slacked lime, and run the sheep through it every other day for two weeks, or until a cure is effected. It is a never-failing cure.

FOR SPASMODIC COLIC IN HORSES, &c.—With a sharp-pointed penknife pierce the ear of the animal, and the spasm will be instantly relaxed, and the poor sufferer relieved from pain. The knife should be inserted lengthways, not across the ear. I have known this to be effectual in many instances and never knew it fail. J. F. W.

FOR WORMS IN PIGS.—Take sulphate of iron, (copperas), half ounce; spirits turpentine, half ounce. Mix and give in greasy, thickened slop, which diminishes the irritating effect of the turpentine. Repeat the dose about twice a week till the pigs are well. The above is a dose for one; increase according to the number.

RINGWORM IN YOUNG CATTLE.—The vegetable parasite infesting the skin of young animals and constituting ringworm is readily destroyed by various astringent dressings. A solution of 20 grains of sulphate of iron to the ounce of water removes it. The dry bare spots are often lightly run over with nitrate of silver. Some stockowners prefer a light application of mercurial or of citrine ointment. Many cattle men rub the spots with salt and then with oil, but this homely treatment is not usually very effectual in destroying the parasitic growth.—*North British Agriculturist.*

INFLUENZA IN HORSES.—A correspondent of the *Michigan Farmer* says:—It may not be out of place, as a severe epidemic is prevailing among our horses, to give a hint that may save many of them from the loss of animals. I have had two already attacked with the prevailing influenza, and one of them was so bad that the water which he attempted to drink would run back through his nostrils, the throat being so choked up by the mucous matter which had gathered in the passage that he could not swallow. I gave this horse a bran mash as hot as I could bear my hand in it, in a pail set on the ground, so that the steam from it might pass up and loosen the matter which hindered him from eating or drinking. It is the steaming that does this, as well as the warm, moist, soft food, of which the horse eats all he can. I then took a half pound of black antimony, and two pounds of ground flax seed, and mixed them well, and gave a tablespoonful every other day till the horse was better, then twice a week only till he was fully recovered. With me this treatment cured the distemper of a year or two ago.

BOT-FLIES.—I have never seen the *Œstrus* (or *Gastrophilus*) *veterinus* lay its eggs on the breast, which is often done by the *Œ. equi*; but it invariably lays its eggs on the throat, and along the intra-maxillary space nearly to the chin. This variety is darker than red, being nearly black. It is one of the greatest pests familiar to teamsters. It will circle around under a horse, when at work, until the rate of motion is exactly ascertained, and then it flies swiftly forward between the forelegs and upward along the neck, striking the horse between the jaws, laying the egg almost at the instant of striking, and then passing sidewise out of harm's way. The blow evidently gives pain to the horse, sometimes lifting him from his feet as quickly as would the attack of a wasp. When horses are running in the pasture, they will stand for hours with their heads and necks across each other's backs, as when horses are in this position this bot cannot lay her eggs. Whether the larvæ crawl along the jaw to the mouth and thus reach the horse's stomach, or whether they penetrate the skin, and become those often found hanging at the roots of the tongue, has never been ascertained so far as I know. To prevent their attacks a piece of cloth can be fastened to the bridle at the bits and the "throat latch," so as to cover the lower jaw; or a quick-motioned teamster can catch the bot just as she strikes the jaw. One or the other must be done in order to use a mowing machine in comfort.—*Cor. Country Gentleman.*

The Poultry Yard.

The Egyptian Goose.

The Egyptian goose, or Bargander, is sometimes made the type of a distinct genus, *Chenalopex*, upon account of the longer bill, a short spur with which the bend of the wing is curved, and the anatomical peculiarity of a hollow, bony enlargement at the bottom of the trachea of the male. It has long been kept in parks and pleasure grounds in Britain, chiefly on account of the beauty of its plumage, and has become partially naturalized. It is a little smaller than the common goose; its voice more resembles that of a wild duck. The prevailing color of the plumage is light chesnut brown, minutely rayed with darker lines; the neck and part of the wings are white. Large chesnut patches surround the eyes. It is very abundant on the Nile, and is frequently figured in Egyptian sculptures. It is much esteemed for the table and was kept and fattened for it by the ancient Egyptians. It is the chenalopex of Herodotus.

Mr. Wright in the *Illustrated Book of Poultry* says of this bird: "The Egyptian goose, also called the Nile goose, *(Chenalopex Ægyptiacus)* is a most beautiful bird, and is often seen at shows, whenever a class for any other variety of geese gives it an opening. It is perhaps the most ornamental of all the geese, its tall and somewhat slender form giving it an elegance of appearance no other variety can boast of; and it has the merit, not very common in waterfowl, of breeding pretty freely in confinement. Notwithstanding these advantages, it has one great drawback: the truth must be told, that the male at least is a most quarrelsome bird. With other males of the same species he will fight to the death, and is generally a dreadful tyrant and persecutor even to the other inmates of the pond. Some individuals, however, manifest somewhat better morals, and it is possible that more perfect domestication might modify this inconvenient disposition.

The general color of the Egyptian goose is grey and black under the upper parts of the body, and pale buff or yellow, beautifully pencilled with black lines underneath, a patch round the eye and another on the centre of the breast being of a chesnut color; the shoulders of the wings white, with a narrow, black stripe or bar of beautiful metallic lustre; and the wing quills and tail feathers glossy black. The eye is orange color, the bill purple or blush red, the feet and legs reddish yellow. The wings of this goose, like those of the Gambian or spur-winged goose, have on the bend of the wing, or wrist joint, a strong, white, horny spur about five-eighths of an inch long instead of the hard knob which belongs to most of the goose tribe.

The female closely resembles the male, but is somewhat smaller. The number of eggs varies from six to twelve, more than six being rarely obtained in captivity, though ten or twelve is believed to be the usual number laid by the wild bird.

The Egyptian goose, like the other principal tribes, has a wide range. It is known to extend from Alexandria to the Cape of Good Cape, and has been frequently shot in England. In some cases, no doubt, such specimens may have been escaped birds from parks or menageries; but this could hardly be the case with a flock of nine seen at the Isle of Man in 1838, and another flock, estimated at no less than eighty, seen in Hampshire after a tremendous gale. In the southern parts of Europe it is common enough, no doubt crossing the Mediterranean from Africa, its native home. Its place in history is well marked, perhaps more so than any other variety. It is clearly alluded to by Aristotle, Aristophanes, Athenæus and other writers; and Herodotus makes special mention of it among the sacred birds of Egypt; while Mr. Salt states that wherever the goose is represented on the walls of temples, this variety is clearly recognizable.

In the Regent's Park Gardens, in 1838, Mr. Yarrell states a female Egyptian goose paired with a male of the Penguin variety of ducks, and the eggs were fertile. This occured during two successive seasons. The Penguin being a mere artificial variety of the common duck, this would appear to give the Nile goose a somewhat intermediate position between the duck and goose tribes, and its affinity to the sheldrakes is indeed evident to any observer."

Thinning Out.

Reality and imagination are two different things. We draw largely on the latter when we look at the broods as they come off in February, March, April and May. We can see many winners, and all good ones. While we rock ourselves in these blissful anticipations, and determine to avoid the errors that had so often made shipwreck of our hopes, and introduced us to grave disappointment, the time creeps on, and the little balls of fluff grow into awkward and lanky chickens.

Still the time goes on, and different temperature, shortened days, and lengthened nights demand a change of treatment. But the change is a startling one from thirteen "new comers" amply cared for under the hen, and the same number of great staring fowls that ask for board and lodging. If there were but one thirteen, something might be done; no amount of writing or talking will enlarge a roosting house.

It is known that Henry V., of white flag notoriety, is slightly lame. When living in Frohsdorf, his admirers were allowed to walk through the apartment as he sat at dinner, or to follow him at a distance when he took his constitutional. Two old marquises of the *ancient régime* were doing so, when one exclaimed to his companion:—"My dear marquis, our prince has one leg shorter than the other" "*Maladroit*," said the other, "they are uneven only, because one is longer than the other." So we will insist the house is not too small but the stock is too large. No difficulty now. How is it to be done? By eating or selling; by selling alive as stock birds, or as ordinary food.

The good London wife who retired into the country was asked, when her first hog was killed how she would have it cut up? She said "all hams." And so our friend and poultry breeder would have all his chickens prize birds. But it may not be. Whatever is done should be done at once. Procrastination in this instance is not only the thief of time, it is the thief of food. These birds are eating that for which they will make no return. You must decide how you will dispose of them.

All we can tell you is, they must be sold. There is a pleasure in putting off a thing; it shows we are not compelled to do it. But Nemesis comes in the shape of the private Catch Quotem. He says, "If you please sir, you must increase my allowance" these growing fowls eat terribly. Now you must steel your heart. And after all, if you had room, many of them are not worth keeping—four-toed Dorkings, single-combed Hamburghs, crooked fowls of every breed; those that somehow never seemed to do any good, the extra cocks, the faulty feathered; all these should now be got rid of. Their food and their room should be given to those that will make a better return for them. If you are told your fowls are all too good to kill, do not believe it. We lately went into such a yard, and the two first selected birds put in our hands were both humpbacked. If you do not thin your stock now, if it is to be thinned at all, the inevitable loss will be your own choice.—*Journal of Horticulture.*

Gapes in Chickens.—From thirty-five years' experience, I have come to the conclusion that gapes in chickens are produced by eggs deposited on the ground where dirty water or suds is thrown out and lies some time without drying. The chickens eat it, and some of it lodges on the root of the tongue, and hatches and goes down into the windpipe, producing red worms, which grow until they kill the chicken. My remedy is to get a head of blue grass (best when young), take off the seed, turn the end down, and twist to make it lie close together; hold the chicken's feet between the knees; take the bill and tongue in one hand, put the blue grass down as low as you can, without pressing it, with the other hand giving it a twist and withdraw it quickly; then let them suffile. When the blue grass is older, it requires more care. Sometimes blowing in a chicken's mouth saves its life. I generally can save them when they are too weak to travel around. Feeding young chickens with corn, as large as they can swallow, is very good.—*Cor. Country Gentleman.*

Lice on Fowls.—Nearly all the mortality among young chickens is caused by lice. The long period of incubation required is aggravated by using nests for sitting which have been constantly employed during the early season by laying hens. If these nests are under ground or in close, filthy houses, lice are almost inevitable. Sulphur or carbolic powder are the best preventives. Before setting a hen, clean the nest carefully, sprinkle it with sulphur, and dust some occasionally over the hen when sitting. A correspondent of the *Pacific Rural Press* recommends an ointment made as follows for young chicks:—Mercurial ointment and lard, each one ounce; one and a half ounces each of flour of sulphur and crude petroleum. This is to be mixed and applied very sparingly along the back of the neck and head and a little under the throat, as it is here that lice are first found, probably from the chick nestling its head among the feathers of its mother. One light application will be sufficient for five or six weeks. At the end of that time anoint again. Care should be taken to use this ointment very sparingly as a large quantity might result fatally to tender birds.

To Preserve Eggs.—On the day they are laid, dip them into Waterglass (Silicate of Soda in Solution), then wrap them in paper and pack them in jars or boxes, keep them in a cool cellar and they will be as good as new laid eggs for six months. I have proved this by many the experiment. J. F. W.

Red Pepper and Poultry.—A lady correspondent of the *Poultry Bulletin* says:—"I don not know if other persons who raise poultry and pet birds are as much dependent as I am on red pepper; but I have found so much benefit from its use in my poultry yards and bird cages, that it may not be amiss to call the attention of others to its good properties. I do not speak of the article that is sold in the drug stores (and sometimes not remarkably fresh) but of the capsicum that grows in our gardens. I have tried all the different varieties, and the most pungent and efficacious is the small kind usually known by the name of 'bird's pepper.' The plant in itself is a beautiful object; it grows about two feet high, and in autumn its bright little scarlet berries look like coral beads peeping from under the dark, green foliage. Indeed, one plant in a pot forms a very pretty ornament for a flower stand. The seeds possess a stimulating and reviving property, and I find that two or three given to newly-hatched chickens, especially if they are weakly, have a most happy effect. If a hen looks feeble after moulting, six of those berries or pods, given daily in some corn meal and sweet milk, improve her wonderfully.

The Apiary.

Wintering Bees in Nova Scotia.

Editor Canada Farmer.—Beekeepers should know in time about how to winter their bees; and this is a good time to make a place for them.

Last December, I put a hive outside, and in March they were all frozen or dead.

I put another in a cellar, the out-door being open all winter. I found the cellar to be too warm. In March there were only about 50 bees and the queen alive. A cellar is only fit for spiders and mice. For my part, I would be feeling bad in a cellar in twenty minutes.

On December 1st, I put another hive in the new place I made. In March, I opened the door to see if there were any alive. It was a great sight to see the combs as clean as the day they were put there, and all black with bees. I took a bottle-full of bees out of this hive and put them with the fifty bees and the queen, and they are doing well.

You see, there are places made for horses, cows, sheep and hens to winter in, but none for the poor little bees.

Robert Stewart.

West River Station, Pictou, N. S.

Bee Veils.—A correspondent says every one—no matter who, whether he leads what is called a charmed life or not—requires the person protected while at work among his bees. To those who are commencing, and until familiarity causes the loss of fear, a pair of good gauntlet gloves and a veil are necessary, but after the fear and trembling occasioned by the thought of opening a hive full of bees has ceased to have its horrors, all protection except the veil will be dispensed with. A good bee veil is made by taking a yard of black netting—costing usually about twenty cents—and sewing the ends together, thus making a bag, open at top and bottom. Then with a half yard of good strong rubber cord, run through the meshes at the ends, and you have a veil which will slip on over the crown of an old hat, and by drawing up and tying at the neck, you have all the protection required, for, if properly made and adjusted, no bee can touch your face or neck, consequently there can be no fear of stings, and besides it it is light, one can see through it nearly as well as if not worn.

Uses of Wool in the Apiary.—For the last four years we have used *wool* quite largely for various purposes in our apiary. We use nothing else for stopping up our queen cages, rolling it for this purpose into a tight wad. The bees cannot gnaw it away, and seldom propolise it. We shut up all our nuclei, when first formed, with wool. It can be crowded into place in a moment, admits air, and is easily removed. If we wish for any purpose to shut up a hive, we use wool. In the working season, we keep one "pocket full of wool," and know nothing of the vexations we experienced when using wire-cloth. Occasionally a few bees are caught in the fibres of the wool, but they are for the most part very shy of it, and are quite indisposed to commit *felo de se*, by hanging themselves in its meshes. Robbers will very quickly retreat from a hive well wooled. If we use the words *to wool* and *wooled* a hive or nucleus, instead of to shut up or open the entrance, our readers will understand what we mean.—*L. L. Langstroth in Practical Farmer.*

The Dairy.

Where Does the Meal Go To.

It has long been accepted as an excuse by feeders that meal fed to cows, must be given to them with cut hay or straw in order that it may pass to the first stomach, there to undergo the soaking preliminary to the thorough mastication known as chewing the cud. It has been claimed by some that, even when fed with hay, the meal is separated and passed along into the fourth stomach; and that water and medicines passed gently down the cows throat also go directly to the fourth stomach. Experiments conducted at the Pennsylvania State Experimental Farm were taken to prove these suppositions [see CANADA FARMER, present vol., p. 92]. A cow fed on corn-meal and unground oats, and immediately killed, was found to have no meal in the first stomach or among the maniplus, while the oats had passed into the first stomach.

But the editor of the *New England Farmer* has made experiments which prove the exact opposite of the Pennsylvania experiments. A cow was fed a mess of clear corn meal, slightly moistened, which she ate quietly, but with a good appetite. Within ten or fifteen minutes after eating the meal, she was passing through the regular course necessary for transforming live stock into dressed beef for the tables of those who consider they have a right to hold the life of an animal as a toy to be tossed about at pleasure.

As soon as convenient, the digestive apparatus was examined and the meal which had just been eaten *was all in the first stomach*, together with hay in all stages of fineness, and also a few pieces of beet which had apparently been swallowed with very little, if any, chewing. The meal was so fresh and lay together so nearly in one mass that there could have been no mistake about it, aside from the fact that the third and fourth stomachs contained no meal at all, either fresh or stale. The fourth or true stomach was more nearly empty than either of the others, and contained only a little water, some coarse particles of hay and a quantity of weed seeds and apple seeds which had not been crushed by mastication.

There is evidently room for further experiments in this direction. The one trial of the *New England Farmer*, though not sufficient to settle the case either way, tears into ribbons the theory that meal always passes into the fourth stomach direct. It is usual, now-a-days, for the agricultural press to call upon the Agricultural Colleges when they want anything experimented upon. This is a point, however, which would scarcely fall within the possibilities at a College unless the institution happen to slaughter its own meat. It is a point for the elucidation of which the men of science and the butchers must lay their wits together.

Onion Juice to Repel Flies Pyrethrum Roseum.

EDITOR CANADA FARMER:—On pages 110 and 112 of last month's FARMER I notice several remedies mentioned to prevent flies from attacking the teats of cows and for scab in sheep; also, in another place, a remedy for the attacks of the gad-fly upon sheep. As the remedies here mentioned are not very elegant, and some (as the rubbing of a mixture of lard and tar on the teats of a cow) are disgusting, I may, perhaps be allowed to impart a few items of information enabling us to do away with remedies that are often worse than the disease. Tar, for instance, when applied to the skin and allowed to remain on it, as recommended for the gad-fly, will produce a superficial inflammation with the most troublesome itching; tar and lard on the teats are not very appetizing neighbours to the milk.

Try therefore to remember the following:—"*The juice of the onion will effectually keep away flies.*" Even when painted on a gilt picture frame in spring, it will prevent flies settling on it during the whole summer. Or if you wish to go out, of an evening, into places swarming with gnats, and wash your face, neck and hands with water containing some onion juice, no gnat will come near you, although not even the keenest human nose could suspect you had used onions in any way. If, therefore, you want to protect any part of your live stock from the attacks of insects, paint them with onion juice.

The most convenient preparation of this onion liniment, I should think, would be a saturated spirituous extract, to make which take, of bulb onions (sliced) 1 lb.; best spirits of wine about 20 fluid ounces. Pour the latter over the onions, tightly close the bottle and allow it to stand in a dark, cool place for a fortnight. For use, this extract may be considerably diluted with water.

Another remedy, which, besides, invariably kills the *acari* producing the itch, is the plant *Pyrethrum roseum Persicum* (of which the *genuine* Persian insect powder is made), or even the *P. Indicum*, which is easier to be got. Take of this dried 1 lb., and infuse with 2 lbs. of alcohol, allowing to stand for a fortnight. May be used highly diluted, as a protection from insects, or as a wash for the itch, on man or beast. It is harmless. In conclusion, I beg to warn you not to try the so-called "Persian Insect Powder" of commerce as a remedy for the itch, as that powder generally is grossly adulterated, often with arsenic.

R. D'A.

Toronto.

Raising a Dairy.

We spoil our milch cows in our calves, many of us. There is too little system, and what there is, is too often wrong. A calf does not want to be fatted if intended for a milch cow. It does not want to be scrimped in its food. It does not want to be fed the wrong food, or in the wrong way. All these are *common errors*. With *pure blood* among breeders, more pains are taken. The same pains are to be taken with stock intended for the dairy, whether thorough-bred or otherwise. Particularly in the native cow is benefit received from care in rearing, developing thus the original good qualities which are more or less latent through generations of abuse, as the "native," as originally imported, was of good blood, and the individuals selected and brought over were choice specimens.

The calf wants to be fed with food congenial to calves. The mother-milk is the best: to the start, to be followed by skim-milk and hay tea, given warm as the milk from the cow, so as to prevent souring. In a few weeks a little hay will be eaten. This should be tender (grass aftermath excellent) and bright, free from dirt and mould, and unbleached. The calf will soon take to it and do well, the milk meanwhile continued. When the season for grass arrives, turn out. I have known the best success with clover, turned in when the plant is advanced, and fed till in blossom.

Care should be taken so as to avoid over-feeding on the one hand, and under-feeding on the other. The course between is the only wise course, the object being to secure the full growth of the animal, all that it is capable of, in the time allotted for this growth. If this is neglected, there will be loss according to the neglect, never to be replaced. It is difficult to make this believed by the general farmer.

A full growth will give you a cow, from the birth of the calf, in two years. If ill attended to, it will take another year, thus losing a year's feeding and care to attain the object, which is milk. Early maternity will also favor an early development of the lacteal functions, which will thus become enlarged and established. This is now well known to experienced dairymen.

Not only during the summer, but the fall and winter, and all the time without abatement, is this care and attention to be given. There is to be no let up for this is *loss—no exposure* to the cold fall and spring winds and rains, which are very hurtful to the shivering calves, especially the first fall.

It pays to take care of the calves, and it is the only way that does pay. I have never known it to fail—*fairly fail*, as is the case with ill-kept stock, but have met with general good success—*in some cases the most highly satisfactory*. Select from the best cows; and if the male is good—*from a good cow or a good milking strain*—all the better. These things cannot be overlooked.

A word more as to feeding. I have recommended, first, milk from the cow; then skimmed milk; this should not be skimmed too close, that is, when the milk is sour: let it be done when the milk is yet sweet. Then, if the hay is tender and nutritious, I have found the feed (including the hay tea) sufficient for health and growth. This with the best calves, and until pasture or advanced clover is substituted for the hay. If, however, the calf needs it, a little meal, fine ground or well cooked, daily given, will supply the want. Oat meal stands in high favor. Too much meal, however, is worse than none at all. In this way, the cheapest and best dairies can be secured. The better and cheaper the food, the more profit. Get thus a good dairy and keep it good. It wants constant care and attendance; no over-feeding; no abuse; no suffering; but generous and kind treatment.—*Country Gentleman.*

Fat in Milk and Cheese.

In reference to the fact recently demonstrated, that fat arises from the decomposition of albumen in living organisms, a writer in the *Milch Zeitung* is satisfied that the same process goes on in albumen after it has been removed from the animal body:

He found that the fatty matter contained in milk increases in quantity for a few days after it is drawn, while the amount of albumen becomes less. But the formation of fat in milk freely exposed to the air is conditional in the development of fungi. If their germs are deranged by the milk being raised to a temperature of 180°; or if means are purposely taken to prevent the admission of fungus germs to it while the access of air is still permitted, the fatty contents of the milk diminish, the existing fat is oxydized by the air and no new compensatory supply is formed.

"Exactly analagous processes attend the formation of fat in cheese. Here also, the existing proportion of butter is diminished by the atmospheric air on the one hand, while on the other a fresh supply is formed by the influence of the fungi which are becoming developed. According to the preponderance of one or the other processes, the fat contents of old cheese will rise or fall in amount."

The *Rural New-Yorker* in commenting on this says:

"The philosophy of curing cheese is very imperfectly understood at least in America. Many dairymen, as well as cheese dealers, do not believe that fat in cheese can be produced in any other way than by the cream which is in the milk. And yet it has been proved over and over again, that cheese properly cured, though made from milk partly skimmed, is often more mellow and rich tasting than cheese made from whole-milk, but not so well cured."

WATER FOR DAIRY COWS. No animal should be required to drink water which the owner himself would refuse, and especially so if that animal is the cow from which you hope to make good butter. It is sufficient on this point to say that pure water is an indispensable article to the success of the dairyman, for good butter or cheese cannot be made where good water cannot be obtained.

PRESERVING MILK AND CREAM IN CANS. I take freshly drawn milk, heat it over boiling water until the mercury shows boiling point in milk, have cans ready the same as for canning fruit, fill and seal in the same manner as fruit, and keep in a cool place: I keep mine on a cellar bottom. However, I like preserved cream better than milk, as it takes less room: treat that in the same way, remembering to have the milk or cream all pure and sweet.—*E. J. Arnold, in New England Farmer.*

KING'S JERSEY COW.—J. C. King, Fayria, O., writes the *Germantown Telegraph* his experience with his Jersey cow as follows: "In the spring of 1871 I bought my first Jersey cow. My neighbours laughed at me for paying $250 for so small a cow; but when I showed them the rich yellow milk and thick cream and such yellow butter as they never saw before, they thought a Jersey cow was worth having after all. That cow has won me $189 in premiums, and I have sold two of her calves (one a half-blood) for $250, and I have the cow and a nice yearling heifer left. The increase of that cow have also won me $147 in premiums."

TREATMENT OF YOUNG COWS.—The longer the young cow, with her first and second calf, can be made to hold out, the more surely will this habit be fixed upon her. Stop milking her four months before the next calf, and it will be difficult to make her hold out to within four or six weeks of the time of calving afterwards. Induce her, if possible, by moist and succulent food, and by careful milking, to hold out even up to the time of calving, if you desire to milk her so long, and this habit will be likely to be fixed upon her for life. But do not expect to obtain the full yield of a cow the first year after calving. Some of the very best cows are slow to develop their best qualities; and no cow reaches her prime till the age of five or six years.—*Maine Farmer.*

BUTTER PRODUCT OF A SHORT-HORN HEIFER.—In looking over your paper from week to week, anyone would suppose that the Jersey cows were ahead of all other breeds in the State for making butter. I think it is a great error. I think there are other breeds that will make more butter on less provender, and give more milk than the Jerseys, and make butter of as good quality. I have a thorough-bred Short-horn cow, four years old last March, that made in one week last January eleven and three-fourths pounds of as nice butter as was ever produced by a Jersey cow. It was but seven minutes churning by the clock. Her feed was but four quarts of shorts per day and as much good hay as she would eat. If any one has a Jersey heifer three years old past that will beat this I would like to purchase her.—*M. L. Wilder, in Maine Farmer.*

The Canada Farmer

TORONTO, CANADA, JULY 15, 1875.

Work for July—August.

The month from July 15 to August 15 is *the* month of Canadian farmers. In it come the haying and the harvest, the latter crowding the farmer so closely that sometimes it has to be allowed precedence. When this occurs, it is bad in many ways. Hay should be cut before the seed is formed, and the stalks have become woody and lost their nutritive elements. The forming of the seed, too, exhausts the land to a greater extent than is generally believed. The earlier the hay is cut, the longer the time allowed for the growth of the aftermath and the better will be the protection to the roots of the grass during the coming winter. It is bad policy to pasture sheep or cattle on the aftermath, as the roots of the plants are compelled to throw out new feelers to enable them to send up fresh leaves in the place of those which have been eaten or cut away.

Farmers differ on the subject of the right time to cut timothy, the general opinion being that it should be cut while coming into blossom, while some are equally positive [see page 123 this issue] that it should be allowed to get ripe. Common sense would indicate that grass intended to be converted into hay, should be cut before the seed forms, as immediately on the seed being formed the stalks undergo a change and become comparatively valueless. It should be remembered that on no account should timothy be cut below the second joint of the stalk. It will be observed, on examination, that timothy has two kinds of roots, bulbous and fibrous. If the bulbous-rooted stalks be cut below the joint before the tuber has matured, the plant will certainly die. It is to this low cutting, and to the nibbling of the bulb by horses or sheep, that much of the dying-out of timothy is owing. If allowed to mature its bulb before cutting, timothy may be cut closer.

It is quite within the bounds of probability that we may have a catching time for haying or harvest, or both. If it should threaten to be so, a small investment of money in hay-caps, as described in our last issue, may save many an anxious hour. The caps may be extemporized in a few minutes out of yard-wide "Atlantic A" sheeting, to the corners of which pegs may be tied temporarily, and afterwards attached in a more business-like manner when time does not press. The canvas is waterproof of itself when not put "dishing," but, to preserve the caps, it will pay to dress them at leisure as before described. For barley which may lose ten per cent of its value in ten minutes, or may be ruined by being hustled up in anticipation of a shower which may not come on after all, hay caps will be more valuable even than for hay.

The cultivators should be kept going among the corn. Corn is a plant which does not thrive without constant and thorough stirring of the soil. This stirring not only keeps down weeds, but renders the soil capable of attracting moisture from the air, and so enables the crop more easily to withstand drouth. The root crops should also be thoroughly weeded and the soil stirred between rows; the plants should be thinned out to twelve or fourteen inches apart.

Buckwheat may still be sown for a crop, in which case it is not necessary to seed so thick as when it is grown as a cleansing crop to turn under. A light soil is preferable, but it will grow almost anywhere. Very heavy soils, however, do not suit it. In some places, the straw is highly thought of as forage for horses. Chopped and steamed it makes a thick jelly which is very nutritious. The seed should be steeped and rolled in plaster before sowing.

The wheat is ready to cut when there is no milk in the kernels. Farmers should be on the alert this year to see the performances of the various new reaping-machines, and self-binders especially, that will be brought to their notice. It is better to bind barley if the straw is long enough.

The summer fallows should be gone over whenever there is any appearance of weeds. Where wheat is to follow barley, oats or peas, the stubble should be harrowed and lightly ploughed as soon as the crop is off. Then, as soon as the weeds have started, manure, plough, harrow and roll.

Feed your working cattle and horses liberally and with sound food. A handful of corn-meal or oatmeal stirred in their water will be as acceptable to them as to yourself.

For your own drinking in the field, cold coffee or tea, the former preferably, are better than alcoholic stimulants of any kind. A handful of oatmeal in the drinking pail is now widely recognized as a good thing to work upon.

Advantage should be taken of spare moments and showery days to put the barns and granaries in trim for the storage of the new crops. Rats and mice and such small deer should be hunted out and exterminated. Precautions should be taken against the grain weevil. Scald the wood-work with hot water and then wash with a whitewash made with caustic lime.

At this time of the year, life becomes a burden to the sheep from the presence of its enemy, the gad-fly. A band of tar across the face will protect the poor animals from much torture both now and when the larvæ of the fly are developing. The maggot-fly is also around, and is as pertinaceous and dangerous an enemy as the gad. It seeks to deposit its progeny in soiled wool on the rump of the sheep. Wounds made by the shears are also selected. By tarring over the abrasions, and by keeping diligent watch over the sheep, and exterminating the "blows" where found, with some of the washes prepared for the purpose, loss from maggots may be avoided.

It is a good plan to divide the pastures with a temporary fence, so as to allow one part to recuperate while the stock are grazing upon another. Otherwise, upon the feed becoming short, the animals go marching about, nibbling here and there, doing a great deal of damage and securing very little provender. This time of the year is the season that will test the arrangements for water-supply. Cattle want the best of water and free access to it: especially so with milch cows. Cattle will also want shade from the burning sun and protection from drenching showers.

In the orchard, the newly-planted trees should be seen to, and, if moved from position by wind-storms, should be replaced and staked more firmly. Grafts should be looked after and any places where the wax has fallen away should be made good. Shoots from the stock should be cut off. Suckers should be exterminated, for they are diverting from the parent tree the supplies which ought to go toward the formation of fruit and new wood. Fruit should be thinned out where necessary.

Budding and layering may be done now. Budding can be done when the bark will separate readily to allow the insertion of the scion.

Small plants and shrubs which are infested with lice may be cleansed by fumigating with sulphur or tobacco. The plants can be covered with newspapers or cloths while the fumigation is being carried on. Larger plants and trees may be cleansed by syringing with a solution of soda or strong lye.

We do not believe in the shooting of small birds, but it is necessary to protect fruit from their too assiduous attentions. The report of a gun loaded with powder alone will drive them away. Many other devices such as rattles, bells, stuffed hawks, etc., answer well enough till the birds get used to them, when another device must be tried.

Unnecessary shoots should be removed from grape-vines, and fruit-bearing canes should be pinched back to within three or four leaves of the last bunch. The soil should be kept stirred about the roots, and the leaves cleaned by syringing with solution of soda and whale-oil suds.

Currant branches infested with the borer should be cut out and burned, and bushes badly affected grubbed up and destroyed. Powdered white hellebore will "fix" the worms that destroy the leaves.

Trim off the runners from the bearing crop of strawberries unless young plants are required. Growers who have been obliged to send half a pint of sand to market with every quart of strawberries will now appreciate the value of mulch—anyway, the public will. Keep the weeds out of the beds. When the fruiting is over, remove the mulch and manure the plants thoroughly. Young plants may be then raised for new beds.

If any watering has to be done in the garden, see that enough is given, or more harm than good will ensue. A slight watering induces root-growth near the surface. It is better to put the water in a hole near the plant than to let it spread about the surface.

Stop cutting asparagus when peas come in, manure and allow the tops to grow, and in the fall, unless seed is wanted, cut them down.

Keep the transplanted cabbage and cauliflower well watered with liquid manure if it can be obtained. Pinch back the melons. Train tomatoes over a trellis or brush heap. Keep down weeds, and hoe thoroughly throughout the garden.

Take care of your own health and that of your help. Recollect that the work that a man can do is proportioned exactly to the amount and quality of the food consumed. After a hard day's work, a cold bath will be found a wonderful refresher and composer for an invigorating sleep.

On the Criminality of Overwork.

Slowly but surely, the art of farming is undergoing a revolution. One by one, laborious and back-aching processes are being sent to limbo. Muscles of iron and sinews of steel now perform with almost human intelligence, and with more than human certainty, tasks which our fathers had to accomplish with the most primitive tools, aided only by strong arms and indomitable wills.

The tendency of the age is toward a still further lightening of the heavy work; but there are still left some laborious tasks which in the near future will be superseded as completely as is the old flail. Even in these improved times, some of our best men become old before they are fairly young, and for no other reason than that they overwork themselves.

It is no news to Canadian farmers to tell them that they work too hard. They are too apt to combine the hurry and dash of our neighbours over the line with the pertinacious assiduity of the old-countryman. It needs no proving when we say that these two styles of work cannot be long combined with impunity. A man has a certain store of health and strength just the same as he has (or, if every one had what he wants, would have) a certain amount of money to his credit with his banker. Drafts may be made upon the constitution in excess of the stock of health just as easily as a banking account may be overdrawn; and nature will be just as prompt as the banker to write "NO EFFECTS" across the first overdrawn cheque.

It is during the harvest that this overwork is mostly—we will say—perpetrated. It is now that the farmer can most profitably ask himself the question whether he can afford to work himself out in five, ten or twenty years. It is now that the young giant of twenty-five, rejoicing in his strength and not knowing the feeling of fatigue, can settle for himself whether he will carry his manhood with him to an honoured old age; or, whether, by reckless abuse, he will lay the foundations of premature senility.

Let him go to any old man in his neighbourhood. If the old gentleman happens to be noted for well-preservedness, let him cross-examine him as to how he spent his youth, whether he remembers ever over-working himself without suffering for it since—whether he does not think that he would have been a still better man if he had not driven himself hard when young. Let him ask the first prematurely-broken old man he meets, why did he age so early? The answer will almost certainly be, that he did too much work before he knew that too much work could be done.

As well as many men young in years but aged in constitution, we have among us hundreds of mature—we cannot call them old—men, who at sixty or sixty-five can do a day's work which will shame many a youngster. These will be found to be men who have always worked within their strength—who have never worked themselves so hard by day that they could not sleep by night—who have steadily kept pegging away at their work till their frames have become so inured to toil as to be, within certain limits well known to them, absolutely tireless.

A man can have no more honourable ambition than a wish to live hale and healthy for his allotted span on earth. When the primeval curse was uttered, "Cursed be the earth for thy sake," the burden laid upon man—"in the sweat of thy brow"—was mercifully proportioned to his strength—nay, was even a light load. Man is endowed with strength and endurance sufficient, properly used, to enable him to carry his load rejoicing. It is only when His good gifts are misused that the Creator's curse bears heavily upon His children.

There is not a township in Canada but will furnish living proofs of what we have said. He who spurs himself beyond his strength does it knowingly, for the results of overwork are patent to everyone. And whether stimulants, commonly so called, be used, or whether the incitement be the no less deadly stimulus of a craving after wealth, the one who overworks himself is committing an act which is not folly, but worse,—it is a crime.

We do not wish to be understood as advocating lazyness as a sure stepping-stone to wealth. There is a medium in work as in everything else. On the one hand is the wish to do too much, its consequences are premature old age, sickness, doctor's bills, early death. On the other, laziness, poverty and life long unhappiness. Between the two extremes lies the safest path and the surest road to competence and long life. If a man be so unhappily constituted that he must be working hard, or else doing nothing, by all means let him work as hard as he chooses, for as says the adage, "It is better to wear out than to rust out."

Our Lowly Evergreens.

(Concluded from last month.)

Epigæa repens, L. Ground laurel, Trailing arbutus—May flower, Ground lilac. Not common; found sparingly about two miles east of the Don, north of railway track, and on the banks of the Humber. The flowers appear in early spring and have a fragrance excelling the tuberose. Rather delicate in cultivation. Of rare occurrence in the county except within a few miles of Lake Ontario.

Gaultheria procumbens, L. Wintergreen, Teaberry, Checkerberry, Partridgeberry. Every farmer, every farmer's wife and children know this plant—the spicy aromatic taste of its leaves, its modest fragrant little flower, and its bright red berries. It is of some commercial importance as the source of an essential oil, much used for flavoring summer drinks and candies. Toronto, St. James' Cemetery. Very abundant throughout the county, in pine, hemlock and often hardwood bush and openings.

Pyrola rotundifolia, L., *Pyrola elliptica*, Nutt, *Pyrola Secunda*, L. Wintergreen shin leaf—applied to each. The three species, about equally distributed, very abundant in pine, hemlock, and often hardwood bush and openings throughout the county, Toronto, St. James' Cemetery.

Pyrola chlorantha, L. Wintergreen. Not common, found in deep shade, on hill sides sloping to the north, Whitchurch, Toronto, St. James' Cemetery.

Monotropa uniflora, L. One-flowered pyrola. Found sparingly in Hellwell's bush, north of Toronto, Whitchurch. Of rare occurrence in the county.

Chimaphilla umbellata, Nutt. Prince's pine, Pipsissewa. This is perhaps the most beautiful of all "our lowly evergreens." The leaves are large, rigid, gracefully shaped and of a lustrous dark green color, which frost and snow only make more bright. The flowers are white, fragrant and placed on a slender terminal peduncle. This plant was formerly much used in domestic medicine as a cure for scrofulous diseases. Well worth cultivation as a foliage plant. Toronto, St. James' Cemetery. Generally in the country in pine and hemlock woods.

Goodyera pubescens, R. Br. Rattlesnake plantain. Leaves ovate, about two inches long, light green, closely reticulated, with well defined white lines. Flowers small, white, saccate, closely aggregated around the upper end of the scape, which is from 7 to 12 inches long. A pretty little plant, well worth cultivation for its beautiful leaves. Toronto, St. James' Cemetery. Township of Whitchurch. Of occasional occurrence in the county, in isolated patches.

Applectrum hyemale, Nutt, Putty-root, Adam and Eve. A very peculiar plant, with one ovate-plaited leaf, about one inch and a half wide, and eight inches long. The leaf arises from a spherical bulb about one inch in diameter, a new one is produced every year, which is named Adam, the old bulb survives the season in a state of partial decay, and is named Eve. Both contain a very glutinous matter. These bulbs were used by the early settlers from Pennsylvania for mending broken dishes. One end of the break was rubbed with Adam, the other with Eve, then the parts held firmly together until dry. Forty years ago this plant was found in occasional isolated patches, in heavy maple and beech woods in the townships of York, Markham and Whitchurch, but it rapidly disappeared as the bush was opened. A few plants may still be found in original hardwood bush a few miles north of Toronto.

Carex plantaginea, Lam., Deer grass. Leaves all radical about half inch wide, nine inches long, three-ribbed, with three triangular plaits, light green, usually flat on the ground; flowers early in May, culms postrate in fruit; should be in cultivation as an ornamental foliage plant. Toronto, St. James' Cemetery, common in the county on hill sides sloping to the north in rich alluvial clay soil.

TORONTO. W. BROWNE.

Proposal to Unite the Dominion and National Grange.

We observe in the *Farmer's Friend*, a Pennsylvania journal, a letter from Mr. James C. Fox, Sec. Subordinate Grange, No. 151, Foley, Ont., in which that gentleman regrets that the Dominion Grange is separate from the National Grange of the United States. He states that "a movement is already on foot to bring the subject of union up at the next September session of the Dominion Grange; as we feel, in not being connected with the originators of the great movement, we are without any responsible head. It seems like a body of Free Masons refusing to acknowledge their Grand Master, and I think the majority in this movement are determined to bring about a union."

It appears to the CANADA FARMER that Canadian Patrons have nothing to gain by subjecting themselves to the jurisdiction of the National Grange. The order is thriving lustily here, and, from our own experience on this and the other side, we do not hesitate to say it gives greater promise of permanency in Canada than in several States of the Union.

It is quite probable that the Granges in Ontario alone will attain to the number of 1,000 or 1,500. If the Canada Patrons go under the National Grange, this will necessitate the sending out of the country of some $22,500 for charters alone; and the annual payment (presuming that some day we shall have 150,000 Patrons) of $15,000.

In return for this vast sum, Canadian Patrons would receive the pass-word from the National Grange, and that is about all they would get; for we should necessarily get no benefit from business contracts made by the National Grange, our chief articles of consumption being either our own produce or else much cheaper here than any contract price that could be honestly asked on the other side.

We do not aim to stifle discussion on the point; in fact we should be glad to have it thoroughly discussed, believing that the outcome of any talk on the subject would show our position to be sound.

A DISGUSTING CASE OF LANDLORD TYRANNY has occurred in Warwickshire. Thomas Mann, a tenant of Lord Willoughby de Broke, has been turned out of the occupation of a 300 acre farm, on the death of his father, with whom he was joint tenant. The only reason assigned was that his capital was insufficient to carry on the farm. The whole of the money invested in the farm by him and his father, which was considerable, is thereby confiscated by the landlord, and Mann is left without the means of taking another farm. He is of unexceptionable character and a good farmer. A collection has been taken up for him among his brother farmers, to enable him to emigrate with his family.

"CANADIAN CATTLE IN ENGLAND!" is the half-wondering, half-scared heading that an Irish cotemporary has for an item noting the arrival at Liverpool of twenty-five head of cattle from Montreal, fat and in good condition. The Irish graziers have had a good thing for a long time exporting cattle to England, and they do not half relish the idea of a new competitor, even one so far off as 4,000 miles. But it seems to be "manifest destiny" that this continent is to supply the teeming millions of the Old World, not only with breadstuffs but with meat. And we Canadians flatter ourselves that the principal part of the ocean cattle trade will be ours. Shipped at Montreal, cattle have the long voyage down the St. Lawrence in which to get used to their quarters before facing the stomach-disturbing billows of the Atlantic. And, again, it is of no use sending tough, stringy Texans for the fastidious palate of John Bull. That gentleman believes that he knows what is good beef and what isn't; and what he calls good beef is as dear in the Atlantic cities of the Union as it is in London itself. Wherefore, as aforesaid, we anticipate that Canada will "gobble" the future live-stock trade with England.

Insect for Name—Pimpla Atrata.

EDITOR CANADA FARMER:—Inclosed you will find a very strange insect. When found it had two of the three long appendages thrust through a piece of bark and into the wood beyond. What was it doing? How does it bore into hard wood with such a slender bit? On what does it feed?—*Wm. Paterson, Rosehill.*

The insect is an ichneumon, the *Pimpla atrata*. It is a showy looking affair about an inch and a half in length, orange and black in color, with bright yellow spots along its sides, and to the unscientific eye resembling the common dragon-fly. It is furnished, astern, with three long and slender instruments, in the specimen sent us nearly three inches in length, with which it bores into wood; and in the holes made it deposits its eggs. This is what it was at when our correspondent found it. It is sometimes found dead with the ovipositors inserted their full length in hard maple, having been unable to withdraw them. It feeds upon the larvæ of wood-eating beetles, and is therefore a friend which should not be maltreated. There are several of the species in Canada, of which the *Pimpla atrata* is the largest. As it is not by any means common round here, will our correspondent oblige us by sending the next specimen he catches?

WE ARE INFORMED that the combination of phosphorus and soap, which we mentioned last month as having been introduced by a Montreal chemist, has not proved successful against the Colorado beetle.

FRENCH HORSES ARE NOW IMPORTED INTO ENGLAND with profit and success. At a recent sale of French horses the average price was $270 each, none selling for less than $200. Although by the conditions of sale every animal was returnable if not approved, not one was rejected. And he importation and sale is announced. We directed the attention of Canadian farmers, a short time ago, to the fact that horses could be bred here and exported to England at four years old, leaving a handsome profit for the breeder. The English agricultural papers note our suggestion, and speak favourably of it.

THE SCIENTIFIC FARMER is the name of a new agricultural paper, published at Amherst, Mass., the seat of the Agricultural College. If the character of the contents can be kept up to the standard of the numbers we have received, its success is assured, notwithstanding the terrific load it will have to carry in its name. There is a prejudice an unreasonable one, we admit, among the mass of farmers against "scientific" agriculture,—a prejudice amounting in some cases to unmitigated contempt. Judging by what we have already seen of the *Scientific Farmer*, our new contemporary will do a great deal towards abolishing this prejudice. But the name has already proved fatal to a Chicago venture. That one, however, was called "Scientific" because of the absence of all science from its columns. In other words, it was a miraculously poor affair. Its name is the only particular in which the Amherst journal resembles it.

SOME INFORMATION, interesting or disgusting to the reader just as he may or may not happen to feel on the question of temperance—can be gathered from recent British Parliamentary returns on the subject of brewing. It seems that the dethronement of John Barleycorn which, it was anticipated, would follow upon the reduction of the duty on light wines, is not going to take place. During the year just ended, 242,383 barrels were consumed more than in the preceding year. Duty was paid on 58,728,687 bushels of malt, the amount so paid being £7,964,401 sterling. One brewing firm made above a million of barrels. Three firms turned out between 700,000 and 800,000 barrels each; one 500,000 barrels; two, 450,000 each; two 350,000 each; and so on throughout the whole number of brewers, till we come down to the small fry of 23,396 brewers who made less than 1000 barrels each. To dispense this ocean of fluid, there are 99,170 full-licensed victuallers, 311,910 licensed to sell to be drunk on the premises, and 461,667 not on the premises. Some of the people given to such things may now sit down and calculate how many times across the Atlantic this beer would reach, if it were in a column so many inches in diameter, etc. etc.

A Minnesotian in Defence of Canada.

In the April number of the CANADA FARMER, we mentioned that the *Mark Lane Express* of the recent date had contained a letter written by Mr. William Carr from the Bermudas, in which letter, to use an expressive vulgarism, Canada and Canadian farming caught "fits," and the Bermuda Islands were cracked up as a sort of Elysium in which only the most select class of angels would be good enough to dwell.

We do not suppose that any native of Canada, or any one who has lived here a few years, cares a great deal how much or how unjustly we get abused—for we are tolerably used to it by this time. Neither do we apprehend that our country will receive much injury by misrepresentation of even the grossest kind; for misrepresentation will call forth correction, and if it should be made to appear that Canada is a bad place for young Englishmen, with more money than brains, and for "fast army captains" with less brains than money, it will speedily be shewn that, after all, our country has many good points along with some bad ones.

Against the small number of well-to-do ignoramuses who have come here and failed, we can set the large number of poor men who have come here and succeeded—and every township will furnish instances of them.

"Ah," say the anti-Canada men, "but see how hard they had to work!" To which we reply by asking:—"Are they or is the world any worse for that? And would they willingly go back to their old condition?" The answer would be a vigorous "No," except from a few chronic grumblers who will be dissatisfied in Paradise—if they get there.

As might be expected, the letter of Mr. Carr has called forth a defender; a former resident of Canada, but now of Minneapolis, and named G. F. Bolton. He writes to the *Express* setting forth the case for and against Canada in very fair light, concealing neither the advantages nor drawbacks. We will make a few extracts from his letter. He states first, that he has been a farmer in Canada in a small way, and knows something of the hardships of the emigrant's life.

"If Mr. Carr, he says, had gone through Ontario in the summer season, he would have found in the large, substantial farm homesteads and in the well-tilled farms prevailing there, abundant *prima facie* evidence of the success of farming in Canada." * * "If the instance of failure given by Mr. Carr were general, his letter would be very discouraging indeed; but the instances of success are plentiful where men, coming to Canada ten or fifteen years ago very poor men, are now the owners of good homesteads, good cleared farms, contented men, and loyal subjects; who, had they remained in England, would in all probability have been to-day labourers, protesting against their tyrant masters, admirers of Mr. Arch, and discontented and half-rebellious members of some labourers' union league."

Mr. Bolton then points out, as we did, that the instances given by Mr. Carr, cannot be taken as characteristic of Canadian farming, and then, properly enough, goes on to caution intending emigrants against being biassed either by the darkly-shaded pictures of such as Mr. Carr, or the rose-colored paintings of the emigration agent. The differences between old country and Canadian farming are touched upon, including the fact that hirers of labor here are much more exacting than are English farmers.

"I quite agree with Mr. Carr that farming in Canada, as compared with farming in England, is a poor business; but then the English farmer is a capitalist, and generally has more money invested in his rented farm than would buy a farm of equal size in Canada, land, stock, and crops, all put together; but, then, I take it, the farmer who is doing well in England in his business is not the man who would seek to do better in the rough semi-civilized life of a colony. Emigration is for the man who can't do well at home, and for those restless spirits, who are always fancying they could do better, and deserve to do better, than they are doing. Take, for instance, the discontented English agricultural laborer, who is a thorough believer in labourers' unions. All his leaders have told him 'that he is a poor peasant, socially and politically ignored, trodden down and under by tyrant farmers and aristocratical game-preserving landlord.' Let *him* come to Canada or the States. England will thus have lost a dissatisfied and half rebellious subject she does not want and can afford to do without, and Canada will have gained, it may be, a useful labourer; for experience gained on this side the Atlantic does sometimes make wise those who have been very foolish. Here he will find a wide field and no favour, and abundant scope for his energies. Here he will speedily gravitate to his natural level; for here he will be regarded just in proportion to his ability to abstain from beer-drinking, and to work—and work he must or starve." * * "If the English farmer is well off, that is, can keep out of debt, give his family a good education, and his sons a fair start in life, with the reasonable prospect of their being as well off as himself, he will of course, remain where he is, content to do thus well, nor seek to better his or their condition by emigration, for the Canadian farmer, though he owns his farm, and follows his own plough, cannot hope to do more."

Mr. Bolton's letter is, as we said before, unbiassed either for or against Canada. No case in reality was made out against us by Mr. Carr's letter, which, in fact, was a stronger argument against certain classes emigrating at all, rather than against their emigrating to Canada; and Mr. Bolton's letter is of the same general tenor, though worded in a different and less prejudiced spirit.

Before leaving the subject we may mention that Mr. Carr has died since his letter was written. We do not know whether he fell a victim to the deadly climate of the country which he considered so far preferable to Canada, but if he did, he only did what many have done before him.

Whackett's Needle Pole-Axe.

The following description of a pole-axe for slaughtering cattle, recently patented in England, is from the *Farmer*.

The first impression which strikes any one is that it is nothing more than an ordinary iron hammer, having two faces mounted on a shaft, to which it is secured by iron straps and rivets. On closer inspection the hammer head is found to be bored through longitudinally, that is, from one face to the other, and within the cylinder thus formed is placed a steel punch, the end being drilled out, so as to present a circular cutting edge about ½ inch in diameter. The punch is about 2½ inches longer than the hammer portion, and is mounted at the upper end by a flat circular cap about the size of half-a-crown, and this is designed to receive the blow. To put the punch in place a portion of one end of the hammer or upper face, which is nothing more than a box or ferule, is removed by unscrewing; the punch is then passed downwards with a spiral spring of wire under its head. The ferule is then replaced by screwing it down, and we find that by means of the spring the head of the punch stands above the hammer head about 2½ inches, and the cutting end is flush with the lower face. It is then ready for use.

The ox to be felled is then brought to the stake in the usual manner, and the operator takes the needle-pole axe in his left hand, and puts the lower face over that part of the skull where the blow would be most fatal. All things being steady, the head of the punch is struck by a wooden mallet, wielded by the right hand, and the animal drops perfectly insensible, and to all intents and purposes dead. An examination after death shews the frontal bones perforated as clean as if the holes had been drilled by the sharpest tool, and the brain is so disorganized that sensation or pain is impossible. The blow required is by no means heavy or violent, for the cutting edge of the punch or needle dispenses with much of the force required for the old pole-axe; and besides this it may be noticed that false blows are almost impossible, for a man holding the instrument with one hand may strike with greater ease and precision with the other than is possible with the old axe, having two hands and a swing blow, when almost always the creature will move in alarm, and so frustrate intentions. By means of the needle-pole axe, less exertion and bustle is required, and prominent in all the trials which have been made under our observation, is the fact that so little skill suffices to destroy the stoutest ox. The animals are led to the stake, and before half the trouble expended in ordinary cases can be observed, they lie on the floor an inanimate form beyond all sense of pain and suffering.

THE AGRICULTURAL HOLDINGS BILL, now before the Imperial Parliament, (we were in error in stating in our last issue that the bill had become law, though it probably is past by this time) has for its object the compensation of ejected tenants for unexhausted improvements. A curious point arises as to the duration of the beneficial effects of bones when applied to the soil in a broken condition. A correspondent of the *North British Agriculturist* has sent to that journal, a sample of bones collected from land to which they were applied *forty years* ago! In those days, the manufacture of bones into dust was very imperfectly carried out, and one-third of the mass would probably be from one inch to two inches in length. The editor states that the bones were in a wonderful state of preservation when received.

IT IS NOT IN ENGLAND ALONE that the condition of the agricultural masses is a bad one, though we, in common with the remainder of the press of this continent, use the state of the English laborer to point the moral when we wish to contrast the condition of the Old World serfs with that of our own producing class. In Silesia, according to the report of a gentleman lately travelling there, the laborer's condition is anything but cheerful. The peasant's cow is very badly off, but his wife is not a whit better. For months every year the men have to seek work in mines, and during that time the women do all the work that has to be done on their tiny farms or on the farms of employers. More women than men work on the fields; and the women are to be seen "dragging harrows, digging up potato ground, loading and emptying manure carts, working as bricklayers' assistants, wheeling clay from clay pits in brick kilns, acting as blacksmiths' mates at the smithy. Meat is a luxury enjoyed by some once a week; by more two or three times a year. Bread is eaten in small quantities." The potato is the chief article of diet, and milk is not dear; but eggs are rarely eaten. The circumstances of the peasantry seem to attract little or no public attention, in which respect their English brethren have certainly had the pull of them, lately.

THE QUESTION OF THE INFLUENCE OF FORESTS on the hydrology of a region is one that has been warmly discussed. Some men of science, Becquerel for example, hold that forests increase the amount of water received by the soil; while others, Marshal Vahant among them, assert that forests diminish the quantity. Some savans, such as M. Mathieu, Subdirector of the Nancy School of Forestry, have endeavoured, by way of experiment, to get together such facts as might, if they did not set the question at rest, at least clear up some points and supply a portion of the experimental data needed for a full explanation at some future time. M. Mathieu undertook to "determine the amount of rainwater received by the soils of two neighbouring districts, one of them covered with timber and the other arable land; and to find out whether, in consequence of the covering of trees which intercepts the rain-water, the soil of the woodland is as abundantly watered as that of the open." His conclusion is, that timbered soils receive as much, and more, rain-water, than the open country. Whatever conclusion the scientists arrive at with respect to the quantity of rainfall in wooded countries and those destitute of timber, it is a well settled fact that the presence of timber renders the distribution of the rainfall more equal, and that it tends to prevent the occurrence of such disastrous freshets as those from which France has lately suffered.

AFTER WE HAD PUT ON PAPER our ideas about overworking, we observed that Prof. Welch, agricultural editor of the Chicago *Times*, is somewhat of the same manner of thinking. Alluding to the fact that, this year, in consequence of the inclement spring, farm operations are unduly crowding each other, he says: Unfortunately neither horses nor men are in the best condition to work. Hot weather came on so suddenly that a feebleness in the system was produced. Farmers while looking out for the condition of their crops, must not be neglectful of the health of themselves, their hands, and their teams. The injury produced from working in the hot sun is every year very great. Cases of sunstroke are more and more numerous every season. Almost every farming neighborhood contains persons of broken down health who owe their sufferings to over-work in the hay and grain fields in July and August. It is said that no people in the world "toil in the heat of the day" to the same extent that Americans do. The cases of injury from the effects of heat are reported to be greater than in countries where the heat is much more oppressive. In India and most of the countries in southern Europe, field labor is generally suspended for about three hours during the middle of the day in summer. The people take their dinner and their sleep or rest. As it begins to grow cooler they go to the field invigorated, and work the remainder of the afternoon with redoubled energy.

Agricultural Intelligence.

Cattle at the Centennial International Exhibition.

The Centennial Commission proposes to adopt a scale to regulate the respective numbers of each breed of Neat or Horned Cattle to be entered for competition.

It is assumed that seven hundred head will cover all desirable entries; and upon that basis will be calculated the number of stalls which will be apportioned each breed. The scale divides the aggregate number into ten parts, and of these, four tenths are assigned to Short Horns, two tenths to Channel Islands, one tenth to Devons, one tenth to Holsteins, one tenth to Ayrshires, and one tenth to animals of other pure breeds.

The exhibition in each breed will comprehend animals of various ages, as well as of both sexes. Draft and fat cattle will be admitted irrespective of breed.

The exhibition of Horned Cattle will open September 20th, 1876, and continue fifteen days. It is desirable that all persons who contemplate exhibiting, will make application for stalls without delay, and if necessary at a later day, such applications can be amended. Inquiries may be addressed to the Chief of the Bureau of Agriculture, International Exhibition, Philadelphia.

Short-Horn and Hereford Sale in Australia:

AUSTRALIA PAPERS bring reports of large stock sales on their continent. At the sale of Messrs. Robertson, on March 19, 2nd Duke of Rockingham was bought by Gibson & Sons, of Tasmania, for 510 guineas; 3rd Duke of Rockingham, W. Neweray, Glen Thompson, 250 guineas; Fanny 12th, Messrs. Chirnside, Windham, 450 guineas; Fanny 13th, Mr. G. Mylne, Clarence River, New South Wales, 410 guineas; Fanny 14th, 300 guineas, and Bridal Flower, 320 guineas, W. McLean, Campbellfield; Empress, Messrs. Chirnside, 270 guineas; Marlborough, by Kirk, Queenland, 220 guineas. The above are Short-horns; in addition to them, some Herefords were sold at unusually large prices; Graduate, Bayles & Melville, Hamilton, 210 guineas; Student's Cadet, same, 550 guineas; several other bulls brought over 150 guineas. The heifer Morning Star was bought by Messrs. Chirnside, for 250 guineas. The total realized at the sale was:

			£	s	d
4	Shorthorn bulls, average		284	10	0
8	" " "		110	18	0
7	" heifers "		513	10	0
4	" " "		188	15	0
4	Hereford bulls, "		284	10	3
6	" " "		130	7	6
3	" heifers "		203	0	0
98	Shorthorn cows and heifers average		46	17	8
21	" bulls "		66	14	6
183	Hereford cows and heifers "		31	15	6
25	" bulls "		40	1	6

546 head, realizing £20,617 15s., or an average of £76 6s 7d per head

Dukes and Duchesses on this Continent.

"H." writes to the *National Live Stock Journal*, disputing the statement of a recent correspondent of that paper [CANADA FARMER, p. 97] as to the number of Dukes and Duchesses existing on this continent. "H." says:—"I notice that you give the United States the credit for possessing only sixteen, and Canada two Duke bulls, when in fact, at the present time, although one has died and another been sold to go to England since that article was written, we have at least eighteen, instead of sixteen, and Canada three, instead of two, as the following list will show. This gives the admirers of in-and-in-breeding twenty-one Dukes to show for over twenty years of breeding in this country, and of these twenty bulls with high-sounding titles, almost half have arrived at such an age as to unfit them for much longer service. Enfeebled as their constitutions are by this long-continued course of in-and-in-breeding, it is no wonder that the "Fancy" are becoming alarmed lest this family should become extinct if this insane folly of in-and-in breeding is followed much further; and already we hear rumors of more outcrosses to be added, to give this so-called "blue-blooded" race of cattle a longer lease of existence.

14*th Duke of Thorndale*—red, calved Feb 27, 1868, owned by Geo M. Bedford, Paris, Ky.

4*th Duke of Geneva*—red, calved Aug. 6, 1867 owned by A Remck and B. F. Vanmeter, Winchester, Ky

2*d Duke of Oneida*—red, with little white calved Aug 3, 1870, owned by T. J. Megibben, Cynthiana, Ky.

3*d Duke of Oneida*—red roan, calved Aug. 14, 1870, owned by Ware & McGoodwin, Danville, Ky.

4*th Duke of Oneida*—red and white, calved Jan. 16, 1871; owned by Ezra Cornell, Ithaca, N. Y.

7*th Duke of Oneida*—red, calved Jan. 24, 1872; owned by A. J. Alexander, Spring Station, Ky

2*d Duke of Hillhurst*—red and white, calved July 17, 1871; owned by M. H. Cochrane, Compton, P. Q.

4*th Duke of Hillhurst*—red, calved Dec., 1874, owned by Robert Holloway, Alexis, Ills.

5*th Duke of Hillhurst*—red, calved April 13, 1875; owned by Noel, Cockrill & Gibson, Nashville, Tenn.

8*th Duke of Airdrie*—red, calved Aug. 14, 1862; owned by Harvey Sedowsky, Indianola, Ills.

13*th Duke of Airdrie*—red roan, calved Feb. 8, 1865; owned by A. & E. Whitman, Fitchburg, Mass.

14*th Duke of Airdrie*—roan, calved July 21, 1865; owned by James Wadworth, Genesee, N. Y.

15*th Duke of Airdrie*—roan, calved Dec 30, 1865; owned by John Wentworth, Chicago, Ills.

17*th Duke of Airdrie*—red, calved Aug. 28, 1866 owned by Col. J B Taylor, London, Ont.

18*th Duke of Airdrie*—red and white, calved June 3, 1869; owned by Abner Strawn, Ottawa, Ills.

19*th Duke of Airdrie*—red, calved Sept 6, 1869; owned by A. M. Winslow & Sons and D. Piatt, Vermont.

20*th Duke of Airdrie*—red and white, calved Sept 5, 1870; owned by R G Dunn, Plumwood, Ohio.

21*st Duke of Airdrie*—red roan, calved Oct. 4, 1870; owned by C. E. Lippincott, Chandlerville, Ills.

22*d Duke of Airdrie*—red and white, calved Sept 9, 1871; owned by Richard Gibson, London Ont.

23*d Duke of Airdrie*—red, calved Nov 12, 1871; owned by J. P. Sanborn, Port Huron, Mich.

26*th Duke of Airdrie*—roan, calved Jan 6, 1875, owned by A. J. Alexander, Spring Station, Ky.

Messrs. Beattie & Miller's and Hon. M. H. Cochrane's Sale.

These sales which came off at Toronto on June 16 were, beyond question, the most successful sales ever held in the Dominion, and were also the most successful in point of interest shown and prices realized, that have been held this season on this side of the Atlantic. The result seems to have satisfied Canadian breeders that Toronto is the best point at which to hold sales, where the presence of buyers from the United States is desired. Its accessibility and its excellent hotel accommodation give it advantages which, together with the liberality of the authorities in granting the use of the Provincial Fair Grounds, place its desirability beyond dispute.

The sales were conducted by Col. L. P. Muir, of Kentucky, who officiated as deputy for Mr J P. Page. The latter gentleman was present and generally superintended things, but was prevented by a slight hoarseness from undertaking the conduct of the hammer. The bidding was spirited, and in a few instances excited, for is is not often that pure Dukes and Duchesses are placed within the reach of everybody that has a few thousand dollars to invest.

The following were the sales made:—

Messrs. Beattie & Miller's Short-horns

COWS AND HEIFERS

1	Prantic 27th, E. T Noel, Nashville, Tenn	$550
2.	Surmise Duchess 10th, Wm. Major & Son, Whitevale, Ont	2,400
3	Surmise Duchess 5th, J R Page, Semett, N. Y	2,700
4	Chaplet and bull calf by Royal Butterfly, S M. Meredith & Son, Cambridge City, Ind	875
5	Statira, same	700
6	Young Bracelet, A L. Stebbins, Port Huron, Mich	900
7.	Princess Maud, Avery & Murphy, Port Huron, Mich	3,000
8.	Princess of Raby, J. R Page	2,200
9	Delight, S T. Spangler Winthrop, Iowa	750
10.	Princess of Oxford 4th, J R. Page	3,000
11	Princess of Denmark 2nd, S. M Meredith & Son	1,000
12.	Tea Rose and heifer calf, A. L. Stebbins	550
13	Mountain Rose 3rd, S. M. Meredith and Son	525
14	Fair Maid of Atha, Col. Holloway, Alexis, Ill	825
15	Belle of Atha, A L. Stebbins	425
16.	Lady of Atha, same	675
17.	Flower of Atha and b. c. by Proud Duke, same	525
18	Lady Bloom, same	400
19.	Duchess of Greenwood, George Miller, Markham Ont	350
20.	Duchess of Raby, J. R. Craig, Burnhamthorpe, Ont	3,100
21.	Mary Hill, W. G. Pettit, Wellington Square, Ont	275
22	Countess and b. c. by Proud Duke, A. M. Darlington, Westchester, Pa	250
23	Katharine, S. T. Spangler	175
24	Lady Barnes, C. S. Smith, Acton, Ont	525
25	Careless 8th, J. R. Craig	2,300
26	Baroness Conyers, S. M. Meredith & Son	1,650
27	Kirklevington Princess 2nd, Avery & Murphy	4,050
28	Kirklevington Duchess 5th, J. R. Craig	4,025
29.	Duchess of Oakland, withdrawn	
30.	9th Duchess of Oakland, Benj. Sumner, Woodstock, Conn.	650
31	Casquet, S. T Spangler	575
32.	Red Rose, same	180
33.	Melissa 3rd, not offered	
34	Jessie Douglas, T. L. McKeem, Easton, Pa	325
35	Don Angeline 7th same	200
36	Frantic Queen 2nd, E. T Noel	500

The bulls were withdrawn from the sale, as no biddings were obtained on the first two offered.

Hon M H. Cochrane's Short-horns

COWS AND HEIFERS.

1.	Airdrie Duchess 5th, Avery & Murphy	$18,000
2.	4th Louan of Slausondale, Col. B. B. Groom, Winchester, Ky.	2,850
3	Mattie Lee 4th, T L McKeem	550

BULLS.

1	5th Duke of Hillhurst, Messrs Noel, Cockerell & Gibson, Tenn.	8,300
2.	Ranger Prince, J M. Peterson, Monmouth, Ill	950
3.	Louis le Grand, Jacob Lahmer, Vaughan, Ont	200

Berkshires.

SOWS.

Mapledale, S. M. Meredith & Son	$100
Blackwatch, J. Miller, Markham	50
Fairy Sylph, S. M. Meredith & Son	100
Blushing Answer, same	95
Bride Elect, George Miller	75
Siesta and seven pigs, Birrell & Johnston	105
Somnoleney, Hon. D Christie	140
Smiling Morn, Birrell & Johnston	85
Beautiful Star, S. M Meredith & Son	80
Baroness, J. Roach, Toronto	170
Susan, S. M. Meredith & Son	120
Surmise, same	95
Secret, J. Holderness, Toronto	60
Sow not in catalogue, J. White, Milton	80

BOARS.

Fitzmeteor, S. M Meredith & Son	125
Germ of Success, A Parlee, Toronto	125
Starlight Sentinel, Hon. D Christie	75
Smalmstown, A. L. Stebbins	50

HORSES.

Stallion colt by Pope, S. R. Sheater, East Cleveland, O.	$800
Pickering Lad, Mr. West, Brougham	325
Young Conqueror, T. McKeem, Easton, Pa	200
Belle of the Ball, John Miller	1,400
Cora Linn, same	650
Mare by Richmond, same	350
Polly, R. West, Toronto	200
Carriage Stallion, T. L McKeem	650
Carriage team of geldings, S. M. Meredith & Son	610

SHEEP.

Six Cotswold rams were sold, five of which were bought by Mr. John Miller, for $50, $55, $65, $85 and $75, and one by Col. R. Gibson, Tennessee, for $115.

SUMMARY OF THE DAY'S SALE.

MESSRS BEATTIE & MILLER'S STOCK.

9 Horses, average $580.50	$ 5,225
18 Berkshires, av. $100	1,800
6 Cotswolds, av. $75	450
34 Cows and heifers, av. $1,227 35	41,730
	$49,205

HON M. H. COCHRANE'S CATTLE.

3 Females, av. $7,133 33	$21,400
3 Bulls, av. $3,150	9,450
	30,850
Grand total realized	$80,055

Bearing in mind that these sales are at gold prices, while the sales in the United States are for greenbacks depreciated as we write by 17 per cent, it will be seen that the average realized Messrs. Beattie and Miller's Short-horns is greater by $200 per head than the average realized at any sale this season on the continent. The cattle sold by Mr. Cochrane are of such a strain that no deductions can be made as respects the average price paid as applicable to Short-horn stock in general.

Sale of Mr. Heacock's Short-Horns.

On June 17, Mr. Seth Heacock's Short-horns were sold at Toronto. Despite bad weather, and the fact that the sale clashed with another stock sale in Newcastle, the prices realized were satisfactory. The following were the sales:—

Cows and Heifers.

Belle of King, J. R Craig, Burnhampthorpe, Ont	$270
Carlotta, Corkery & Long, Thornhill, Ont	195
Cherry Duchess, same	150
Daisy 4, and heifer calf, by Fidget's Oxford 8th, S J. Spangler, Winthrop, Iowa	520
Minnie Herman and heifer calf, by Fidget's Oxford 8th, Corkery & Long	320
2nd Duchess of Oakland and bull calf, by Fidget's Oxford 8th, E. T. Noel, Nashville, Tenn	205
3rd Duchess of Oakland, same	135
Susie Mowbray and heifer calf, by Fidget's Oxford 8th, S. T. Spangler	300
Carlotta 2nd and heifer calf, by Fidget's Oxford 8th, Corkery & Long	255
Wallflower, S T Spanger	200

BULLS

Oakland Duke 2nd, John Little, Greenwood, Ont	200
Earl of Hamilton, Daniel Dow, Kinmore	140
Alpheea's Oxford, S. T. Spangler	460

SUMMARY.

10 Females, average $255 00	$2,550
3 Bulls, average $266 66	800
Total	$3,350

AT THE BATH AND WEST OF ENGLAND SHOW last month, great dissatisfaction was given by the award of the blue ribbon to a heifer without a name, belonging to Lady Pigott. Complaint is made that the only merit she has is that "she is by Booth's bull. If she stood in any market place she would not be noticed for any striking points of beauty; and if a question were raised by her owner as to her quality, she would be set down by a judge on being touched as the issue of a common Irish cow by a well bred bull. She is just a neat, shapely heifer, such as may be seen by the hundred almost any week in Liverpool and Manchester markets, and that is all that can be said of her; for she has neither hair nor color." Two other decisions were impugned, both of the cattle being by Baron Oxford 4th. Mr. T. Booth was one of the judges, which, says an English contemporary, was a likely appointment to engender dissatisfaction on the part of Bates men.

Coming Stock Sales.

The dates of the following Short-horn sales have been fixed:

July 21—B. F. Vanmeter, Stockplace, Ky.
July 22—Kinnaird & Cunningham, Ashwood, Ky
July 23—Handy & Lowry, Pine Grove, Ky.
July 27—Innes & Burgess, Cynthiana, Ky.
July 28—Muir & Offcutt, Paris, Ky.
July 29—J. Sudduth, Paris, Ky.
Aug. 18—A. W. Griswold, of Vermont, at New York Mills, N.Y.
Aug. 18—Overton, Cockrell and others, Nashville, Tenn.
Aug. 18—J. G. Cowan, Ottumwa, Ioa.
Aug. 25—G Engle, Arcola, Ill.
Sep. 1—J. S. Long, Newton, Ill.
Sep 2—Sprague & Flynn, Desmoines, Ioa
Last week of Sep.—Boone Co. Breeders' Association, Columbia, Mo.
Oct. 6—J. S. Long, Monroe, Ioa.
Oct. 6—T. Smith, Creston, Ill
Oct. 19—J. A. Gano, Centreville, Ky
Oct. 20—P. B. Goff, Winchester, Ky.
Oct. 22—J. W. Prewitt, Winchester, Ky.
Oct. 27—Ayres & McClintock, Millersburg, Ky.
Oct. 28—Corbin & Patterson, Paris, Ky.
Nov. 4—B. R. Groom, Winchester, Ky.
Nov. 5—H P. Thomson, Thomson's station, ky

Hon. D. Christie's Short-Horn Sale.

Hon. D. Christie's herd of Short-horns were sold at the Plains Farm, near Paris, Ont., on June 23. The prices realized were as follows:

Oxford's Princess of Athelstane, J. R. Page, Sennett, N Y.	$525
Mary of Athelstane, E T. Noel, Nashville, Tenn	475
Knight's Princess of Athelstane, F W Stone, Guelph	175
Placida 8th, Hon. Geo. Brown, Bow Park	500
Lady Queen, Gen. S. Meredith, Cambridge City, Ind.	500
April Morn, same	625
Louan of Brant 4th, E. T. Noel	850
Louan of Brant 5th, Hon A. McKellar	1,350
Louan of Brant 6th, Messrs. Holton, Ellison, Ill	1,150
Louan of Brant 7th, same	500
Louan of Brant 8th, J. R Page	350
Louan of Brant 9th, Hon Geo. Brown	800
Louan of Brant 10th, Messrs. Holton	200
Isabella 28th, Gen. S Meredith	725
Hattie Napier, Osler & Chegwin, Dundas, Ont	150
Angus Napier, Wm. Harris, Mt. Elgin	140
Grace, Hon. G. Brown	600
Faith, Osler & Chegwin	135
Jura, same	140
Vanda, B. Sumner, Woodstock, Conn.	235
Rosalie, Osler & Chegwin	250
Young Rosalie, J R. Craig, Burnhamthorpe	75
Mabel, Osler & Chegwin	150
Miss Goldsmith, A. Elliott, North Dumfries	155
Ella, R. Rennelson, North Dumfries	105
BULLS.	
Knight of Athelstane, Gen. Meredith	200
Louis Philippe, same	300
Prince Athelstane, H Chisholm	150
Sirius, J. Bawtinheimer, Oakland	100

SUMMARY

25 cows and heifers, average	$390.75	Total	$9,950
4 bulls and b. calves, do.	187.50	do.	750
29 head, average	$368 40	Total	$10,680

Short-Horn Sales in the United States.

The principal Short-horn sales in the United States during the month were At Abingdon, Ill., on June 8th, the Walnut Grove Herd of John Bond; at Galesburg, Ill., on June 9th, the herd of Col. Joseph Scott of Kentucky; at Cedar Rapids, Ioa., on June 8th, the herd of Wesley Warnock, Cynthiana, Ky.; at the same place, June 11th, the herd of Silas Corbin and Green & Morton of Kentucky, at Nokomis, Ill., on June 15th, J. H. Beatty's and J. F. Scott's herds; and at St. Louis, on June 17th, C. T. Quisenberry's herd. The following are the principal animals sold, and summaries of all the sales:—

John Bond's Herd.

Lady Clark, S. McFarland, Herman, Ill.	$300
Louan Duchess, J. W. Dowdy, Abingdon, Ill	300
Joe Townley, J. Lewis, Osceola, Ioa	320
Oxford of Walnut Grove, E. Johnson, Herman, Ill.	250

SUMMARY.

34 cows and heifers, average	$176.18	Total	$5 990
14 bulls and b calves, do.	140 00	do	1,960
48 head, average	$165.63	Total	$7,950

Col. Joseph Scott's Herd.

Lady Fashion 2d, Byron & Bro., Abingdon, Ill	$300
Australia 11th, W. Scott, Wyoming	300
Mary Myers and calf, Latimer, Abingdon, Ill.	435
Ann Myers, Campbell, Mt. Pleasant, Ioa.	300
Belle Airdrie 4th, Dunlap, Galesburg, Ill.	305
Lady Fashion 4th, N. D. Willey, Chariton, Ioa	350
Granger Shaw Bull of the West, Byron Bros	350

SUMMARY

60 cows and heifers, average	$201 67	Total	$12,100
13 bulls and b. calves, do.	177.70	do.	2,310
73 head, average	$187 40	Total	$14,410

Wesley Warnock's Herd

Rosa 2d, J. Wilson, Tama, Ioa	$300
Wabaunsee and calf, Judge Fairfield, Charles City, Ioa	400
Welcome, same	360
Duke of Maynard, same	250
Florentine Duchess, D. L. Hughes, Clinton, Ioa	400
Lady Sheaf 4th, same	335
Florence 3d, H. A. Hartshorne, Tama, Ioa	315
Lily 3d, W. L. McCloskey, Mechanicsville, Ioa	505

SUMMARY.

41 cows and heifers, average	$239 27	Total	$9,810
11 bulls and b. calves, do.	142.73	do.	1,570
52 head, average	$218.85	Total	$11,380

Silas Corbin's and Green & Morton's Herd.

Nannie Duke, C. Jordan, Wanbeck, Ioa	$900
Red Princess, A Rile, Mt. Auburn, Ioa	315
Duchess 2d and calf, G. W. Brown, Oelwin, Ioa	350
Pre-emption Belle, Wm. Hutchins, Marion, Ioa	440
Athalia 2d, R. Adams, Cedar Rapids, Ioa	340
Florentia 15th, D. L. Hughes, Clinton, Ioa	330
Minnie 3d, S. W. Jacob's, West Liberty, Ioa	300
Imp. Counterpart 2d (bull) H. G. Little, Grinnell, Ioa	505
Prowess, J. W. Wall, Cedar Rapids, Ioa	320
Mary Bell, D S. Smith, Marshalltown, Ioa	650
First Belle of Alexis, W. L. McCloskey	310
Mollie Kidd, Col. Byron, Dunlap, Ill.	420
Lord Danby, John Ferguson,	275

SUMMARY.

72 cows and heifers, average	$219.93	Total	$15,835
11 bulls and b. calves do.	195.00	do.	2,145
83 head, average	$414.93	Total	$17,980

Summary of J H. Beatty's Sale.

67 cows and heifers, average	$161 85	Total	$10,895
9 bulls, do.	245.55	do.	2,210
72 head, average	$175.00		$12,605

Summary of J. F. Scott's Sale:

35 cows, average	$118.88	Total	$4,160
3 bulls, do.	143.33	do.	430
38 head, average	$120.75	Total	$4,590

Summary of C. T. Quisenberry's Sale.

58 cows, average	$144.05	Total	$8,355
5 bulls, do.	76.00	do.	380
63 head, average	$138.65	Total	$8,735

THE EAST RIDING OF LAMBTON COUNTY Agricultural Society will hold their Fall Show in Forest on Oct. 5th.

THE PROVINCIAL EXHIBITION at Ottawa will commence on Sep. 20, not on Sep. 21 as we announced last month.

THE COUNTY OF PEEL AGRICULTURAL SOCIETY have fixed Oct. 5th and 6th for the holding of their fall fair.

LOUAN'S DUKE OF ONEIDA, by 2nd Duke of Oneida, has been sold by E. K. Thomas to Messrs. Riles Bros., Madison Co., Kentucky.

MR. E. ADRIAN, Compton, Quebec, has bought from Mr. S. Brown, Galena, Ill., the Short-horn bull 3rd Duke of Hazlewood, 19687.

BORDEN'S CONDENSED MILK FACTORY in Orange County, New York, uses 14,000 quarts of milk daily and pays out $27,000 monthly.

SEVERAL OF THE SCOTTISH AGRICULTURAL SOCIETIES have changed the date from which the exhibition ages of cattle are to be reckoned from Jan. 1st to Dec. 1st.

LOUAN HILL 4TH, by Baron Booth of Lancaster, has been purchased by Col. Holloway, of Illinois, from Messrs. Pickrell, of Mechanicsburg, same state.

MR. F. W. STONE, of Guelph, at his sale in 1873, reserved twelve short-horn cows, and had the singular fortune to have twelve bull calves from them in 1874.

THE BRENCHLEY SHORT-HORN herd of G. F. Symonds, Ruxton, Kent, was sold last month. The average of 25 cows was £35 6s. 5d; of 3 bulls, £21; total, £946 1s. 0d.

MR. JOHN R. CRAIG, of Burnhampthorpe, lately purchased 5th Duchess of Springwood, a Craggs, from S. M. Meredith & Son, of Cambridge City, Ind., for $2,000.

MAJOR H. EVANS, Spring Station, Ky., has issued a notice stating that he is prepared to receive pedigrees for the fifth volume of the "American Short-Horn Record."

MR. G. F. FOX, of Harefield, England, writes to deny that he offered, as is rumored, $80,000 to Mr. B. F. Vanmeter, of Kentucky, for his herd announced for sale on 21st instant.

MR. C. W. HARVEY, a noted Short-horn breeder, of Walton-on-the-Hill, England, is dead. He began breeding by purchasing from Thomas Bates, and he always adhered to the same strain of cattle.

THE CELEBRATED TROTTER KITTY WELLS died at Hamilton on July 2, of congestion of the lungs. She was valued at $20,000. She made her debut at Utica with 2:32.

THE IOWA STOCK-BREEDERS have formed themselves into an association with Prof. A. S. Knapp, President. The association will meet annually, the next meeting to be held in June 1876 at Vinton, Iowa.

THE CALF OF ROSALENA 2D by Baron Bates 3d, due next September, has been sold in advance, provided it be a heifer, by Mr. C. F. Wadsworth, Genesee Co., N. Y., to Mr N. G. Pond, Milford, Conn., for $3,000.

AT THE SALE of Short-horns at Ionia, Mich., last month, Lady Phœnix was bought by Hon. G. W. Webber for $325; Junietta, John Thorburn, $325. Eighteen head brought $2,300.

SHEEP SHEARING AGAINST TIME—At Mr. Hammond's sheep shearing at Swamby Grove, near Bedale, Scotland, John Pinkney, of Crakehall, recently shore 60 hoggets in ten hours.

MR. E. T. NOEL, of Tennessee, has purchased of Mr. J. J. Davidson, Balsam, Ont., the imported heifers Orange Blossom 32d and Solemnity. These are from the herd of Amos Cruickshank, Scotland.

NOT MANY INSTANCES are on record of mares having bred over the age of twenty-five years. The Orillia, Ont., *Packet* says that Mr. Daniel Tompkins has a mare over thirty years old, which had a colt last year and this year.

BIRRELL & JOHNSTON have recently sold to Anderson Bros., of Franklin Co., Mass., the imported short-horn bull Scotchman 2d, a noted prize-taker. Some Cotswold ewes also changed hands at the same time at $55 each.

THE RUGELEY, STAFFORDSHIRE, HORSE-FAIR is one of the greatest fairs now held in England. Some fine horses at the late gathering sold for from £250 to £300 each. German buyers bought all the black and bay horses of not less than 15 hands that were offered.

ONE OF COL. MORRIS' MT. FORDHAM HERD, lately sold by him to Avery & Murphy, of Port Huron, Mich., the 2nd Beau of Oxford, has been resold to Mr. Whitman of Lorminster, Mass., the present owner of 13th Duke of Airdrie, whom the Beau is to succeed.

MR. A. W. HALL, Superintendent of the city farm of Augusta, Me., was killed by a Jersey bull recently. These "accidents" are continually occurring. It should be a warning to every one never to trust a bull, however gentle, without a ring in his nose and a secure leading pole.

AT A SALE OF SHORN-HORNS belonging to various owners at the Midland Counties Repository in Birmingham, England, lately, Mr. Nevatt bought Princess Louise and Dolly Varden for 76 and 67 guineas respectively. The highest price given for a bull was 44 guineas, for Lord Beauchamp's yearling Honeydew.

MR. SIMON BRATTIE, of Pickering, Ont., will leave for England shortly, where he will continue to carry on his business of importing stock to this country, both on his own account and on commission. He will probably locate near Liverpool or Glasgow, in order to have shipping facilities. In the fall, he will return to Canada and make a clearance sale of his stock here, and such animals as he may bring with him.

A WESTERN STOCK RAISER whose specialty is Berkshire pigs writes from England to *The Live Stock Journal* that the prices for pigs in that country are such as "to make purchasers look blue," those pigs that he had purchased having cost him $250 to $700 each. This may be taken as a very broad hint to those who have a desire to buy the produce of fashionable imported stock, and to whom in general "a nod is as good as a wink."

MR. WILLIAM T. BAILEY, of Buffalo, assistant editor of the American Short-horn Herd Book, has issued a new quarterly journal, designed to fill the same want on this continent as is filled by *Thornton's Circular* in England. It will give all details about Short-horn births and deaths, private and public sales, etc., furnishing the matter more in detail than the agricultural press can do with respect to the general run of animals. We anticipate that the publication will be successful.

THERE APPEAR TO BE RIVAL "AYRSHIRE RECORDS" in the field. Messrs. Lewis & Sturtevant have issued "The North American Ayrshire Register," and now we observe, in a contemporary, a notice that Mr. Wm. Birnie, of Massachusetts, is going to issue another, under the control of the Ayrshire Breeders' Association, the secretary of which will edit the book. It will be called the "Ayrshire Record" for short, and will contain two classes of animals, one to trace direct to importation, and the other believed to be pure-bred on evidence.

HIS COSTLY GRACE, the 5th Duke of Hillhurst, purchased by Messrs. Noel, Cockerell & Gibson, of Tennessee, at Hon. Mr. Cochrane's sale at Toronto, is still with us. His buyers are unwilling, in consequence of his extreme youth, to risk removing him to his future residence until the heated term is over; so for the present he is the guest of Mr. John R. Craig of Burnhamthorpe. We understand that Mr. Craig offered the Tennessee gentlemen a considerable advance on the $8,300 which the Duke cost them, but that they declined to sell.

MR. C. M. LANSING, Niagara, Ont., writes to the *Country Gentleman*:—"A short time since I purchased of C. Hills, Crystal Spring Farm, Delaware, Ohio, the Short-Horn cow Twin Maggie by Duke Imperial 5526, and her two heifers, red and white, Maggie by Imperial Starlight 8370, and Cambria Lass by Duke of Crystal Spring 11458. I have changed the names of these animals to Lady Cambria 1st, 2d and 3d, and Lady Cambria 2d has dropped a very handsome c. c., red and white, by Renick's Red Duke 12731, which I shall call Lady Cambria 4th. The pedigrees of these animals are the same as that of the celebrated Louan family, from Cambria by Bertram 2d (3144). &c."

A CURIOUS INSTANCE of hereditary malformation recently occurred in the case of a pedigree Short-horn cow in England. The cow, when half gone with her third calf suffered a serious injury in the fore part of her udder. The udder, however, was saved, and when the next calf was dropped, the milk reappeared as usual. But when the calf, a heifer, came to produce a calf in her turn she exhibited a defect in her udder, by which the quarter corresponding to that in which her dam was injured developed no milking capacity. After having three calves, this quarter remained totally defective and useless. But the first calf of this latter cow, when she in her turn produced a calf, showed an excessive development of milking power in the very same quarter of the udder in which her dam and grandam were deficient. This curious coincidence is related by the owner and breeder of the animals.

New Granges of Patrons of Husbandry.

The following new Granges of Patrons of Husbandry have been constituted since our last issue :

Division Granges.

13. VICTORIA, County of Perth.—Robt. Beatty, Master, Kirkton ; John Campbell, Secretary, Woodham.

14. DURHAM, County of Durham.—Jesse Trull, Master, Bowmanville ; W. Cryderman, Secretary, Enniskillen.

15. EAST LAMBTON, County of Lambton.—J. Dallas, Master, Widder Station ; T. Doherty, Secretary, Uttoxeter.

16. ORANGEVILLE, County of Wellington —Wm. Clark, Master ; W. T. Pattullo, Secretary, Caledon.

Subordinate Granges.

191. CHERRY GROVE, County of Middlesex.—Robert Brown, Master, St. Mary's ; John Cameron, Secretary, St. Mary's.

192. HILLSDALE, County of Simcoe —Edward Archer, Master, Hillsdale ; John Johnston, Secretary, Simcoe.

193. NILESTOWN VICTORIA, County of Middlesex —Eli Jarvis, Master, Nilestown ; Walter H Edwards, Secretary, Nilestown.

194. WILSON, County of York.—R. J Rutherford, Master, Coleraine ; Isaac Devins, Secretary, Coleraine.

195. CROMARTY, County of Perth —Robert Hamilton, Master, Cromarty ; James Gillespie, Secretary, Cromarty.

196 CAMILLA, County of Dufferin —James Decatur, Master, Camilla ; D. McNaughton, Secretary, Camilla.

197. FINGAL, County of Elgin —David Barber, Master, Fingal ; A. McDiarmid, Secretary, Fingal.

198. ERIN, County of Wellington —John Barry, Master, Erin ; Alexander Smith, Secretary, Erin

199. OSHAWA, County of Ontario.—Allen Trull, Master, Oshawa ; Daniel Lick, Secretary, Oshawa.

200. BURLINGTON, County of Halton.—B. H. Kean, Master, Burlington ; O. F. Springer, Secretary, Burlington.

201. CLARKE, County of Prince Edward —W A Wilson, Master, Northport ; S J Cutter, Secretary, Northport.

202 LAUREL, County of Wellington —Thomas West, Master, Laurel ; H. Lipsett, Secretary, Laurel.

203. Union, County of Middlesex.—G. W. Francis, Master, Belmont ; Wm. Barr, Secretary, Gladstone.

204. MELVILLE, County of Peel.—Henry Scott, Master, Orangeville ; J. A. Mitchell, Secretary, Orangeville.

205. SHERWOOD, County of Peel.—Wm. Spanker, Master, Maple ; Alfred E. Keefer, Secretary, Concord.

206. PEEL AND MARYBOROUGH, County of Wellington.—Thos. Garbett, Master, Hollen ; John Paterson, Secretary, Hollen.

207. WEST MAGDALA, County of Elgin.—James Munro, Master, West Magdala ; John French, Secretary, West Magdala.

208. ARVA, County of Middlesex —Captain Burgess, Master London ; Wm Elliott Secretary, Arva

209 IONA, County of Elgin —D. McNail, Master, Iona ; John Rogers, Secretary, Iona.

210. CADMUS, County of Durham.—C. B. Power, Master, Cadmus ; J. L. Power, Secretary, Cadmus.

211. AILSA CRAIG, County of Middlesex.—John J. Cassidy, Master, Ailsa Craig ; John S. McEwen, Secretary, Ailsa Craig.

212 SCOTCH BLOCK, County of Halton.—John T. Elliott, Master, Speyside ; Ephraim Moore Jr., Secretary, Speyside.

213. LUMLEY, County of Huron.—Arch. Bishop, Master, Hay ; James Fyfe, Secretary, Lumley

214. HARLEY, County of Essex —T S Rutherford, Master Burford ; A Harley, Secretary, Harley.

215. ALTON, County of Peel —Joseph Dodds, Master, Alton ; Wm J. Dodds, Secretary, Alton.

216. BAY QUINTE, County of Lennox.—Wm Hoglo, Master, Ernestown Station, W. M Fraser, Secretary, Ernestown Station.

217. ROSE OF HARWICH, County of Kent.—Thos. Worlfenden, Master, Harwich ; J. D McCoig, Secretary, Chatham.

218. BALLINAFAD, County of Wellington —Joseph Hilts, Master, Ballinafad ; Geo. Sewell, Secretary Ballinafad

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THE EXPENSES OF THE NATIONAL GRANGE of the United States last year are now officially placed at "about $160,000." The printing of song books manuals, etc., cost $67,838 76 The cost of the seventh session of the National Grange was over $11,000.

THE FORTHCOMING EXHIBITION of the American Pomological Society, which will take place in Chicago on Sept. 8th, and succeeding days, will probably be the most successful gathering of the Society. Canada will be represented by Dr. Burnet, of Hamilton, and Mr. Gibb, of Montreal.

WILLARD'S PRACTICAL BUTTER BOOK, published by the Rural Publishing Co., of New York, is now out. The name of the author is a sufficient guarantee for the reliability and thoroughness of the work It is a small book, costing but a dollar. The author has contrived to condense a vast amount of practical information in a very small compass. Butter-makers who would keep abreast of the times cannot afford to be without it.

THE GRASSHOPPERS IN THE WEST will not touch peas as long as there is anything else around.

INDIANA AND MISSOURI now lead Iowa in the number of granges, Indiana having 2,025, Missouri 2,023, and Iowa 2,002.

YOUNG SHAD IN MILLIONS have appeared on our side of Lake Ontario. They are the fruit of Seth Green's work in stocking the water on the American side. We hope no one will destroy them in an immature condition. The addition to our resources is a valuable one.

THE DROPPING OF THE WORDS: "When the school teachers can take the children out for half an hour," between the words "efficiently," and "during," at the end of the first paragraph of Mr Julyan's article, last month, on the Education of Farmers' Sons, rendered the sentence unintelligible.

FIELDS COVERED WITH YOUNG TOMATO PLANTS, says the *Garden*, are now not uncommon in the neighbourhood of London. Although in our climate the Tomato never can be grown so easily as a field crop as in warmer countries yet it has been proved to ripen well in the London market gardens, and perhaps some of the newer kinds may prove an early variety suited to our climate.

AMONG THE LATEST ADDITIONS to the increasing list of purposes to which paper is now applied, is the making of baskets, belting for machinery, buggy-boxes, and various household utensils. The paper buggy-box is said to be a perfect success, proof against shrinking or cracking, and of such strength and hardness that the kick of a horse scarcely makes an impression on its surface.

AS IF THE TERRIBLE PHYLLOXERA were not enough, the apparition of another enemy is reported from the vine growing districts in France. It has been named *grisette* It is an almost imperceptible insect, which attacks the blossom of the vine, destroys the chief organs, and leads to the utter exhaustion of the young grape. The *grisette* ravages are said to be already considerable, and means are now being devised to put a stop to them.

A NEW POTATO-DISEASE has developed in England, in the Royal Hort. Society's Gardens at Chiswick. It is a fungus which attacks the plant when young. The disease is regarded with considerable alarm, as probably more formidable than even the old form of potato disease itself. At Chiswick its effects have been most disastrous, the entire crop of the American varieties having been destroyed, the tubers never advancing beyond the size of small kernels. It is said to be confined to these varieties.

A FISH PROTECTION ASSOCIATION has been organized at Guelph, upon the model of the successful Peterboro' Association The officers of the Guelph society fare :—President, Judge Macdonald ; Vice President, James Goldie ; Treasurer, Capt. Swinford ; Hon. Secretary, C Acton Burrows. The association is already stocking the Speed with bass. Next Spring, it will go largely into trout-breeding, procuring the fry from Mr Wilmot's establishment at Newcastle.

MR. CHARLES BRAGDON, for many years Associate Editor of the *Rural New Yorker*, having been compelled to go to Florida for the benefit of his health, his place on that journal has been filled by Mr. Wm. J. Fowler, of Pittsford, N. Y. Mr. Fowler is already well-known to reading farmers by his contributions to the principal journals over the familiar initials "W. J. F." His name will be a tower of strength to the "Old Rural." But, we may add, he will have no light task in maintaining that journal at its present pitch of excellence.

THE EIGHTH ANNUAL REPORT of the Dairymen's Association of Ontario, recently issued, is a credit to the association in respect to the practical nature of its contents, and to Secretary Hegler, of Ingersoll, for the care with which it is compiled. Canada owes a great debt of gratitude to the association for the place she now occupies in the world's market with her dairy produce ; and those Ontario dairymen who do not belong to the society are losing time and ground by every minute that they delay joining

AMONG OTHER SPECIFICS against the Colorado beetle may be mentioned two reported in the *Maryland Farmer*. The first is tobacco-dust sprinkling upon the vines when the dew was on. The other was discovered by a lazy man who when planting, "tried a small piece of ground after the old lazy way, that is, dropped the potatoes on the top of the ground, and covered with old straw, pretty thick, say thick enough to keep down the weeds. Around this little patch potatoes were planted in the usual mode, and up to this time the bugs have not disturbed the straw covered potatoes, but have played havoc with the rest."

PHOTOGRAPHY BY LIGHTNING. — *Berrows' Worcester Journal* (English) mentions a curious incident attendant upon the striking of some sheep by lightning. Similar marks have before been discovered on men who have received a shock of the electric fluid. Twenty-one ewes were killed by lightning in the case alluded to. On skinning one, the fellmonger held the pelt up to the light, and discovered photographed upon it by the lightning an exact resemblance of the tree, with its branches, leaves, and stem, under which the sheep had taken refuge, and at the bottom a fleecy looking mass, evidently the sheep huddled together.

Seeds, &c.

Seed Grain—Subject for Grange Discussion—Hulless Oats.

EDITOR CANADA FARMER :—When a farmer requires seed grain, he generally purchases the finest sample he can procure, but I think it a matter of more importance that the seed should be procured from a different soil, and if from poor land, so much the better, provided the seed is pure and unmixed with the seeds of weeds.

A neighbour of mine on one occasion bought some seed oats of a very unpromising appearance, but they were raised on a worn-out sandy soil, and he sowed them on a strong loam, which had been cleared only a few years before. His crop was excellent both in quality and quantity. A few years ago, I paid $1 per bushel for seed oats of the potatoe variety, which were as fine a sample as I have ever seen, and part of an excellent crop. I sowed them on old land which I thought had been rather overcropped, and I therefore applied superphosphate of lime at the rate of 200 lbs to the acre, but neither in quality nor quantity was the crop equal to the seed. A part of the same field was sown in barley the same year, and to that also I applied the superphosphate at the same rate, with no beneficial results. One ridge both of oats and barley had no superphosphate, and yet the crop there was just as good as where the superphosphate was applied.

As an experiment, part of one ridge of oats had the superphosphate applied about three times as thick as anywhere else, and there the oats were ranker, but did not ripen so early as the rest.

It seems only reasonable to suppose that, if seed grain from rich land is sown on poor land, it must degenerate, and also that seed from poor land, if sown on rich land, must improve. It is rather late in the season for these remarks now, but the subject might properly be discussed at the meetings of the Granges, so as to elicit the experience of as many individuals as possible.

I have no doubt that, if seed grain were procured in the northerly section of the Province and sown in the southern section, it would prove beneficial, but there must be a limit to that, as we cannot continue going northward very far.

The Hulless oats man has not been around here to my knowledge. I have seen some of that kind of oats, and, if it were thrashed with a flail and well cleaned, it might sell for groats, but there is only a limited demand for that article.

As for the Hulless barley, I have seen that raised in new settlements in the Province of Quebec, where they could not raise fall wheat, and it was raised for flour, for which it is better adapted than any other kind of barley, as it makes better flour. It ripens very early and must be cut before it is dead ripe, as the straw is very brittle. It is not considered by botanists as being barley at all, but rather a species of wheat, the beard being attached to the chaff as in wheat, and it is therefore prepared for the mill with less trouble than any other kind of barley.

There is no deception in these kinds of oats and barley, unless when they are represented as being new varieties, and extraordinarily productive. Still, if there were not plenty of gulls, what would become of the knaves. They, poor fellows, must eat in order to live, as well as other people, and if there were no gulls the knaves would die out.

I think you are doing good service by cautioning your numerous readers against giving too ready an ear to the interested representations of those who would rather live on the credulity of others, than pull off their coats and go to work for themselves.

SARAWAK.

THE LONDON AGRICULTURAL GAZETTE contains letters from several farmers who "have seen it done," averring that oats planted in the spring and cut from time to time to keep them from flowering, will produce the following year, not oats, but wheat or barley. Another instance of the irrepressible conflict between science and practicality. Science says that oats cannot produce wheat. Practical farmers who have no object to serve by telling lies, say that oats do produce wheat.

Australian Wheat.

Alderman Mechi writes as follows to the *Agricultural Gazette*:—

At various times I have sown among my own wheat crops portions of fine wheat sent to me for trial from Australia. In every case, the plants just before development have become blighted and worthless, although the home-grown wheats within a few inches of them came to perfection. This puzzled me extremely, seeing that the Australian samples were of the finest quality. I then remembered that our own wheat had, before being sown, been steeped in a solution of blue stone (sulphate of copper) which prevents blight, and that we had omitted to do this with the samples of Australian wheat, but we did steep the last sample, which is now in full ear without any symptom of blight or disease. It is fully ten days forwarder than our own wheat growing near it, although sown the same day.

As we hear of such ruinous losses by blight in our colonies, I think it most important that the steeping process should be there generally adopted, as it is by all good farmers in this country. We use 1 lb. of sulphate of copper to 10 quarts of water, the wheat is steeped in this for ten minutes, and well stirred, or the wheat is put on a floor and saturated with this solution. Whenever we have omitted to steep the grain, the crop has proved more or less blighted or smutty.

I am sorry that I did not leave a portion of the Australian wheat unsteeped; this should be done as a comparative test. The saving of a fortnight in time in late districts would be a considerable advantage. The wheat was sown the last week in November. It looks a promising well-developed crop. This wheat tillers rather less abundantly than home-grown, but would probably become more vigorous by acclimatisation.

Correspondence.

A SUSPECTED SWINDLE. S. C. Harrison, Ill.—We are making enquiries about the person you name, and, if we find him to be a swindler, we will publish the fact.

HORSE WITH SWELLING ON LEG. Subscriber, Mariposa.—Your enquiry came too late for insertion in its proper department. As far as we can tell, the treatment has been correct. Send us your name, and we will reply more fully by mail.

PROTECTING CABBAGE PLANTS. W. H. M., Upper Woods Harbor, N. S. Winding paper around the stem of the cabbage plants, and leaving part above and part below ground, is an effectual remedy against the grub. Dusting with air slaked lime or wood ashes will prevent the fly from attacking the leaves of turnips, etc.

POTATO-BLOSSOMS. A. D. R., North Wellington. We have heard that picking off the blossoms from growing potatoes increases the growth of the tubers, but never tried it, and therefore do not know whether it will do it. Suppose you try it by picking a row side by side with another which you leave unpicked, and let us know the result.

THE MOUSE-TRAP IN THE MARCH NUMBER.—George Duncan, St. Malachi. We do not see that the trap needs any explanation. The bait is placed in the centre and the mice are free to run in and out as they please. When they get to feel at home, plug the holes, carry trap and contents to a place where there will be a clear course and no favor, call the dogs or cats, and then let out the mice.

ROSE-BUG—MACRODACTYLUS SUBSPINOSUS.—D. A. Purdy, Newbury, Ont.—The insect you send us in reply to our request in our last issue, is not the insect which does the sewing machine work on the grape-vine, specimens of which you previously sent us. The insects last sent are the *Macrodactylus subspinosus*, Rose-bug, which in the beetle state preys upon the grape vine. The eggs of this insect are laid in the ground and the larvæ mature there.

HEDGES.—Subscriber.—The fastest growing hedge-plant that will stand the climate is, undoubtedly, the willow, but the willow hedge is a delusion and a snare against which we caution our readers. We have seen a tolerably good willow hedge, but for one good one there are many that are nothing but an eyesore and a nuisance. Buckthorn is the best and hardiest hedge-plant that we know of. We will probably take up the subject of hedge-growing shortly.

Miscellaneous.

Giant Powder.

Dynamite, or giant-powder, may be transported by all ordinary means of conveyance in every climate and temperature without danger of explosion. Several European Governments allow it to pass as common freight. The secret of its safety lies in the fact that the absorbent is soft, compressible, and elastic, and is no more affected by a blow than is a cushion. It has been subjected to the severest tests by scientific men and experts of every sort, and has proved by its conduct that the only means of exploding it is by a large and powerful percussion-cap. In contact with fire it burns to ashes like saltpetre paper. A lot of 8,000 lbs. has been burned at once without exploding. It may be poured upon a red-hot plate, or a red-hot poker may be thrust into it; a box of it may be thrown upon rocks from any height, so that the box is shattered; heavy weights may be thrown upon it; it may be beaten with a sledge-hammer; it may be held in the hand and set on fire, and when half consumed be extinguished with water: all this may be done and the powder will refuse to explode.

There are two kinds of dynamite. One is composed of 75 per cent. of nitro-glycerine and 25 per cent. of infusorial earth. The other has much less nitro-glycerine, the deficiency being supplied by nitre, saltpetre and rosin. The second is not so strong as the first, and is only half as costly. The substance has the look of dirty corn-meal. "If explosion does not take place like gunpowder, burning from point to point, but the entire mass, however large, bursts at once, as if the band that held it were cut and the recoil of each grain took place at the same instant. It shatters the hardest rock as if it were the most fragile of things, and reads wrought-iron and steel as if they were rags. The slightest charge of it in the heaviest rifle or cannon tears the gun into a thousand pieces. It is as good in water as out. If turned loose into a bore-hole filled with water it sinks to the bottom is tamped by the water and explodes with full effect."

As dynamite contains nitro-glycerine, it is supposed to be dangerous to transport, yet it is in truth quite otherwise. Congress has made it a misdemeanor punishable by heavy fine or imprisonment to ship highly-inflammable or dangerously explosive substances without disclosing their character by labels on the boxes or vessels containing them. A late trial before a United States Court established the fact that dynamite cannot be reckoned one of these substances.

Marks on Trees.

An old surveyor sends Dr. Asa Gray some interesting observations on marks on trees.—For several years before the war I was the surveyor for Davidson County, Tenn., in which the City of Nashville is situated. A large part of my duty was running old lines established by former surveyors, numbers of which had been cut fifty to sixty years before. These lines were indicated by hatchet marks upon the trees, through, or near which, the lines ran. Three chops with the hatchet about 4 inches apart, breast high, was, and is, the recognised mark for surveyors' lines. So uniform were the marks given to the trees by the old surveyors that by practise in noting the position, depth, angle, width, and distance apart of the marks, I could generally tell what surveyor had run the line. Very old lines through bottom lands had often been surveyed on horse back, and in such cases, the marks would be found 7 or 8 feet from the ground.

It may be interesting to know that the most permanent marks are those in which the hatchet does not go through the bark. In such cases the marks were as plain and sharp after fifty years as when just made. If the sapwood was touched ever so little, the edges of the cut would widen and fresh bark would be made, and this being smoother than the old bark and surrounded by a sort of lip, the whole would, as the tree grew old, assimilate in appearance to the rest of the tree, so that only a practised eye could detect the mark at all. If the chops were very deep the bark between them would be thrown off by the tree, and all replaced by new bark, and present a blur, which, in time, would be very hard to recognize, and such a tree could only be proved to a jury (as it was often necessary to do), by cutting into the tree and exposing the chops or marks in the solid wood under the sap, and often under many layers of the tree wood. Law suits where lines were questioned have been decided by this method. I may here state that I have often known these layers to tally exactly with the number of years since the survey was made, and thus carry the most convincing proof that the tree was marked at that time.

The point, however, in which the present interest lies is that among the many thousand marked trees I have examined I never new one in which the distance of the marks from the ground, or each other had varied from the general practice of surveyors. Many of them had been so marked in the presence of old settlers who accompanied me in the re-establishment of the lines, and I never knew of any change being spoken of in the appearance, except by being cut too deeply. Many of the marks were the subject of especial study to me; but I never met with or heard of marks that had grown up a tree or that had widened apart out of the surveyor's customary limit. In some instances the original level of the soil had been changed by being washed away, but this was only on hill-sides, and easily accounted for, and proved by other trees and circumstances.

The habit of bears of standing up against Beech trees and scratching them with their claws somewhat as cats do against table-legs is a case in point also. No bears have been found in Davidson County for the last fifty years, and I have had pointed out to me trees that had been scratched all round in this manner, and although the same trees would be marked by the climbing of the bear, yet the peculiar marks made by this playful scratching were never any more than the usual distance from the ground. I know a place near Nashville, where, about forty years ago, a Cedar-wood seat was put between two close growing trees by notching it into each one. The trees have grown quite large, and entirely round the ends of the board, but it is exactly the same height as when first placed. I also know where I cut my initials into the bark of a young Hackberry tree with those of a young lady; this was twenty-three years ago, and the marks are there at the same height. These last, however, are special instances, and only prove the habits of Beech, Elm, and Hackberry trees, while those of the surveyors' marks comprise all kinds of trees indigenous to this country, and extend through such periods of time as give very complete observation.

About Bricks.

Few materials for building are in more constant use than bricks. Even where stone is the principal article used in the composition of a building, bricks are wanted for linings, flues, furnaces, ovens, and a number of other purposes. The properties of bricks should vary according to the purposes to which they are to be applied. A brick intended for building should be so solid that it may be neatly cut, and baked at a temperature sufficiently high to prevent it being disintegrated by atmospheric influences. A good brick for an ordinary building will support a considerable weight without being crushed. It ought not to crumble in water nor to absorb too great a quantity of it. This question is tested by weighing the brick before and after immersion in water.

Earths are often found which, without preparation, are fit for the manufacture of bricks for building purposes. Indeed, the common yellow vegetable earth will generally answer. In the construction of furnaces, the bricks to be used ought to be such as will longest resist the ashes of the combustible.

Fire-bricks are made with plastic clay, containing neither gypsum, lime, or oxide of iron, which color bricks red and render them fusible. The clay is first washed to free it from the foreign substances which it contains. It is then reduced with cement of burnt clay, made expressly for the purpose, and powdered. Even the purest sand, mixed with clay, would not make infusible bricks.

Bricks are formed either with the hand or by manufacturing appliances. Two men with the hand can make from six to seven thousand bricks per day. They are burnt either with turf, coal, or wood, according to convenience, the latter being generally used in this country. The kilns are built almost entirely with the bricks intended to be burnt, the base of the kiln being the only part made of old bricks. A kiln contains about four hundred thousand bricks, and it requires about five days to burn them.

The Flemish process, by which the bricks are burnt with coal, is the most economical. The manufacture of bricks in St. Louis has assumed mammoth proportions, and they are becoming famous for their surpassing excellence, many persons prefering a front of them to one of stone. Milwaukee has a clay which gives a peculiar light-yellowish tint to the bricks made there, which, when judiciously contrasted with trimmings of dark colors, gives a very pleasing effect.—*Builders' Journal.*

REAL AND APPARENT DEATH.—A memoir has just been published by Dr. Ange-Monteverdi on a simple method of distinguishing real from apparent death. The plan suggested consists in the subcutaneous injection of a small quantity of strong liquor ammoniæ. When injected into the living body, even during the last hours of life, ammonia causes the appearance of a spot of a deep red or purple colour, which forms more or less quickly according to the rapidity of the circulation. If the fluid be injected after death, no change in the color, or only a darkening of the natural color of the skin is produced.

Drilling Glass.

Few who have not made the trial would credit with what facility glass may be perforated in any desired direction by means of a common drill applied in a proper manner. Small circular holes in glass sheets or cylinders are often required by the practical student, who does not care to have recourse to the "shop" for every little job.

Supposing it to be desired to bore a hole through a glass sheet, such as might be employed in the construction of a plate electrical machine. A perfectly flat board should be provided, on which the glass may be rested, and a small depression made with a bradawl exactly in the centre. If a piece of boxcloth be placed over this board and fastened down tightly by tacks at the sides, all danger of breakage through inequality of surface will be removed. The position of the hole having been decided upon, the glazed surface of the glass (the skin) is grazed at that point by a scratch or nick with a three-square file. The glass is then placed on the board with the marked spot exactly over the depression. A good steel drill fixed in the stock of a common bow or Archimedean drill, and of the dimensions suitable to the hole required, is to be dipped in oil of turpentine and then into fine emery. Placing the point of the drill over the marked spot, the operator proceeds to communicate rotary motion, without, however, exerting any considerable pressure, especially towards the end of the operation.

It is by no means necessary that the drill should be excessively hard: even a copper drill, if duly supplied with emery and turpentine, will do the work effectually. Should it be desirable to produce apertures of considerable diameters, such as from a quarter of an inch upwards, it is advisable to make some little change in the arrangement. Thus the drill must be grasped at one end below by a "collar" to prevent any change of position while rotating, and the head of the drill should be worked by means of a hinged lever, which is fixed by the brace to any convenient spot and weighted at the other extremity the head of the drill-stock supporting it in the centre. By this means an equable "feed" is secured. Instead of a steel drill, a brass or copper tube of the size of the aperture required is fastened to the stock, which, for this purpose, should work with a bow. By moistening the tube constantly with a solution of camphor in spirits of turpentine, and feeding with fine emery, a true and smooth aperture may be quickly cut.

THE FOOD OF MOLES.—A correspondent of the *Field* communicates his knowledge of the movements of a tame mole now in the possession of Mr. Howlett, Newmarket. It is kept in a large propagating glass that holds about three pails of earth; and in this it works its subterranean passages and throws up the hills. Its food consists of earth-worms and wire-worms, and from the careful observations of Mr. Howlett it consumes daily about 100 worms, which are supplied every morning. It is quite at home, and feeds freely out of the hand of its master.

THE MADDER PLANT.—Versmann states that the madder plant has been cultivated in Holland for more than three hundred years: France (especially the neighborhood of Avignon) now produces about one-half of all the Madder consumed, to the value of about £750,000 per annum. Turkey and South Russia also supply considerable quantities of high quality. Some experiments in cultivating madder were made in Derbyshire some years ago, but with indifferent results, though the plant is quite hardy in England. The Dutch madder will dye red, but not purple, and the color is not fast. Naples madder dyes good red and purple, but the colors are not fast; that of Turkey dyes good red and purple, and is very fast. France supplies the market with two qualities, called "rosées," from their dyeing beautiful reds and pinks, and "paluds," which give a good purple, besides a fine red: this is the best French quality. The last name is derived from the fact that the plants are grown on marshy land.

TO FORM PERFECT SQUARES.—Squares can be tested with the dividers by drawing two circles, one within the other, from the same centre, of sixteen and twelve inches diameter respectively: then set the dividers to ten inches, insert one point in any part of the outer circle, and mark the point exactly where a circle (drawn with the dividers in this position) would intersect the inner circle; now draw a straight line through the centre of the circles and through the point marked in the inner circle; and through the outer one, another line starting from the point where the dividers were inserted in the outer circle through the centre of the circles, until the outer circle is reached. If this is done exactly, the points where those lines intersect the outer circle will form the corners of a perfect square whose side is 11.3137 inches. If the square is correct, it will fit the square thus formed and also the lines in the centre, which divide the circle into four equal parts, and the angles must be ninety degress. This is based on the rule for finding the hypothenuse of a right angled triangle, thus 6 square=36 and 8 square=64, sum 100, the square of which is ten. This is sometimes called the six, eight and ten rule for squaring buildings.

TIME MADE BY FAST HORSES.—Goldsmith Maid, 2:14; American Girl, 2:16 1-2; Lafa, 2:16 3-4; Occident, 2:16 3-4; Gloster (dead,) 2:17; Dexter, 2:17 1-4; Nettie, 2:18; Red Cloud, 2:18; Lady Thorne, 2:18 1-4; Lucy, 2:18 3-4; Judge Fullerton, 2:19; George Palmer, 2:19 1-4; Bodine, 2:19 1-2; Camors (dead,) 2:19 3-4, Flora Temple, 2:19 3-4.

PURIFYING THE AIR IN WELLS.—Take a fanning mill and set it beside the well; take a bed quilt or waggon cover and hang it over the end and around the well; unhook the shaking works (or shoe) then turn fast a few minutes. This will create a current of air to the bottom—at least it did in my well, 40 feet deep. Previous to doing that a candle would burn only about half way down.

TO CLEANSE KEROSENE CASKS.—Set the cask on its end, remove one head, and build a fire in the bottom of the cask with straw, or any light combustible matter. Allow the head which has been taken out to remain suspended in the cask while burning. When the inner surface is charred, put out the fire by covering up the open end, and rinse the barrel with strong lye. A barrel thus treated can be used for cider, meat or any other purpose.

RECENT TRIALS of Garretson's straw-burning engines in England have proved that with 1 cwt. of straw for fuel there can be thrashed 17 cwt. of net wheat straw, and extracted from it a weight of wheat equal to 12 cwt. 3 qr. 21 lb., giving 29 cwt. 3 qr. 21 lb. as the gross weight passed through the machine. Even in England the question arises whether it will not be profitable for the farmer to use his straw in this way and return to the soil, instead of guano or other purchased manure.

SUBSTITUTE FOR COFFER-DAMS. An engineer at Dublin who is building breakwaters and harbor-works, constructs concrete blocks that weigh three hundred and fifty tons each, and then, by a clever contrivance, sinks them to their place at the bottom of the sea, and thus, in a comparatively short time, brings the work above the low water-mark, when the upper portions can be built in the usual way. This saves all the trouble and cost of coffer-dams and pumps, and must be regarded as a triumph of engineering.

BLOOD POISONING BY IMPURE WATER.—An English farmer had lost several horses lately, in a strange manner. When seven had died, he had a *post mortem* examination made of one of them, the last that died, the result of which showed unmistakably that death had resulted from blood poisoning. All the horses which had died had drunk regularly of the water of a certain pond. The pond water was stagnant, black in color, offensive, and largely impregnated with animal and vegetable matter. The other sources of water supply to the premises were the home pump and a small running stream. Their waters were clear, tasteless, and free from smell. Their supply was constant, and free from any source of pollution. The facts of the case all pointed to the pond water as the source of the mischief.

EPPS'S COCOA "GRATEFUL AND COMFORTING."—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavored beverage which may save us many heavy doctor's bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack, wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—*Civil Service Gazette*. Made simply with boiling water or milk.—Each packet is labelled—"JAMES EPPS & Co., Homœopathic Chemists, 48 Threadneedle Street, and 170 Piccadilly; Works, Euston Road and Camden Town, London."

MANUFACTURE OF COCOA.—"We will now give an account of the process adopted by Messrs. James Epps & Co., Homœopathic Chemists, and manufacturers of dietetic articles, at their works in the Euston Road, London."—See article in *Cassell's Household Guide*.

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