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The Field.

On the Exhaustion of Soils and Their Recuperation.

The members of the Paschim, Ont., Farmers Club were entertained and instructed, at a Spring meeting, by a paper from one of their number, Mr. P. Mahon, on the exhaustion of the soil and methods for its re-invigoration. Mr. Mahon, after alluding to the importance of the subject, said that the fact that the soil is becoming exhausted is now forcing itself upon the attention of farmers. He continued:—When the early pioneers came to this township some forty or fifty years ago, and by their industry and perseverance, and many difficulties, succeeded in clearing and reclaiming our farms from the waving forest, making them produce abundant crops of yellow corn in return for their labor, it was found then that almost any kind of cultivation was sufficient to ensure a crop.

This state of things gave rise to the impression that the Old Country system of careful cultivation and frequent manuring was not required in this; in short, that there was no danger of running out the land. This continued until within the last fifteen or twenty years; then a change for the better took place with regard to ploughing and harrowing, and the clearing of the land generally, but still with an equal disregard for a proper and judicious rotation of crops, or a system of manuring that would sustain the soil and keep up its productiveness. In short the practice prevails of taking, or endeavoring to take too much out of the soil and putting too little into it in return. The land, therefore, must, and is, deteriorating to an alarming extent under this practice. There are, no doubt, a good many exceptions to this rule, but they are the exceptions. I also know that I will be told by not a few that they know how to work their farms as well as anybody else. To those I would say, all right, my friends I do not presume to teach you, but would ask you to look around in your respective localities and there observe some of your neighbors who have been paying proper attention to the keeping up of the productiveness of their farms, and you will see that, even in adverse seasons, they have a fair and remunerative crop, while yours will little more than pay expenses. You might ask yourselves the question, if it would not be well to take a leaf out of their book instead of blaming the weather, or something else, when you are not yourselves blameless? The fact is, there is not stamina in the soil to sustain the crop through the severe droughts that of late years often prevail.

To remedy this state of things would be comparatively easy if our farms were large, and we had the capital to go to work with, but with small farms, and I may add, still smaller purses (and who was ever known to have a plethoric purse on a small farm?), it is not so easy, especially when the support of the family and enough to keep the thing running has to come out of it yearly, often leaving little for improvements. However, there is a good deal in trying, as I have myself experienced.

I would therefore begin by adopting a system of subsoiling and fallowing. Plough down a crop of clover on these fallows if you have it to plough down, if not, you can raise a crop of buckwheat to plough down. It is a good fertilizer, and can be cheaply done. A bare fallow should never be made, because there is no necessity for it. Sow your buckwheat early in June, so as to escape the frost, roll well after sowing, and plow it under, just as it is coming into blossom, being careful not to let the seed form. I have covered it when in places it stood four feet high, by attaching a chain to the beam of the plough just before the coulter, the other end to the doubletree over the furrow, forming a loop that drags in the furrow, and pulls it in under. Harrow every evening your day's work, and roll

when all is done—this is a valuable adjunct for killing Canada thistles.

ry sown in the fall, and Rape sown in the spring, to be eaten off by stock, are also valuable fertilizers. In fact anything that increases the quantity of provender for cattle, thereby enabling us to keep more stock, and to make more manure during winter, and also enriching the soil during the grazing season by their droppings, is highly beneficial. In this respect I may mention the cultivation of Western corn, to be used when the pasture fails in summer and as provender in winter.

I would also recommend dairy farming in localities adapted for grazing purposes. It will be found to be perhaps the quickest and surest means of recuperating the soil.

I have for many years practiced the drawing out of my manure in spring for my root crops, and have found that, notwithstanding the many requirements that may be brought against it, where we are obliged to confine ourselves to what manure we can produce on the farm, it is better that it should decompose on the soil, and enrich it, than to remain in the barnyard in the hot weather to be wasted by leaching and evaporation.

I have also been in the habit of preserving carefully all my wool ashes, and sowing them on my turnip ground before drilling, and harrowing after, so as to mix with the soil. I use it in preference to salt, and believe it to be better. Since adopting this plan, I have raised better after-crops on my turnip, than on my potato ground, the reverse being the result previously. It has also the effect of destroying grubs sometimes found in turnip ground, which prey upon the plants when they are even some size, doing considerable damage.

Lime may also be used to advantage as a fertilizer. The best mode of using it would be to mix it with muck, such as may be found in the low swales that abound on most farms. This muck should be carted out into a heap and mixed with lime, leaving it to sour before using. I have never known lime to be used without marked benefit, even on gravelly limestone land, where it is generally supposed there is enough before. It should particularly be employed to recuperate lands worn out by the repeated wheat cropping, and to warm up cold soils.

I would furthermore strongly recommend the putting down of tanks in barn-yards, so constructed as to receive and contain the liquid manure, and washing these yards by thaws and rains, all or nearly all, of which is generally wasted. This should be carted out in close boxes prepared for the purpose, to enrich our meadows and pastures by way of irrigation. The only argument I have heard advanced against this system, is the cost attending the construction of these tanks, &c. Well, I think it more economical to preserve and utilize what manure we have, than to be yearly purchasing salt and plaster to make up for this waste, and which at best, is of questionable utility compared to the above.

In conclusion I may add, that the foregoing, or any system that may be adopted for the recuperation or for preserving the productiveness of the soil, will be more than neutralized, unless a regular and systematic rotation of crops is observed. It is not my purpose to lay down what that rotation should be, that subject allowing sufficient scope for an essay in itself. This much I may say, that any general system that may be laid down, must be modified or amplified according to the intelligently directed experience of the farmer, save and except, such a system as may be based upon a scientific knowledge of the adaptability of different soils to different crops, and the relation the different crops bear to each other, according to the different substances extracted from the soil by each, together with the best mode of recouping the soil after each, and for all.

For such a system as this I look forward to our Agricultural College, when it once gets properly into operation, and think I will not be disappointed.

Thanking you, gentlemen, for your patient hearing, allow me to express a hope that the foregoing hints, imperfect and deficient as they are, amplified by your own more enlarged experience, may do much to recuperate our worn-out soil.

Sulphur for Potato-Beetles The New Potato Disease.

EDITOR CANADA FARMER:—Having observed a statement that a mixture of 1 lb. sulphur, 1 lb lime, and 4 gallons of water would destroy the potato-bugs, I lost no time in trying it. I found it effectual as far as the immature larvæ were concerned, but it had no effect on the full grown beetle. I also tried dry sulphur with equally good effect, and prefer it that way, as it saves the lime and the labor of mixing; besides every farmer has not a watering pot, and it is also cheaper, as the dry sulphur would be applied only where the larvæ are actually feeding, and a pound of sulphur would consequently go further.

I used a common tin flour dredge to sprinkle the sulphur on the growing potatoes, but it would be better to have a tin box with holes in the bottom and a strong socket on one side, in which a long handle may be inserted so as to save the fatigue of stooping.

On the 10th inst. I was called to a gentleman in the township, a few miles off, when I called his attention to a paragraph in the *GLOBE* of the 8th inst., respecting the new potato disease which has appeared in England, which he had not previously noticed. He immediately went out in his garden, and soon returned with a potato plant about six or eight inches high, with the stalk affected as described in the *GLOBE*, and a microscopic examination revealed the fungus very plainly. There were a few small potatoes of the Early Rose variety, a little larger than peas, attached to the stalk which was consigned to the fire. I have kept a sharp eye on my own potatoes, and have also mentioned it to some of my neighbors, but have neither seen nor heard of any further cases of the disease in question, and I trust the country generally will escape the visitation of that destructive disease which, if it should spread, would be far worse than the old disease and the ten lined potato beetle put together.

A late number of the *Annals of Gardening* states that the new potato disease is increasing in virulence, and like all new diseases is very mysterious. The disease is limited to American varieties from English seed, the garden affording no instance of an English variety being affected, nor yet an American variety from imported seed. The disease is distinct from the old murrain in appearance, and also in being affected by weather influences. The old disease spreads most rapidly with rain, the new increased most quickly under the late dry sunny weather. It would appear that the real seat of the disease is in the seed tuber, and that when once acquired, it is hereditary.

SARAWAK.

In a letter of later date than the above, the writer says:

Farther observation has proved that sulphur will not destroy the Colorado Beetle on the potatoes. It makes them leave the plants for the time, but they return again. Some were enclosed in a tin dredge with sulphur, and in about an hour's time the young larvæ were dead but the old beetles were uninjured. We have just tried a mixture of coal oil and sulphur. I am not yet in a position to report results, but fear it will be too expensive. Ducks will pick the beetles off, but they will not stay amongst them long enough at a time to do much good, besides they will probably eat the parasites, and consequently do harm as well as good.

SARAWAK.

Burn up a tree, a stack of hay or grain, and nearly all passes off into the air. All that is consumed must have come from the air at first and is from ninety to ninety-seven pounds in every hundred.

Ploughing Under Clover.

The fact that clover is a cheap and profitable manure is attested by thousands of farmers in all parts of the country. In a great majority of cases the best use of the clover is to plough it under when in full bloom. There is then no labor in cutting and curing the crop, and the manure is more evenly spread over and over in the ground than it could possibly be by hand labor. The value of clover as it stands in the field is comparatively a trifle, on an average not more than \$5 per ton, and perhaps not more than \$2 or \$3 in places distant from market. Good clover hay was sold in Rochester the past winter at \$10 to \$12 per ton; and at the lowest price, after paying for cutting and curing during the busiest season of the year, and then a day's work with a man and team in winter to draw to market, the clover could not net the farmer in the field more than \$4 to \$6 per ton of dry hay. It was probably in most cases worth more than this to plough under as a fertilizer. If this be true near Rochester, the case is still stronger at a distance from market, where clover in the field must be even lower than here. I have believed that we might profitably cut and feed at home most of our clover and then draw the manure on the land; but an excellent farmer in this country buys more or less clover every year to feed in winter, that he may have his own clover crop to plough under. The difficulty with this plan would be in getting toul seeds on the farm, quack, thistles, and the like. A second difficulty would occur if that farmer's neighbors ever got their eyes opened: none of them would sell him clover to enrich his farm at the expense of their own. He has had no such trouble, however, and it is perfectly safe to advise anyone who can buy good clover hay, free from foul weed-seeds, and at a reasonable price, to do so, especially if their soil is sandy or deficient in vegetable matter.

On a mucky soil carbonaceous matter is not needed, and here all the good effects of clover may be had by grazing or mowing the tops, and inverting the sod. The roots alone will furnish a much larger amount of plant food than is generally supposed, and if more be needed it is probably some mineral element—lime, potash, or phosphate of lime—any of which can be furnished more cheaply than in clover. Where the soil is sufficiently porous and full of vegetable matter, a light dressing of potash or phosphate of lime, drilled in with the grain, will produce a wonderful effect. The clover thus used is none the less valuable and even necessary as a fertilizer. Its roots penetrate the subsoil and bring thence mineral elements that would otherwise be out of reach of slender growing plants. These roots also decaying in the subsoil below the plough make veins through the soil to carry off water, and also to be followed by roots of corn or wheat in time of drought. It is a fact frequently noticed that crops on clover sod are less injured by dry weather than after other grasses, and this I believe to be the cause. Making the soil lighter and looser, clover makes it more open to receive air and water, by which its fertility is increased.—*Cor. New York Times.*

Absorbents for Farm Use.

To prevent the evolution of ammonia from urine, cleanliness is of great importance. Fresh urine is a comparatively stable substance, but if it be mixed with urine that has already putrefied, it quickly undergoes decomposition. Charcoal and earth are universal deodorizers; they are capable of absorbing all the gases given off by putrefying bodies. A dead body covered by a few inches of earth is, as we all know, rendered harmless; the earth-closet is another illustration of the same fact. The sprinkling of earth in poultry houses and kennels, is the best and simplest mode of keeping them sweet; a dry loam will answer well for this purpose; dry peat will also prove very useful. In the case of stables, the nature of the offensive gas is quite evident; it is clear that if a deodorizer is to be used, it must be one capable of absorbing ammonia.

Gypsum is of no practical value as an absorbent of ammonia. The most effective and cheapest absorbents are those used at gas works for removing the ammonia from coal-gas. They are sulphate of iron (green vitriol), and sulphuric acid. The material principally employed in gas works is sawdust soaked with sulphuric acid; this is also the best absorbent of ammonia the farmer can employ; green vitriol would injure his manure, as it acts as a poison to plants. In cases, therefore, in which the floor of the stable is full of holes, in which urine collects and putrefies, we would recommend the farmer to sprinkle dry peat upon the floor, and failing that, to try sawdust soaked in sulphuric acid, for the same purpose. The latter deodorizer will probably prove the more powerful of the two, so that less of it will be required. Brown oil of vitriol should be diluted by pouring it very slowly and carefully into three times its volume of cold water; dry

sawdust is then to be stirred in till the acid is all absorbed, and the saturated sawdust preserved for use. The sawdust cannot, like the peat, be spread over the whole stable, but must be confined to those parts where the horses do not lie. As the acid may injure the men's boots, the sawdust had best be sprinkled on the floor just before leaving the stable for the night, and should be swept together on the entrance of the carter in the morning. The quantity of sawdust required will vary according to circumstances; the farmer will use the smallest quantity which experience proves to be sufficient. We need hardly add that sulphuric acid acts powerfully on iron, and upon cotton, linen, wool, and indeed most vegetable bodies; it has less action on wool, silk, or other animal fibers.—*London Agricultural Gazette.*

Thick Seeding of Oats.

Mr J. L. B. Kerr, a Michigan farmer, gives the following item of experience of his young days to the *New York Tribune*:

Many years since my boss took a field to work on shares to sow oats. The ground was ploughed convenient to sow broadcast by furrow. Boss being a tailor, I had to sow said oats, which was new work to me. However, I went to work like a man, feeling quite large scattering oats. Boss ordered, "sow 2 bushels per acre." I tried to do so, getting only one bushel on the first acre. The next acre 1½ bushels. The next four acres, 2 bushels per acre. Seeing that I was going to have considerable seed left after sowing the field, I concluded to try an experiment. The seventh acre received 2½ bushels, and the eighth 3 bushels. In the evening I told my boss what I had done, receiving a severe scolding for experimenting at other people's cost. I was not afraid of getting a flogging for I felt just then like whipping more than nine tailors.

The first day of oat harvest (in said field) the proprietor of the farm came to me where I was cradling. "The oats are rarra thin." Yes sir, quite too thin here but they are thicker on all the field except this acre. "I mow; hors that." I explained to the gentleman my mistake, and also the experiment. Mr. Trumbull sympathized with me at once, and his countenance brightened up, and he inquired, "And what is the result?" The crop is very much better where the oats were sown thickest. The gentleman examined the crop closely and returned to me. "Mr. Trumbull don't you think the oats are best where I sowed 2½ bushels on the acre?" "I dinna kin about thort." The field was re-examined after the oats were harvested, and our good neighbors sowed 3 bushels of oats per acre after the year 1836, and I have practised sowing 2½ bushels per acre. Mr. Trumbull not being a close observer sowed too much seed in dead furrows.

GYPSUM AND ASHES are valuable in the compost heap. Twenty pounds of plaster to each good load of manure is sufficient, since one hundred pounds of gypsum will fix twenty pounds of ammonia. Quicklime should not be used with fermenting manure, since it sets the ammonia free, instead of fixing it. Ashes contain largely phosphoric acid and potash. When leached, the phosphoric acid remains, and also a good deal of the potash. The phosphoric acid is in a finely divided state, and in combination with peroxide of iron, magnesia and lime; so the carbonic acid generated in the compost pile will liberate it from its bases, and render it immediately available to plants.

CURING SOWN CORN.—Let the crop grow until it begins to ripen. This is a particular point in the curing of this crop, for when the lower leaves begin to turn yellow, it is a sign that the saccharine matter is being converted into sugar, and that there is less water to dry out than at any time previous to this, consequently the crop is more valuable than when cut sooner. The ground having been rolled smooth, I can cut the crop with my reaper, close to the ground. I then let it lie in the sun two or three days, then rake with a horse-rake and cock up, and allow it to cure for four or five days, when it can be hauled to where I wish to feed it. I usually put it in small stacks, and have but little more trouble with it than I do with timothy hay.—*Et.*

THE ACTION OF LIME.—Professor Bartlett says:—Lime answers two great purposes for nourishment: *First*—It disposes certain insoluble bodies to form by their decomposition, soluble compounds; and, *secondly*, it prolongs the action and nutritive virtue of soft and insoluble animal and vegetable substances beyond the time they would continue to act if they were not made to enter into combination with the lime. From this statement the agriculturist can draw some practical conclusions in regard to the uses of this substance, and the manner in which it should be employed in order to have the results arising from its application conform to those which have been produced by enlightening experiments. Lime is acknowledged to be specially useful upon fallow lands which are broken, upon sward lands and those of a turfy nature, which are to be put in a fit state for cultivation. In all these cases there exist in the land large quantities of roots, which, by the application of lime, may be made the better to serve for manure by the solubility it will give to the new compound formed by them; but to produce this effect the lime must be thoroughly mixed with the soil.

IN AUSTRIA they have a way of preserving fodder for winter which will be new to our farmers. The product is called "sour hay," and is made thus:—The green grass, green Indian corn, or other fodder is simply crammed down into graves or trenches four feet wide and six to eight feet deep, until it forms a compact mass up to the surface, and the whole is then covered with one foot or rather more of earth rounded over, so as to form a long mound. No salt is used, and the wetter the fodder goes the better. The preservation is complete, and when cut out with a hay spade in winter the fodder is of a rich brown color, and exhales a slightly sour, but, on the whole, agreeable flavor. As this method is stated on the high authority of Prof. Wrightson, of the Cirencester Agricultural College, to be quite successful, it may be worthy of a trial here.

PLOUGHING IN OF GREEN CROPS.—In ploughing in green crops it will be readily seen that all that is drawn from the air is clear gain to the soil, by supplying a portion of that in which the land is deficient. Now, take a piece of soil, such as referred to, and plough it; sow it with buck-wheat, and then, just before it begins to head out, plough it under. In this case, all of this green crop which comes from the air is clear gain to the soil, while that which comes from the earth to help in the growth is returned right back to it again. It is quite evident, then, that this will repair land. On some soil a crop can be had on the following year after one green one has been turned under. On other soil it may take two or three. The last crop to be ploughed under should be quite a thrifty one before taking any off. When the soil has been brought up, it should be kept so, either in this way or by other means.—*Cor. New York Times.*

POISONED WITH CHARLOCK.—An English paper tells us of the poisoning at Market Deeping of thirty-seven cattle, by rape-cake containing an admixture of wild mustard or charlock seed. The cake was fresh from the mills the evening before, but they had previously consumed a ton of a similar kind, and partook of it readily. About ten o'clock the three cows which had the largest share and were first served began to show symptoms of uneasiness, lying down and suddenly getting up again, stretching out their heads, and putting their bodies into all kinds of contortions, kicking and moaning occasionally. By twelve o'clock all the herd, without exception, showed symptoms of colic, and the cows were now almost frantic, rushing unrestrainedly through the yard; indeed, so insensible were they to external impressions that one of the cows, one of those that survived, threw herself down in a paroxysm against the wall with such force as to fracture the spines of the sacrum. Eight head died, and the rest did not recover for several days.

ABOUT KILLING WILLOWS.—It is a well-known fact that willows are a difficult thing to get rid of, and having accomplished this successfully, I propose to give my experience for the benefit of others. When I came on this farm, five years ago, there was a piece of about two acres of rather wet land, from which the timber had been cut some years previous. Upon this piece had grown up a thick undergrowth of willow, ranging from two to ten feet in height. The following winter, having occasion to build a fence on one side of this piece, the willows were cut and made up into a brush fence. In the spring the stumps sprouted, and where there was one before there were a dozen now. It beat all how those willows did sprout and grow. The following two years nothing was done with them. Last summer we resolved to get rid of them if possible. There they were, one dense mass, many of them twenty feet in height, and four inches through. So at it we went in August, and cut them all down and piled them. Late in the fall we set fire and burned them up. This season not a sprout is to be seen in the whole piece; nothing but the stubs, which were cut close to the ground, left "to tell the story." We were cutting them, off and on, as we had time, for over a month, so the moon had nothing to do with it.—*Country Gentleman.*

REMOVING BOULDERS.—I have had some experience with boulders, and have resorted to various means to get them off from my fields. I have broken them with fire; I have dug them out and drawn them off with three teams; I have buried a great many, and on one occasion came near being buried myself. But latterly I have employed men to break them with powder, which I think the cheapest and best way to get rid of stones too large to be drawn with one team. I took over one hundred of these troublesome pests from my corn-field last spring, one of which cost \$6 25 to get broken into pieces of suitable size to be drawn with one team. This monster made thirty-five large boat loads of fragments, many of which were very fine face stones for wall. The expense for breaking stones which will make three or four boat loads, with me, has been 37½ cents. Where land is worth clearing of boulders, the stones are valuable for fencing and should not be buried. If land is so occupied with stones that it will more than fence the land, it will not pay to remove them.—*Cor. Country Gentleman.* Dynamite is immensely superior to gunpowder for smashing boulders, and is safer and easier to handle. A few days ago we saw on the farm of Mr. Hill, east of Toronto, the remains of a boulder which, when entire, must have weighed some eight or ten tons. A dynamite cartridge completely broke it up, and most of it so small as to want no further breaking for road purposes.

Grasses and Forage Plants.

Red-Top—*Agrostis Vulgaris*.

The Red-top, *Agrostis vulgaris*, illustrated on this page, is one of the best known of our grasses, and one which, although lightly esteemed by some farmers, is a really valuable grass, in some situations being the most valuable of all grasses. In Pennsylvania it is known as Herd's grass, in New England as Burden's grass. It grows from one to two feet high, and flowers in July. Its favorite home is in wet pastures and swampy meadows, where its roots interlace and consolidate the sward. Its seeds weigh about twelve pounds to the acre. Cattle relish hay made from this grass, especially when mixed with other varieties. Dairymen value it as a pasture grass.

The Woburn experiments give the following as the product of an acre:—10,209 pounds of grass, which, in drying, lost 5615 pounds and afforded 532 pounds of nutritive matter. At the time of seed-ripening it yielded 9,525 pounds of grass, half of which disappeared in drying and from which only 251 pounds of nutritive matter were obtained.

Mr. Charles Julyan writes us from Presqu'île, Owen Sound, with respect to this grass:—"It appears to be indigenous in Canada. I have noticed it on my farm, amongst other grasses, although I have never sown it. The flowers are in a loose open panicle. The spikelets are one-flowered or one-seeded, and the whole head has usually a reddish purple color, very conspicuous where growing in quantity in meadows. It grows about two feet high; roots creeping. This grass is widely known. In England it is called Fine Bent. It succeeds best on rather moist soils, where it is one of the most valuable grasses, although as a whole, much inferior to timothy. It is well adapted (like June grass) to sow with the latter, and forms a dense sward over the surface, which otherwise is left bare after cutting timothy for hay. It is perennial, and makes good permanent pastures in which it should be fed down so as to prevent going to seed, which renders it unpalatable. It is one of the best lawn grasses, and sown with June grass and white clover, forms with weekly mowing a beautiful green carpet. The seed is small and four to six quarts usually seeds an acre."

Manure for Grasses.

The Michigan Agricultural College experimented with different manures as top-dressing for grasses, with the following results, as reported in the *Michigan Farmer*:

The results of a single top-dressing on eight plots of nearly half an acre each of sandy warm soil, exhibited the following facts at the end of three years; the top-dressing was applied in 1864, and the grass was cut twice each season in 1864 and 1866. The produce of each cutting and of each lot was weighed separately and a perfect record kept. The results of the four seasons were as follows: On the plot to which no manure or fertilizer was applied, the total weight of hay yielded per acre was 8,740 pounds. Where two bushels of plaster per acre were applied the yield per acre was 13,225 pounds, a gain of 4,484 pounds. Where five bushels of wood ashes were applied the yield per acre was 12,907 pounds, a gain of 4,165 pounds. Where three bushels of salt were sown per acre, the yield was 13,969 pounds, a gain per acre of 5,227 pounds. Where 20 loads of muck per acre were laid on, the yield per acre was 13,816 pounds, a gain of 5,074 pounds. Where 20 loads of horse manure were laid on, the yield was 14,686 pounds, a gain of 6,224 pounds. These are results which indicate that there are fertilizers which will produce as good results as plaster. For instance, the plaster yielded a gain of 51 per cent., while the horse manure gave an increase of 71 per cent., or nearly a ton more grass per acre in the three years.

FREQUENT SEEDING ADVISABLE.—Clover is at its best for pasture or hay the second year after seeding. If allowed to grow through that year, its roots extend as far as they ever will, and the ley is in best condition for ploughing. If kept longer the clover runs out, and its place is left vacant or filled by weeds and inferior grasses. If timothy is mixed with clover at seeding, it will partially occupy the ground as the clover retires, but never so fully as if the original seeding was timothy. In short, keeping a clover sod over the second or third year, at most, is generally bad policy, and should be discouraged. For one or two years land in clover increases in fertility; after that the advantage is less until another seeding is had.—*Country Gentleman*.

Mixing Clover and Timothy.

The custom of sowing timothy and clover together is an old and extensive one, and pretty well established, showing that it has something to recommend it; yet an immense loss is sustained as it is now practised. In the first place, there is the too common habit of thin sowing, then that of late sowing; also that of sowing on poor land or land badly prepared. Every reasonable farmer knows that thin seeding, or a poor catch, is worse than no seeding at all, as at best it gives but part of a crop, which does not pay for the labor and seed expended, and the use of implements and land. A total failure, as was the case two years ago, is preferable, as it necessitates the re-ploughing and re-seeding of the land, with a chance for improvement, if the same recklessness is not repeated, which generally is, trusting to the season for luck, and not to a judicious preparation of the soil. The majority of seedings are too thin; the land does not carry what it is capable of doing, and what affords the greatest profit; and the trust is to nature for supply.



Red Top—*Agrostis Vulgaris*.

ing what the farmer neglected. But this is a slow process, and will not succeed if the land is not suited to it, which it rarely is. We cannot afford to wait; it is loss. It is a blind effort to attempt to grow a good crop on poor land, whether this crop is of grass or grain. It requires a good soil for grass or clover, as well as for grain or anything else. But we seem to be thoughtless. We are apparently of the opinion that forage plants are an enricher of the soil (which is true enough), and all that is necessary is to put in the crop. The failures have been so numerous that it is a surprise that farmers should persist in such a course. They do not see the cost.

Thus much for general seeding. Now for clover and timothy in particular. The usual way is to sow equal parts by measure. This is the cause of much mischief. Where the land is good and the seeding a thick one, as it should be, the first year or two will show a heavy yield of clover, which smothers the timothy. At the end of the two years, when the clover disappears, the land must be re-ploughed or re-seeded, which may be done with advantage. Harrow well in the spring as soon as the land will bear it; sow and cover the seed; a Thomas' smoothing harrow is the best to

do this, as it does not bury the seed too deeply; or sow on the late snows. This will afford a crop the same season, and secure a good stand. The fault here is the loss of the seed (timothy) in the first sowing. The clover should have been sowed alone. This is the plan I prefer. Get all the clover the land will bear, by preparing the soil well and sowing thick. This will be one of the most paying crops, and besides, the land will be prepared for the timothy which is to follow. It will be largely enriched and made mellow, and insure a good catch if the seed is put out in good time.

There is another way that has proved highly successful; it is to double the proportion of timothy to clover—say eight quarts of the small seed to four of the latter per acre. This will give a fair yield of clover, with a "bottom" growth of timothy, making a large and excellent crop. At the disappearance of the clover the timothy will be there to occupy the field. The small proportion of the clover enabled the timothy to get a good footing, filling up the vacant space, giving also a chance for the sun and air to help it on. It is true that the clover by this method will not be so heavy—though a good crop; yet the lack will almost be made up by the timothy. This addition will make a fine, tender feed, and afford variety. It will do excellently for all kinds of stock if harvested in time. My friend Smith makes this his practice, only he sows much more seed per acre. He always has a heavy sod from the start. The land being good, and in good condition, he grows large crops of timothy, the clover aiding in the preparation of the land by enriching and mellowing it, the nitrogen gathered by the clover being taken up at once, or before the rains wash it out. In this way the timothy is saved and made to do service from the start.

A crop of pure clover is excellent as a crop by itself, capable of being made a large yield, and is highly nutritious for winter feed, while the land is immensely improved; but it does not leave it a meadow. Clover is eminently a grass killer. There must be a chance given for the timothy, and from the start, else the powerful legume will smother and kill it.—*Cor. Country Gentleman*.

Lucerne—Alsike.

EDITOR CANADA FARMER:—I have neither heard nor seen anything of Lucerne in this part of the country, although I have seen English Rye-grass mixed with Alsike and Red clover, and looking well on a farm in this township. The proprietor approves of Alsike clover as a forage plant. It was not growing so long as the red clover when I saw it, but he assured me, he had counted one hundred and forty-three stalks growing from one root. Some years ago in a wet summer I saw a stalk of Alsike about 8 feet long, but I believe it requires a good soil and a moist season to grow so long as that, unless there are two varieties of it.

I seeded down a field of spring wheat with Alsike and Timothy last year. The Alsike took well, but the Timothy did not. This season it is, as might be expected, considering the severe drought we have had, very short; and the crop of hay throughout the country will be very short. Very little fall wheat is sown in this country, except on the Indian Peninsula and there it will hardly exceed half a crop, being badly winter killed.

Spring wheat, barley, oats, and pease, are looking well though rather short in the straw. Potatoes are looking well, and where pains are taken to destroy the potato beetle, will perhaps give a good crop unless the present dry weather should continue throughout the growing season, but the grubs which in some places frequently injure the crops are very little complained of. Mayfield beans are generally more or less injured by them, but this year I have not noticed a single bean cut down by them, though, owing to the drought, many of the beans failed to germinate.

Owen Sound, July 20th.

SARAWAK.

GRASSES FOR LIGHT SOILS.—Flint recommends the following mixture of grasses for light sandy soils:—Tall Meadow Oat grass, 3 pounds; Orchard grass, 4; Hard Fescue, 6; Meadow soft grass, 3; Italian rye grass, 4; Perennial rye grass, 10; Timothy, 3; Red clover, 3; White clover, 4—total 40 pounds.

LAWNS.—Mr. Elliott writes to the *Gardener's Monthly*:—"Glad to see again your caution about barnyard manure as an indication of weeds: you should also say, use no street sweepings, for they are all full of weed seeds. Your former words advising well rotted mould spread over an inch or less in depth was one of the best advices. My practice, however, has been in early winter to sow fine bone meal, then in, say February, use salt, and soon after the grass starts in spring, plaster. The quantity of each depends upon the condition of the lawn and what has before been applied; if much manure has been used, more salt can be used than where little has been, and less plaster is needed."

Implements.

See That the Implements Are Well Bestowed.

Farmers, as a class, have the credit of taking the best care possible of the costly implements with which their business is carried on. The reaper is sometimes left out in the field where the last cut was made, exposed to driving rains and drying winds, and is even left to be covered up with snow and to have its most joints discovered and rusted by the melting of that emblem of purity. The next year comes round and our pattern agriculturist, its owner, latches to. "Wonder what's the matter with the thing, now?" ejaculates he as it dawns on him that the machine will not work. The woodwork is shrunken and split, the paint worn off, the bright surfaces are an eighth of an inch thick with rust and the bearings—well, the less said of them the better. If given to profanity, our farmer falls to cursing, not his own carelessness and stupidity but the maker of the "gimcrack rubbish," which will not stand a bit of rough usage.

It is not only reaping machines that are neglected, though probably there is a greater loss from neglect of them than from ill-using all other implements together. Ploughs are left in fence corners exposed to weather so that their smooth surfaces, which should be bright as mirrors, become rusted and flawed. Shovels are allowed to get rusty and rough, wearing out in half a day a man who could have done a creditable day's work with a tool in good order. Cultivators, harrows, hay-rakes, etc., are allowed to lie around in a way that speaks eloquently of the reason why so many agriculturists find that "farming does not pay."

The fall following harvest is the time when farmers should see that they have proper shelter for their tools—a place for everything and everything in its place. In countries where lumber is dear there may be some excuse for not providing shelter. In Canada there is no excuse. A few dollars will rig up a shed large enough to shelter properly all the tools which a small farmer uses. There are not many ways in which money invested will make such quick and sure returns.

Repairing Waggon.

"A stitch in time saves nine. In nothing is this old proverb truer than in regard to repairing waggons. I once lived with a man who repaired waggons for his neighbors and often had a chance to see the loss caused by a little neglect. Many a wheel have I seen at that shop which needed new spokes and fellos, but which need not have been brought there if the owner had only attended to it in time. At first the tire was a little loose. If it had been taken to the blacksmith's and been set, there would have been no further trouble. But it was let alone. Soon the spokes began to work, and as the wagon was kept in use, the spokes kept working until they had worn both themselves and the fellos. Then new spokes and fellos had to be put in and the tire set besides. Sometimes a wheel would be brought with a loose box. If it had been taken in time it could have been made as good as new in a few minutes, but having been neglected until it had worn a large place out of the hub it was quite a job to repair it, and there was no certainty that it would long remain in good condition.

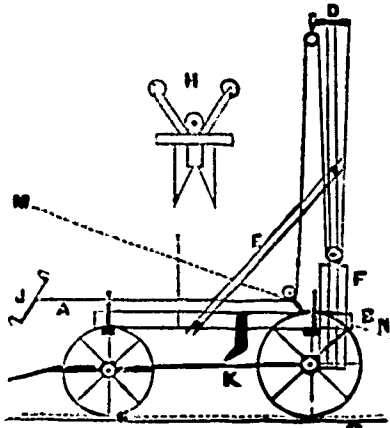
A loose bolt often wears both the wood and iron work of a wagon, makes a constant rattling, and injures and weakens where it ought to preserve and strengthen. A worn axle or a cracked shaft has often caused a break down, much to the annoyance, and sometimes to the injury of the owner. When a man is in a hurry about planting or haying it is neither pleasant nor profitable to have a wagon break down. Yet a great many farmers let their waggons run as long as they will without repairs. It is hardly pleasant to have a wagon or carriage come to pieces when the owner is travelling either for business or pleasure. Sometime it is very disagreeable.

I remember an instance in which a man drove up to the shop on some errand, and the man who made repairs, noticing something wrong about the wagon, told the owner that it wanted a little fixing. I think it needed a bolt, or else a little iron work. The owner said he must have it fixed, but being in too much hurry to go to the blacksmith's then, he went home, and as the wagon did not fail, he kept using it as it was. One day his wife started for another town; the wagon came to pieces, she was thrown out, seriously hurt, and as the direct result of the accident was sick all winter. Such cases are not very rare. And their moral is that repairs should be made as soon as needed. Now is the time to examine waggons and have them repaired if they need it, so that they will be ready for use when they are wanted.—*Boston Cultivator.*

Pile-Driver for Fence Posts.

The engravings below represent a portable pile-driver for fence posts. The maker of it has had it in use for eight years and is perfectly satisfied with it, it being practical, quick and efficient especially for large posts. There is no patent upon it. It is placed upon an ordinary farm wagon, and can be drawn from place to place; is light, and can be put on and taken off as readily as a hay-rack. It will be seen from fig 1 that it is placed like a hay-rack on an ordinary farm wagon.

There are two bed pieces, B, of soft wood, set edgewise, 2½ by 5 inches, 11 feet long; into which are morticed cross pieces 2 by 4 inches, like the lower part of a hay-rack, the rear cross piece being directly over the hind



axle of the wagon, the main pieces projecting rearwards over the hind axle 16 inches. An upright gallow, L, (fig. 2), is made of soft wood 2½ by 7 inches, 16 feet long, attached together at top by cross piece and braces, and at bottom to the bed pieces, 12 inches back of hind axle, by

movable ¾-inch bolts, and open at bottom; the fence post to be driven being set up between them. Two braces, E, 2½ by 4 inches, of soft wood, 11 to 12 feet long, are attached by movable ½-inch bolts to the upright and bed pieces. These braces can be removed and short ones substituted to lower the guide pieces to the position of the dotted line, M N, when moving from field to field, the hammer hanging between the guides and across the axle of the wagon. F is the hammer, made of a sawed hard wood block, 20 by 20 inches, 4 feet long, corners beveled off slightly; weight 450 to 500 pounds, with a band at the lower end like a beetle ring, and a link at the top into which catches the hook for raising. This weight will drive a fence post at one or two blows. H is an automatic catch, like those used on ordinary pile drivers, but lighter for taking hold of link of block, and letting go when drawn up. L is rear view of the guides.

The block is raised with the ordinary horse-fork rope, attached first at top, D, then through pulley in catch, then through pulley at top, D, then through pulley at bed piece, then to horse at J, or the rope can be attached to a roller in the bed pieces, at the crank K, and raised by hand. The horse is much the quickest, and can be attached to the wagon to move ahead. The driven posts are left in rear of wagon. A long line of posts can be driven in a day accurately and well. The cuts and description we have reproduced from the *Country Gentleman*.

Reaping Machine Contest.

We had the pleasure of witnessing an interesting trial of Reaping Machines held yesterday on the farm of Eli Crawford, Esq., lot 2, 2nd line east Chinguacousy, between the Brampton Harvester, manufactured by Haggert Brothers of Brampton, and the Champion, made by the Joseph Hall Manufacturing Company, Oshawa. The field chosen was one of barley—an irregular crop—some parts heavy and down, others very short and thin. The farmers present, of whom there were a good many, selected as Judges, Robert Lowes, George Cheyne and James Anderson, Esq. The Champion Machine was represented by Mr. Thayer, of the firm of Messrs. Bright & Thayer, agents, of this

town, who complained of his smooth knife being bad, and demurred to cutting barley with a sickle knife. Mr. Haggert generously said, "we wish to get no advantage in this trial, but desire the machines to be tested on their merits, and will therefore use a sickle knife in our machine," thus putting both on an equality. Both reapers appeared to have good drivers, but we thought that the horses attached to the Champion Machine had the hardest work, as they appeared to labor a good deal, while those on the Brampton Harvester did their work with greater ease. We were particularly struck with the clean manner in which the Haggert Machine cut those portions of the field where the crop was short and very thin—scarcely leaving a straw standing—while the Champion really run over it, not cutting one-half the grain on such places, and many places where the crop was heavy the Champion left a ridge or comb of uncut grain several inches wide; in fact, the latter feature was so noticeable that the driver of the Brampton Machine objected to following directly after the Champion, lest the Judges should think it was his machine that left it. The Judges thereupon ordered that each should cut two swaths in succession round the field. Below we give the decision of the Judges, which was fully endorsed by all who witnessed the match:

At a trial of Reaping Machines held yesterday on the farm of Mr. Crawford, lot 2, 2nd line east, Chinguacousy, between the Champion Machine, made by Hall, Oshawa, and represented by Messrs. Bright & Thayer agents, Brampton, and the Brampton Harvester, made by Haggert Brothers, Brampton, the following farmers were appointed Judges: Messrs. George Cheyne, Robert Lowes and James Anderson. After the Machines had been tested in the field, both machines using sickle knives, we are unanimously of the opinion that the Brampton Harvester did the best work. With regard to the Butterfly, also exhibited by Messrs. Haggert Brothers, we consider it a nice little, light-running machine, and one that does its work remarkably well, very light on a team, and well worthy the attention of farmers.

(Signed,)

GEORGE CHEYNE,
ROBERT LOWES,
JAMES ANDERSON.

In view of such tests as these where the superiority of the Brampton Machine is so manifest, we do not wonder that Messrs. Haggert Brothers are in the same satisfactory position this year as usual, having sold all their machines but two, which they say will yet be disposed of. There are but few firms in the Dominion doing so large a business as they do, who can boast of having their sales limited only to capacity to manufacture, and we hope soon to see them enlarge their already immense premises sufficiently to employ three hundred hands.

We had almost omitted to mention that they also tried in the same field a lighter reaping machine, which they intend manufacturing next year. This machine was universally admitted by all present to be greatly in advance of the Champion in cutting qualities, and superior to both in lightness of draft, and in laying off a square sheaf, not being in the least twisted. This machine the Haggert Brothers, with their characteristic forethought, are having thoroughly tested in various parts of the County in all kinds of grain, so that when they offer it to the farmers next year, they will be certain that it can accomplish all they claim for it.—*Peel Banner.*

A KIMMEL-JACK.—A kimmel-jack is made of a good piece of leather an inch and a half wide, split like a pair of scissors, with buckles on the two lower ends to buckle to the bit rings; the other two have loops on them like those on a martingale. The bridle has two loops on the top of the headstall, so that when the kimmel is put on, it makes an X in the horse's face. The two ends with the loops pass over the head through the loops on the headstall, and drop three inches each side of the neck. Then take a plough line, lay the middle on the top of the head, pass each end through the bit rings, then through the loops on the kimmel, then through the hame and saddle rings, and then through a large ring made safe on the crupper at the hip strap. Hook your horse in the shafts, then tie the rope to each shaft, so as to rein the colt up tolerably tight, and he cannot kick. Every attempt will throw its head just twice the height of its heels. I always use a snaffle bit with two slide rings, and fasten everything to the slide rings except the driving reins. I fasten these to the outside or stationary ones, as it gives free play to the bit.—*Cor. Country Gentleman.*

Horticulture.

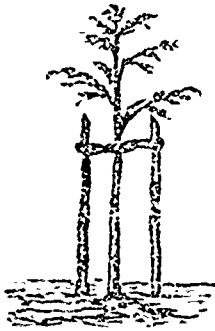
THE ORCHARD.

More about Staking Trees.

EDITOR CANADA FARMER.—I see in past numbers, many good ideas, such as those on staking newly planted trees, or others needing support. Much depends on doing such things in the best manner, and so to this end it becomes the duty of any one having ideas which appear good to themselves to communicate them to others, especially when such ready means are at hand as are afforded by the columns of the CANADA FARMER. So I give mine on staking trees, etc.

When a tree needs support, of two stakes, on opposite sides, of sufficient strength and height as the case may require, the stakes may be set before planting the tree, but little or no injury will be done by setting them after, by taking a good smooth hand-spike and sharpening one end nice and smooth. With this make holes for the stakes by striking repeatedly into the ground, swinging the spike around until a hole of sufficient size is made, using no maul or anything of the kind. Or, which is better, take a crowbar or any rod of iron of sufficient size, with one end sharpened. With either of these implements holes of any desired size may be made with ease.

Now to the way of securing the tree: Take any good tying material, as rye straw, elm or other tough bark,



strips of leather, etc., as they present themselves from time to time. Take the band, of whatever material, in middle on one of the stakes and at a proper distance from the ground make a loop round the stake by crossing it and the tree; then another loop around the tree crossing between it and the other stake, around which make another loop as before and secure. If the band is of straw, it may be made fast by the common twist and tuck used in binding sheaves of grain. If of bark, tie a knot; if of leather, secure with a nail or two driven through it and into the stake.

Set the stakes firmly that they may stand straining, which should be done by drawing the band tightly and securing firmly, thus giving support to the tree in all directions. Two stakes are better than one for several reasons and especially in orchards where hogs are allowed to run. They will prevent the hogs from rubbing against the trees, which is very essential.

Small shrubs and flower stalks may be supported in the same manner

Pleasant Plain, Warren Co., O.

WM. FERRIS.

Manuring Orchards with Clover.

From the observations we have made, and from our own experience in enriching orchards with clover, we would recommend the following course: In the first place, the trees should attain a certain age, say a good growth of at least five or six years after setting out. If much younger, the growth of the clover will produce too great a check of the trees while it is growing. While the trees are small, the ground must be kept clean and mellow by cultivation, or hoed crops only planted; with the addition of manure, as the natural condition of the soil may require. Then, if the land is sufficiently dry, either naturally, or by draining, (as all orchards should be,) plough it and make it mellow and smooth late in autumn; or omit the ploughing if it can be made clean and smooth without it. Early in spring, sow clover and nothing else. Do not think of sowing any grain crop with the clover unless you want to stunt and spoil your trees.

To make the seed take well and with certainty, it will be better to roll or brush it in as early as the soil will admit, and more certain than to sow earlier on the surface and trust to a "catch." This has been our experience at any rate. By mid-summer or a little later, there will be a dense growth of clover; larger, if the young plants have

had a bushel per acre of plaster or gypsum. It is better to cut at early blossom than to let it go to seed and exhaust the soil. You may leave the cut crop to lie and rot on the ground; but if you draw it off for fodder, be sure to spread on the clover stubble immediately afterwards, a small even dressing of manure. This will start the young plants, as well as make the land richer. Then, next spring, by the time the leaves of the trees are just opening, and the clover has made a good start, turn the whole under to a moderate depth, and plant corn, or any hoed crop. You will have a fine growth of corn from land thus treated, and the trees will start up with renewed vigor, after the check they have met with the previous year in consequence of the growth of the clover, and the want of surface stirring.

For trees that are rather young, one year is about as long as it will do to allow the orchard to remain uncultivated in clover; but when the trees are twelve to twenty years from transplanting, the clover may grow two years before it is ploughed under, giving it a light dressing with manure the first autumn as before, and if the soil is not rich and the trees not very thrifty, another dressing the second autumn. The clover will feel this manure and respond with great vigor, and it will help the trees. Those who have not much manure, may enrich their orchards to much advantage, in this way, the benefit from ploughing under the clover being several times greater than from the light coat of manure. If much manure has been applied during the early years of the orchard, the clover may not need any top-dressing; and if this manure has made the trees grow too rank for the healthy ripening of the young wood, the clover may prove a positive benefit, even for the time while it occupies the ground. On soils naturally very rich, this treatment for increasing the fertility will, of course, not be necessary.—Country Gentleman.

The Philosophy of Transplanting

Plants have lives and are susceptible of injury by wounds and bruises. In the course of transplanting they undergo the amputation of the outer ends of the main roots, where the feeding fibres are most numerous. That, with the disturbance of all the roots and their exposure for a given time to light and air, checks their thrifths, which they do not regain until they make new fibres after being reset. In digging up save the roots as much as practicable, and expose their roots to light and air as short a time as possible. Dig the soil some days before planting; break the soil fine; and if it is stiff, mix a portion of sharp sand with it to make it friable (sand at five dollars per ton will be profitable to so use in transplanting trees and shrubs especially); the more friable the soil put about the roots in planting, fibres will be put out the more readily; so the plants will sooner recover from their injuries. Hard-wooded trees take a longer time to put out new fibres after removal than soft-wooded species do; so they should be transplanted while young. An oak and hard maple, four feet high, will be slower in making new fibres than a poplar and willow, twelve feet tall. Among fruiting trees, cherry, pear, plum and all nut-bearing trees are slow in making new fibres after being transplanted; so they should all be transplanted when four or six feet high, and also all other stone fruit trees. Apple trees have soft roots when young and make new fibres readily; they may be six to eight feet tall when transplanted. Oaks, beeches, birches, hawthorn and other hard-wooded trees may be transplanted when four to six feet high. Poplar, willow, linden, soft maple and other soft-wooded trees may be transplanted when eight to twelve feet high. Pine, juniper, crytomeria, &c., are among the slowest of evergreens in making new fibres; plant when thirty to fifty inches high. Spruces, pines, arbor-vitae make fibres readily and may be transplanted from three to six feet high. So all soft and hard-wooded trees and shrubs in the same ratio. For transplanting trees from nurseries they should be tied into bales, with wet straw about their roots, and bass mats or sacking sewed over the whole. Send by express for quickness sake. The practice of transporting trees and shrubs in wooden boxes without other coverings to their roots is reprehensible, and will soon ruin the trade of any nursery. We have witnessed many heavy failures by that practice. In high inland, a mulch may be put over the roots of lately planted trees, if the weather be hot and dry; say, apply the mulch middle of June, and remove it middle of September. Artificial waterings are often absolutely necessary. If litter is used as a mulch, turn it over every fortnight, as it encourages the growth of mould which would soon kill the trees. If sawdust or tan bark is used, hoe them in when cutting up weeds about the roots of the trees.

Dogwood, deciduous cypress, larch, salisbury, hickory and tulip trees should be transplanted when thirty to fifty inches high; they are all very slow in making new fibres after removal. The tree boxwood is hard-wooded, yet it is very prolific and quick in making new fibres (that is an exception, not the rule). *Cydonia japonica* is the slowest deciduous shrub in making new fibres; transplant it when twelve to eighteen inches high. Austrian

pine is the slowest evergreen tree that I can think of in making new fibres; always plant it when young and small. *Biola auria* and mostly all the golden gilded evergreen shrubs, should be planted when twenty to thirty inches high. Such care will ensure success. Success and failure attend both spring and autumn transplanting. I have transplanted Norway spruce trees when thirty feet high in the opening of spring, and hemlock spruce trees twenty-three feet high at the same time; and all grew well and still flourish after ten years so removed. I have also transplanted soft maple trees fifty feet high; sugar maples and red maples, lindens, sycamore trees, &c., when thirty feet tall and well branched. They all grew well. The roots were followed out long distances, and all soil removed from them with picks and digging forks. Let me have all the roots and I do not want soil with them. The transplanting of those large trees were upon the same grounds; say, a hundred yards removed and staked for support. The frozen ball system is a humbug, but many other humbugs are successful, so is this at times, after heavy costs.—Cor. Germantown Telegraph.

Plums on Peach Roots.

Josiah Hoopes writes to the New York Tribune:—I claim that my plum trees, grafted on peach roots, are just as healthy as any of my neighbors; that the principle is correct; and if the facts do not coincide with the popular theories of the day, then it is bad for the theories. If any one can tell me why plums on peach roots will not do equally as well as those budded on plum roots in a country where the peach thrives with unexcelled vigor, then I shall have to assume another position. The opponents of this system claim that the "borers" soon destroy the peach root. I admit that, but the man who is too lazy to devote a few minutes once a year to killing them don't deserve to have plums nor peaches either. Practice after all is the sure test to prove such disputed points as the above, and practice in this case says that in peach countries the peach root will thrive as well—yes, I will even say better—than the plum, but in heavy clay soils the latter is the better stock of the two in all probability; yet I suppose there are plenty of "Walking Encyclopaedias" similar to a neighbor of mine, who are ready to argue that it is cheating because it is.

WASH FOR FRUIT TREES.—The Practical Farmer, speaking of a wash for bodies of fruit trees, recommends the following: One ounce of copperas to eight or ten gallons of water, forms a good wash, and is advised for trial as preventive against blight. One pound of bleacher's soda and one gallon of water forms a wash that cleans off all insects, and leaves the trees with fresh, young-looking, healthy bark.

WATERING TREES.—As a general rule, watering young trees in summer does more harm than good, by crusting the surface, without reaching the roots; and even if the roots are reached, the relief is only temporary, unless the watering is regularly repeated. There is a great want of appreciation of the amount of water required for trees by those who apply this remedy. A young tree four or five feet high, if growing well, soon throws out roots several feet on each side. If these roots are only three feet long, the circle of roots will be six feet in diameter, and at a depth of only one foot there would be no less than twenty-seven cubic feet of earth to saturate with water, requiring for one-fourth the bulk nearly one hoghead for a single watering. It is true that a young tree just set out may have had its roots cut much shorter, but as new ones are to be quickly thrown out into the soil as it commences growth, a narrow watering will do but little good. Clean, mellow culture is better than all the watering that can be given—or wide and heavy mulching if cultivation is impracticable.—Country Gentleman.

THE WILD GOOSE PLUM.—I have referred more than once to the probable value of this new candidate for popularity, and have advised readers to give it a fair trial; but as so many of the novelties lose their early reputation after a few years' test. I have thought best to be cautious in recommending this plum too highly until better known. An article from the pen of D. B. Wier gives additional weight to the testimony in its favor. Mr. W., who is well known to the horticultural world as a careful experimenter, states: "I am willing to stake my reputation as a man of truth and a horticulturist that the genuine Wild Goose Plum will prove to be all I have claimed for it, and that all with whom it has failed have been imposed upon by a spurious variety. This is pretty strong evidence, and seems to settle the controversy in respect to its value. Should this variety retain its standard of excellence in every section of the country, in addition to being 'bug proof' and entirely hardy, it strikes me there is a pleasant prospect ahead for all lovers of plums." Unfortunately, however, as Mr. W. observes, there is such a host of worthless, spurious sorts now being disseminated, that one really does not know what he is getting, even should the Wild Goose be ordered.—An Old Orchardist in New York Tribune.

THE FRUIT GARDEN.

English Gooseberries.

EDITOR CANADA FARMER:—Accompanying this letter is a small box containing four gooseberries of the English sort I have grown them these three years without any signs of mildew on them. Of course I keep the land under and around the trees free from grass and weeds, and I give the trees plenty of manure and keep them thin for the sun and air to get through them; and of course I keep the worms off, or at least I kill them as fast as I find any on them. If I was to allow them to strip the leaves off, there would be but a very slight chance of much fruit the following year.

I raise them on the one leg system. It is not so much trouble to keep them in good trim. I am raising some from some seed of an excellent kind, thinner skin and better flavor than those I have sent you, and if I don't mistake, they are red ones. If the seedlings turn out as good as I hope they may, I will report again to you. I may say that I have no plants for sale.

Crosshill, Ont.

G.R.B.

The gooseberries arrived and were immediately put where they would do the most good. They were over an inch in diameter and of good flavor. English gooseberries can be grown in Canada with careful tending, as several cases in our knowledge, in addition to the above, sufficiently prove.

Rose-Bug on Grape Vines.

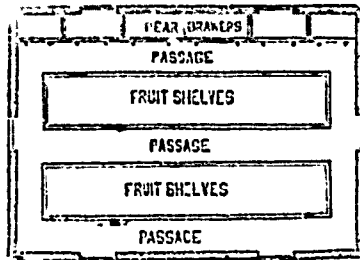
Last month, a reader in Western Ontario sent us for name an insect which proved to be *Macrodactylus sub-spinosus*, the Rose-bug, which he had found preying upon his grape-vines. Mr. Andrew S. Fuller gives in the *New York Tribune* his way of preventing their depredations. Many are the methods, he says, which have been tried in my garden to make the rose-beetles let the grape flowers alone, but only one has proved a perfect success, and fortunately it is inexpensive and there is no machinery to get out of order. Of course I am not positive that the *Macrodactylus sub-spinosus* will be as easily managed in every garden as it has been in mine, still I can see no good reason why they should not be, for locality is not likely to make any change in an insect's taste or appetite. The different species of insects which infest our gardens are supposed to have some preference in the way of food, but a few like the rose-beetle take a very wide range, so much so that few plants seem to come amiss, still by close observation we may soon discover that they do take to certain kinds more readily than to others. This is their weak point, and just where I made the attack to keep them from my grapevines.

Several years since, says Mr. Fuller, I set out near my grapevines, the following shrubs and herbaceous plants, the flowers of which have proved to be such enticing bait for rose beetles that these pests no longer trouble anything else, at least not to any extent worth mentioning. Snowball leaved spiraea (*Spiraea opulifolia*), Goat's Beard do. (*S. aruncus*), Sorb leaved do. (*S. sorbifolia*), New-Jersey Tea (*Cronolus Americana*), Swamp Magnolia (*Magnolia glauca*), and the Purple Fringe Tree (*Rhus colinus*). Taking these plants together, they will furnish inviting food for the rose-beetles from the time of their first appearance in Spring until after the grapes are too large to be injured by them. The beetles are also much more readily gathered and killed when crowded upon the flowers of the above-named plants than when scattered over grapevines. I have found no rose-beetles upon my vines this season, although they are to be seen by the thousands on the shrubs only a few feet distant. Any nurseryman will furnish the plants named, and at cheap rates.

WHEN TO PRUNE.—There is no time for directing the growth of plants, grape vines, fruit trees, etc., so good as when that growth is most rapid. Growth may then be checked, and the sap and vigor of the plant turned in any desired direction of development, provided it be done with reasonable care. When large timber is to be removed, it is best to wait until the most vigorous growth is past, and this is usually about mid-summer. The scar will not bleed at this time, and the wood exposed will become close and hard, impervious to water and will often remain sound longer than the rest, should anything cause the tree to decay. Large limbs removed in spring, when the sap is quite liquid, leave scars which often "bleed," the sap running down and "scalding" the bark below. The wood becomes porous, absorbs water and decays, making holes in the trunk.—*New York Tribune*.

Fruit Houses.

A fruit house should be similar to an ice-house in its walls and construction, the intention of which is to exclude the heat in autumn as well as the cold in winter. Fruit which has been kept cool during the last half of autumn will keep several weeks longer than if housed, as soon as gathered, in a warm and damp cellar. If built above ground, which would be best, the walls should therefore be double, and be filled in with sawdust, tan, or other non-conductors of heat. A space of six or eight inches would answer. The interior may be arranged as shown in the accompanying cut.



Three shelves, one above another, may occupy the space between the floor and the roof, and the passages around them admit ventilation and access of the attendant. For ordinary use, apples may be placed on these shelves without cover, and the layer being only a few inches thick, any decayed specimens are easily seen and removed. If the shelves are occupied with pears, they will ripen more perfectly (especially summer and autumn sorts) if a woollen blanket is first spread on the shelf, the fruit deposited, and then covered with another blanket. Or if the shelves are made into boxes, with lids for excluding light, they will answer well. Where fewer pears are raised, a row of drawers at the side, as in the cut, will answer a good purpose. The windows of the fruit house should be either double or with double panes. After fruit has been gathered and placed in it, air should be admitted only on the north side, to keep it as cool as practicable; it should be opened in cool days or nights, and be kept closed during warm days. A thermometer should be hung in it, and in winter the temperature kept nearly down to freezing.

For large fruit houses, the pears, apples and grapes should be in separate rooms, in order that the odor of one may not injure the flavor of the others.

It often happens that a carriage house or other out-house may be spared for a few weeks in autumn for fruit, where a cellar is used in winter for storing it. The same care must be employed in either case to keep it cool both in autumn and winter.—*Country Gentleman*.

THE FLOWER GARDEN.

Aira, or *Agrostis Pulchella*.

The beautiful little variety of ornamental grass illustrated on this page is the *Aira pulchella* sometimes called



Aira pulchella. It is an elegant and graceful annual growing eight to ten inches high, and producing numerous thread-like flower stems terminated by erect, delicate, graceful panicles. These panicles cut before the seeds ripen, and dried in the shade, will keep for a long time either in a natural state or dyed. Milliners and artificial flower makers use them extensively. The grass should be sown in April or May in good soil, and should be thinned out or transplanted allowing plenty of room.

SOOT TEA FOR ROSES.—Soot "t. a." is a capital fertilizer and stimulant for roses, producing free blooming and also a healthy growth. Where a wood fire is used, as in many a farmer's kitchen, the soot, when the stoves and pipes are cleaned, should be carefully preserved and used occasionally through the season direct to the plants.

COMPOST FOR FLOWERS.—In cleaning off the garden and flower borders, there is more or less of leaves, litter, etc., that must be disposed of in some way. Take it and make the basis for a compost heap for the winter; empty all the coal and wood ashes of the house over it, as they accumulate from time to time; save all the bones and refuse of the kitchen, and all the greasy dish water, and the chamber lye, and add them daily to the heap. Gather, if you can, from the blacksmith's shop or elsewhere, iron filings or scales from the hammering of heated or rusty iron, the parings of horse hoofs, and, with a little sharp, sandy soil, add them to the heap. This, well mixed, in the Spring, will form one of the cheapest fertilizers for all kinds of flowers in the open border.—*Horticulturist*.

FLOWERS FOR EVERYBODY.—There is no class of plants in existence which affords more pleasure with less care and attention than the rose. Very many people merely dig a little hole in the grass-plot, cram the delicate little mass of roots therein, and ever after wonder "what under the sun is the reason that some folks have such miserable luck." Roses love a light soil, rich in decaying vegetable matter, and some decomposed manure. They don't need sand, neither do they like clay; such extremes being about equally injurious to their healthy development. It is in bad taste anyhow to set out a single rose-bush on the lawn; better by far dig a good large bed, chopping up the turf well, and enriching it somewhat at the same time. Make such a selection of varieties as will combine hardness and free-blooming properties as nearly as possible, and very little attention afterward will secure the best results.—*New York Tribune*.

THE GERMAN IRIS.—This, the well known old Blue Flag of many a time-honored garden, still deserves a place in our modern collections, notwithstanding the many superior varieties of later introduction. It is the parent of a host of beautiful kinds, many of them hybrids with the Yellow Iris of England, so that the intermingling of colors and form has given us almost an entirely new class of plants. While some of the tints are exceedingly delicate and showy, others are more unique than pretty; and as to size, the plants vary in height from the typical species to the little Dwarf Blue Iris, so often used for edging. They are now coming into bloom, and a bed that I recently visited, containing some 70 distinct varieties, I imagined to be one of the greatest treats in flowers that I had seen for a long time. They need no special culture, merely preserving the surface of the soil clean from weeds and grass, with a slight top-dressing of manure in the Autumn. As this class is entirely hardy, it is especially adapted for grouping in with bulbs of shrubbery, where the diversified colors show to great advantage.—*New York Tribune*.

EVERGREENS FROM CUTTINGS.—The *American Agriculturist* says that the Arbor vite is readily raised from cuttings. The common Arbor vite is generally popular, but it is a waste of ground to grow this, if the Siberian and Pyramidal Arbor Vites can be had, as these varieties are quite as hardy as the original, and very much handsomer. As an illustration of the ease with which these Arbor Vites take root, last fall a friend sent me three small bits in a letter, for a name; though they had been cut two or three days, I stuck them in the sand of the greenhouse bench, and all three took root. To manage a quantity of cuttings, I use what the florists call a "flat," which is a box about three inches deep, made by dividing a soap-box. This is filled with sand, and in November cuttings about three inches long set in thickly, and the box put in the cellar until spring, taking care that it does not get dry during the winter. In the spring the boxes are set where they will be shaded during the heat of the day, and where they can be watered as needed, and in a few months the majority of the cuttings will be rooted.

PRUNING EVERGREENS.—The agricultural editor of the *Chicago Tribune* thus answers a correspondent who enquired the right time to prune evergreens:—If you have specimen trees, and your object is to check exuberant or straggling growth, prune in June, or before the new wood begins to harden. In pruning such trees, cut near buds, and from beneath up, with a clean cut. If you want to strengthen growth, prune in the same manner in the fall, after the season's growth has been perfected. Evergreen hedges should not be pruned, except just enough to keep them in balance, until they have made several seasons' growth, and the hedge has become well established. And, since the object is to encourage growth, the cutting should be done in the autumn, and then only to remove rampant growth. As the hedge gets older, the object will be to weaken the growth. Then pruning may be in June; for, at this season, cutting-back checks and weakens growth. A second trimming may also be given in the autumn. It is only by practice and observation that one can become expert. The object sought must be taken into consideration. When you have decided how you want your trees, a little practice will enable you to proceed rapidly. There are no prettier ornamental evergreen hedges for our climate than arbor-vite or Norway spruce, except it be, in situations favorable to it, that prettiest of evergreens, the hemlock.

THE VEGETABLE GARDEN.

Peppermint The Proper Mode of Cultivation.

Last month we directed the attention of Canadians to the growing of the profitable crop of peppermint. Since our article was written, the Farmers' Club of the American Institute have been talking peppermint; and as supplementary to what we have already said, we reprint the proceedings:

Mr. E. Sylvester, M. D., Lyons, N. Y., read a paper as follows:—

On the 28th of February, 1871, I read before the Farmers' Club of the American Institute a paper on this subject, which was published in the volume of transactions. It is the desire of the present paper not to reproduce the facts before stated, but to give additional instruction in regard to growing this important crop. I say important crop, for in Wayne County we raise about \$300,000 worth annually. Let not the unsophisticated for a moment suppose that we thereby increase enormously the consumption of mint juleps—for it is with great pleasure that I mention that mint juleps are made from spearmint and not from peppermint. Since 1871, the price of peppermint oil has fluctuated from two to six dollars per pound in our market at Lyons. In 1874, I planted five acres, which yielded thirty pounds per acre, and sold for \$5.11 per pound, amounting to \$765.50, or over \$150 per acre. The late quotation in village papers was \$5 per pound.

Since the publication of my paper on the cultivation of mint, I have received from numerous persons these questions: Where can I procure the seed? Do you plant the root, the stem, or the seed? It is these questions which I now propose to answer. I have no doubt that peppermint may be grown either from the root, stem, or seed, but the most desirable portion to plant is the rooted runner from last year's growth. Perhaps you will be enabled to understand me better if I detail the production of this "rooted runner." For instance, in the spring I plant an acre of mint-roots. These grow, are kept free from weeds, and in July or August the tops have grown from one to two feet high, and when in blossom, the tops have been mowed off and converted into peppermint oil by distillation. About this time small sprouts or runners are seen growing from the neck or collar of the mint, and remaining on the surface of the ground. These runners take root, and each for himself becomes a living plant, though still clinging to his mother's breast. It is these plants, full of life and vigor, which you must plant, if you would grow mint successfully.

I once planted seven acres with the runners in November, and the mint was as productive as other mint in the same field planted in the spring, but the general practice is to plant the runners in the spring. Just at this juncture comes the important question, How shall we protect the winter runners during our cold and often inclement winters so that they shall possess sufficient vitality to be separated from the parents, and commence a vigorous, productive existence in the new field to which they are removed? If snow falls on the ground before it is much frozen, and remains on until spring, covering the runners with a white, soft blanket, they will come out of the winter as bright and smiling as a tottering infant; but if, as too often happens, we have severe weather without snows, and the ground is frozen a foot or more in depth, fierce winds sweep across your mint fields, and in the spring they look brown or black, their young rootlets are dead, and they are unfit for planting.

How shall we obviate the effects of the winter and have fresh, healthy runners? I answer by relating my own experiments. Last autumn, I divided my new mint fields into three unequal sections, which I numbered 1, 2, and 3. Section 1 was plowed in November very carefully about five inches deep, the surface laid flat and not lapped, so that the runners were by this process covered with soil about five inches deep. Section No. 2 was covered to the depth of five or six inches with buckwheat straw early in December; the straw was spread evenly from a wagon driven over the field, and was not pressed down or rolled. Section No. 3 was left unprotected in any way; just as the runners grew so they were left to care for themselves during the very severe winter which has just passed. The result was that the runners on the section covered with straw came out in the spring bright

and healthy; those left without any attention were the next best, and many of them used in planting, while Section No. 1, which was ploughed over, was very much injured by the winter, and none of the runners were used in planting, but they have come up through the soil to some extent and now promise a fair crop of oil this season.

The method of ploughing over is not always so unsuccessful. In some seasons the very best results are obtained by this plan. It depends much upon the nature of the soil and the vagaries of the winter. I am of the opinion that a light covering of straw is the best method, and that wheat or rye straw will answer as well as buckwheat. What is wanted is some light application on the surface of the ground to hold the light snows, if there are any, and practically protect the young rootlets from the severe cold. But, the novice asks, Why this anxiety about roots? After you have planted a field, can you not mow the mint year after year as we do meadows? I answer, No; the mint is usually cut for two years and then replanted—in very rare instances three crops are gathered. How many roots do you plant to the acre? This is a fair question, and I should much prefer to answer it than count the runners we plant on an acre. When the runners are numerous and well-rooted, and all alive, from ten to twenty square rods will afford sufficient for one acre; hence, you perceive then, one acre of runners will plant from eight to sixteen acres of new mint. But if I were so situated that I had to transport my roots to a great distance, then I would mark off an acre in furrows, three feet each way, and plant in the crossings; this would require about 5,000 plants to the acre; and then the next year would plant my new field, using the runners from twenty square rods in each acre. There is money to be made by growing peppermint when the oil brings in the market over \$3 per pound, if every detail is well managed; and it has this positive advantage—it does well on and utilizes soil that is too wet for the successful cultivation of corn or wheat.

In answer to questions by members of the club, Dr. Sylvester said that a rotation of crops was as necessary in the cultivation of mint as for other crops. About 5,000 plants could be raised, by careful cultivation, to the acre. The process of distilling the oil was the same as that adopted in the distillation of whiskey. It costs usually about forty cents per barrel to distil the oil, but the price was sometimes increased to fifty cents. The demand for peppermint was limited, and if it was cultivated very largely the crop would not be profitable.

Growing Asparagus.

The trouble and expense of excavating the site for asparagus beds and filling up with new soil and manure, prevent many persons from growing this excellent vegetable. A correspondent of the English *Horticultural Magazine* says, he accidentally discovered a cheap way of growing the plants which he has been practising for several years with the most satisfactory results. He raised a number of seedlings for sale, and sold the greater part of them. A considerable number were, however, carelessly, and unintentionally left in the bed, which was made up of very rich soil, and they consequently grew very strong. They were so evenly distributed over the bed that he let them stand, expecting to sell them for three year old plants the next season. They remained in the bed without being earthed up, or anything else but weeded.

In due course of time these came up fine buds, tempting to cut, and the only disadvantage was, that some of the crowns were all but above ground, so that there was no length of white, and therefore he let them grow three or four inches of green, and cut them, so that every morsel could be eaten. The next year all he did was to raise the bed, by throwing about two inches of soil over it. The crowns were just covered, and that was all. The next year they came up so strong and good that he determined in future to grow his asparagus in the most simple way.

He first digs a trench about eighteen inches broad and as deep. He then fills the trench with manure well trodden in, and returns the soil that was taken out until the surface is level with the original surface of the ground.

The level surface of the trench sinks in a few days, and he draws in more soil from the bank which remains alongside, and again makes it level. It is best to do all this in the Summer. Along the ridge which covers the trench, he plants in the Fall, two-year-old asparagus roots, nine inches apart, in a single row, and draws the bank of spare soil down upon them, in a sort of rounding form, and lets them bide their time of coming up, which they will in pretty good strength in April or May. He keeps them clear from weeds, and the second season, without any other trouble than throwing a little earth on the crowns in the Fall, and raking it off again in the Spring, he grows the finest asparagus in his country.

He has no more difficulty in preparing land for asparagus than for celery. His object was to see whether asparagus could not be grown, like other crops, on the level ground, so as to admit of another crop of a different kind being raised between the rows. According to this plan there are no alleys, no breaking down of edges, but simply plants growing like cabbages or any other crop, the crowns within two inches of the surface, and the shoots cut without any white handle. He allows the shoots to grow five or six inches high for the purpose of increasing the eatable portion. He likes growing crops on the level ground, for many reasons; first, because the plants have more nourishment in rains; secondly, the manure is not washed into the alleys; thirdly, because other crops can be grown between without affecting them at all. He has also grown asparagus on a still plainer system. He manures the ground highly and gets it into fine condition. About March or April he marks drills, three feet apart, and sows the seed thinly along them, covering lightly. When the plants come up, he thins them to about nine inches apart. Here they are allowed to grow until the third season, when just before they come up, he draws the earth over them so as to cover the crowns about ten inches. When managed in this way he has the finest crop that can be desired, and between the rows he raises cabbage, broccoli or any other crop that will come off before Winter.

Vitality of the Potato.

Potato tuber possesses such astonishing vitality that it will not only make a strong growth, but will also yield young tubers, very small it must be granted, but of perfect form and with the organs of reproduction perfectly developed, without any extraneous assistance other than is afforded by atmospheric moisture. This fact is undoubtedly of little value in itself, but is sufficiently remarkable to lead one to inquire if the economy of the potato was capable of nothing more than this, for the phenomenon which I have described is in reality precisely that which takes place in a living plant. For example, a grapevine will produce strong shoots clothed with foliage and bearing incipient fruit-bunches entirely from stored up sap, without any assistance from its roots.

Nor does the analogy cease here, for both potato and grapevine fail to make further progress without the assistance of new roots fed by a nutritious soil. By careful examination it was found that immediately after a tuber had ceased to grow it might be separated from the haulm, without any interference with the process of ripening or deterioration in quality. The only blemish is in the somewhat unsightly and ragged appearance of the skin, which becomes broken from contact with others when taken up in its immature condition. The action of nature to remedy this rubbing of the skin is wonderfully prompt, a fresh skin of considerable thickness being formed within 24 hours after the storing of the potatoes. Here is a question involving other questions for physiologists. One can understand something of how a ripening process can take place by oxidation, and by the combination of crude matter to form the starch or meal substance so much appreciated in a good potato after the tubers are taken up, just as of apples and pears after they are gathered from sugar.

It has been well said that "Nature knows no limits in her great laboratory, having combinations to play upon such as we are only just beginning to understand," and I should be glad to know more of her action in this instance. How is the second skin formed? Of course the substance is derived from the juices of the tuber; am I to suppose, then, that the juice which flows from the wound becomes hardened and converted into a substance resembling the skin by the action of the air? Or is there circulation, or rather a movement of its juices among its tissues, taking place after it is separated from the haulm? It may be said that the fact of the subsequent ripening process would imply something of the kind. Ripening, however, is simply one of a series of chemical changes. Many fruits ripen after they are gathered, but if the skin sustains any damage, decay invariably follows.—*London Journal of Horticulture*.

THE COLORADO BEETLE'S FOOD.—According to observations made in various parts of the country, the "Colorado Potato-beetle" has been seen to feed on potatoes, tomatoes, eggplants, night shade, corn leaves, lambsquarter, amaranthus, lettuce, cabbage, thistles, strawberry, currant and raspberry leaves, plantain, potato tubers, and sundry other vegetable substances, but its preference is the potato.

HEADING UP CABBAGES.—The great drawback in growing these successfully and to profit is in failing to have a large proportion of head. To make them head uniformly and well, hoe often, especially in dry weather, and as soon as the surface dries after rains. Don't allow a crust to form around them. A tumbler full of salt scattered over them occasionally will be found very beneficial.—*Prairie Farmer*.

The Breeder and Brezier

Salt in Animal Economy.

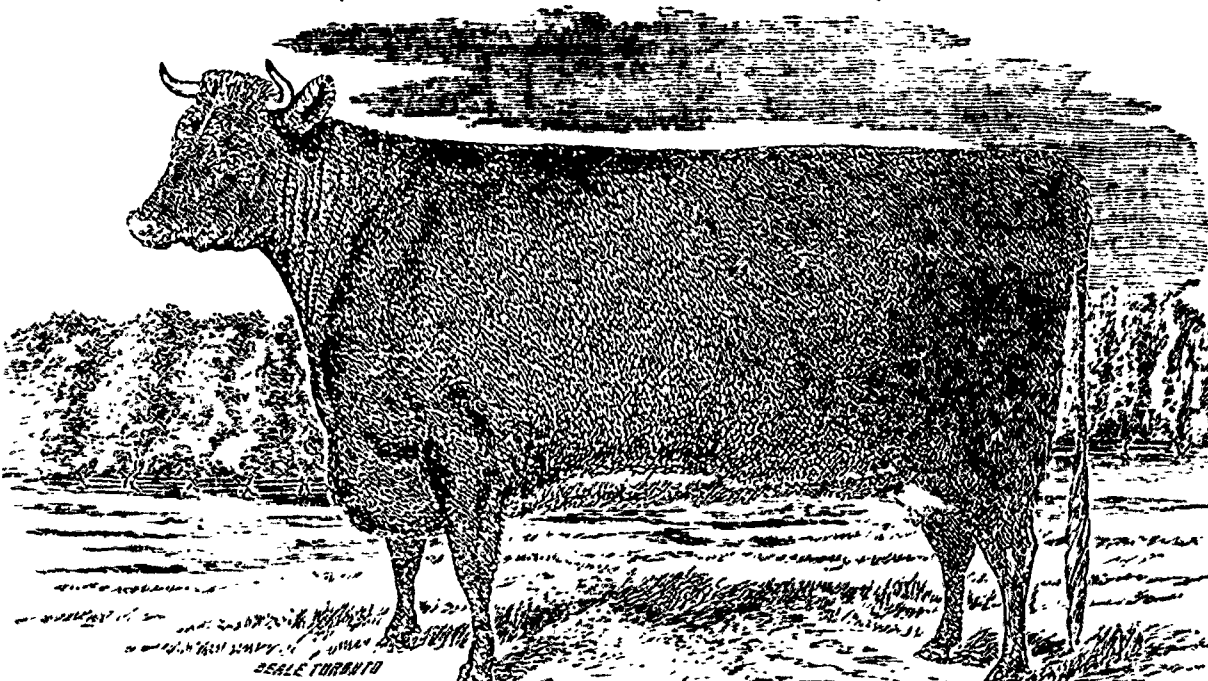
The forthcoming report of Prof. A. J. Cook to the Michigan Board of Agriculture will contain the following essay upon the value of salt in animal economy:

I have been invited to write a scientific disquisition upon the above subject by a gentleman of rare culture, and one who occupies a very leading position in relation to the agriculture of our state.

Salt, or chloride of sodium is not only found in very constant quantities in the blood, but is also present in nearly all the fluids and tissues of the body. The origin of the salt of the body is in the general food, as nearly all animals and vegetable substances contain it in minute quantities; and into the human body, that of our domestic animals, and often of wild animals, it is also taken separately, or uncombined with other substances.

The exit of salt from the body takes place through the secretions, but principally as an excretion eliminated by the kidneys. Not only the salt which comes from the breaking down of the tissues, consequent upon use, is thus eliminated, but also the surplus which may be taken in the food above what is needed.

The function of salt—for that it is very important is certainly proved by its considerable quantities in the tissues, and even greater abundance in the animal fluids—has been definitely ascertained. It is not so much to form tissue as to preserve the consistency of organs and organized fluids, and to aid the processes. It has been shown that it is chloride of sodium, or salt, that keeps the albumen of the blood in solution, and the corpuscles in their semi-fluid condition. Hence the entire absence of salt in the food, free or combin-



Short-Horn Heifer, "DUCHESS 2d OF DEREHAM ABBEY," the Property of Hon GEO. BROWN, Bow Park, Brantford, Ont.

ed, would be fatal to life. Again, it has been definitely settled that salt promotes absorption, as perhaps no other substance does. Again, salt acts as an appetizer in human food, a use by no means to be neglected.

Now, there are two questions of practical importance to the farmer: First is salt needed to the perfect health of our domestic animals in greater quantities than it exists in the general food? and secondly, is it desirable for any reason to give it to our horses and cattle? And one question of general interest: Is it unhealthy to eat salt in large quantities?

First, then, is salt needed in the animal economy in larger quantities than it exists in the general food? In 1854 a French scientist by the name of Boussingault experimented on six bullocks. He treated them all alike in every respect except that three were fed 500 grains of salt each day, while the other three had no salt. These experiments commenced in October. For six months no noticeable difference appeared; but in the succeeding April a difference was noticed in the looks and actions in favor of the animals receiving the salt, which continued to be more striking, till finally the animals not receiving any salt appeared sick both as to looks and actions, while the others were as fine in appearance as could be desired. Mr Dailley, of England, tried similar experiments with sheep, and with the same results.

These experiments show very conclusively that animals which are stall-fed need more salt than is contained in

their usual food; and the supposition would be that the same is true of animals which roam the fields and crop the fresh grass, though the fact that animals in a wild state frequently get no free salt and yet appear very healthy, would argue the reverse of this. Yet these same animals seem to crave salt, as the much-frequented salt pools clearly prove; and a natural taste or desire is pretty good evidence of an organic need. The general opinion, too, of our best farmers, as indicated by their practice, is no small argument in favor of salt. Yet this argument may be weakened from the fact that the same solicitude that would give salt, would give other extra care, which would tend to make sleek kine. Hence salt might get too much credit in accounting for the fine condition of salt-fed stock.

Yet the fact of whole herds all through the country, which look well and yet never get any free salt, is the strongest argument against its necessity. There are only two solutions to this question: Either the animals get the needed extra salt by licking the earth, or else they would look and do still better were it a part of their aliment.

In the second place, shall we feed our animals salt? I say emphatically, Yes. We see the weight of argument seems to favor its use as a need, which the animal feels especially when stall-fed; and, as we shall soon show,

salt can work no injury. It will pay simply in making our animals more docile and manageable, even were the argument from organic need entirely wanting.

Again, I have heard our scientific city milkmen say that milk might be skimmed to a limited degree, and by adding a little salt the fraud would be completely masked. Now, we know how readily the milk glands abstract substances from the blood. Is it not probable, then, that salt-fed cows would give milk that would seem richer from its containing more salt, aside from the chance of their being more healthy?

Lastly, is salt unhealthy when taken in quite large quantities? Experience says no. Physiology sustains the negative. As already stated, if the salt in the blood becomes excessive, it is excreted by the kidneys and does no harm. Let no one, then, who has a taste for very salty victuals, which they have heretofore gratified with grim forebodings of disease and death, any longer fear; for if salt will not save us, it will tend in that direction. Experience and physiology alike bid us eat all the salt our appetites crave; for if we do eat more than the system needs, it will be harmless; and not simply that, but be a positive good even then as an appetizer. I would have no one infer from this that it would be safe to give animals an excessive amount of salt when salt-hungry, any more than any other article of food. It should be kept before them, or else fed in limited quantities at stated intervals.

Duchess 2nd of Dereham Abbey.

The engraving on this page is of the imported Short-horn, Duchess 2nd of Dereham Abbey. She is of a red and white color, and has the unmistakable appearance of her aristocratic breeding. She was calved 24 July, 1867, at the premises of her breeder, Mr. Hugh Aylmer, of West Dereham Abbey, England, and was imported to Canada in 1870. She is of a family originally established, early in the present century, by Major Brown, of South Lincolnshire, a noted breeder of his day, and a purchaser at Mr. Colling's sale. Mr. Aylmer became possessor of the family by purchase from Mr. Wetherell, who bought Lady Welbourn from Major Brown.

The pedigree of Duchess 2nd of Dereham Abbey is:—

Dam	Sire	Breeder of Sire
	Colt 1, Norfolk Thrusdale Duke (24066)	Mr. Hugh Aylmer.
Red Duchess	" Red Knight (1860)	Mr. Grundy.
Roseleaf	" Whittington (12290)	Mr. Holland.
Lady Welbourn	" Lord Lowther (7104)	Mr. Seymour Dighton.
Eliza	" Panton Favorite (4610)	Mr. Dunning.
Miss Eliza	" Grandson of Grazier (1086)	Mr. Wiley.
Elizabeth	" Son of Grazer (1085)	Mr. Wiley.
Bessy	" Son of Vulcan (967)	Mr. Brown.
Bess	" Vulcan (807)	Mr. Brown.
Betty	" Quaker (1819)	Mr. Stater.
	" First Stone Hill Bull (3798)	Mr. Charles Colling

ABSORBENTS.—For absorbing purposes in stables, muck suits excellently, and retains odor. Sawdust does this less well; some odor will escape. But as an absorber of the juices and odors it must give place to muck, but especially to pulverized clay or clay soil. This (dry of course) will readily absorb the fluids and prevent the escape of odors. What is more, clay has the property of not only retaining the nitrogen of the urine, but preventing fermentation, so that it is held intact till the plants take it from the soil, absorbing it in its unfermented condition.

Earliest Feed for Cows.

EDITOR CANADA FARMER.—Could you or any of your readers tell me the earliest feed to sow for milch cows. My pasture gave out this year long before the oats and peas which I sowed together were ready for cutting. I have heard of fall rye, but I do not know when to sow it, or what kind of soil it requires. A YOUNG FARMER.

North Easthope, Ont.

The earliest feed that can be got is undoubtedly Red clover. Fall rye would come in next. Drill in a bushel to a bushel and a half to the acre on well-prepared ground about the last week in September. Any land that will grow cereal crops will do. Rye will succeed on poorer soil than wheat will. It will come in about the end of June. To follow the fall rye, sow rye again early in the spring. The winter rye will do just as well to sow in spring as spring rye, which latter might be difficult to get.

THE YIELDS OF FORAGE, both of roots and maize, obtained by French farmers are remarkable. At a recent exhibition of beets in Paris, specimens were exhibited of crops which gave for a yellow beet 55 tons per acre, and for red globe beets nearly 50 tons per acre. A species of maize known as giant, or *Carayna*, returned no less than 70 tons of green fodder per acre. The fertilizers used for this latter crop were 350 pounds per acre of a mixture of three parts superphosphate of lime and one part sulphate of ammonia.

On Training Steers.

The great secret of all government is self government. The man who does not govern himself is unsuitable to govern a school, a family, or even a team. A neighbor recently remarked to me, "You have a faculty of charming steers." I replied that this was a mistake. I simply study their nature and adapt myself to that nature. In approaching them, (whether they are under the yoke or not,) though I may "come with a rod," yet I always come "in love." If I am in a hurry, and a steer is in my path, I never give him a kick, or a thrust, with a yell, "Get out of my way," but instead I allow him the path while I pass quietly by, gently rubbing him with the hand as I pass.

The pressure of the hand on the animal has a powerful influence in training him, and I had rather engage to bring two yoke of steers to a state of good working discipline, than tame one pair that had been taught to fear the presence of man. I cannot give several illustrations, but will mention one that may "go and do likewise." Yesterday I was cutting with a pair of steers that were impatient about starting. Whenever they started too soon, I would back them to the very spot from which they started, and rub their heads, or pick off loose hair from their bodies, and in one-half hour the change in their general appearance was surprising. In handling them, I always endeavor to persuade them that even the goad cannot harm them. When I yoke them, which I do at all ages after the first 10 months, (though I consider from 1½ to 2½ years the best age for their discipline.) I usually place them in front of a yoke of well trained oxen or steers large enough to anchor them safely. At first I attach a line to the horns of the off steer, making it fast to the bow of the near one, thereby preventing him from turning his head too far to the right. This is not usually necessary after once yoking. I also hold another line in my hand attached to the horns of the near one, or if he is too hard to manage, I put a snap in his nose. Of course they are frightened at first, but after a few minutes they will walk off quietly. I travel beside my rear cattle, using appropriate language, speaking just what I mean, and no more, at the same time showing by means of my goad and line the meaning of my words. In ordinary cases I can remove my line from the near one after one hour, calling them to without it. After handling them on the lead one day I can use them on a drag or a light log, and next, a cart.

Human nature and bovine nature are synonymous in a great degree, and as we encourage trustworthiness in our children by trusting them, so far as it is safe, but no farther—in like manner I will trust my steers so far, and only so far as I can conveniently do so. As soon as they can be trusted I give the near one an occasional lesson in the yard without the yoke, teaching him the elementary tactics in "single file." I then change their places under the yoke, putting the off one on the near side, and after he becomes handy there I teach him the tactic singly also; after which, as both are disciplined to work on either side, I can place them together without any yoke or other attachment, and move them to any part of the pasture and where else I please. I never whip them except in rare cases of stubbornness (which are nearly as scarce as hen's teeth), and then not severely, but calmly and caudally, without exciting fear in the animal; and the moment he yields, treat him with the greatest possible kindness.

I always give each steer a distinct name, naming them after the Yankee custom, allowing the color, spots, lines, horns, etc., to guide me in this matter, and I always call him by that name, on which ever side he may chance to work, naming the steer and not the place where he works. This may seem boyish to some, but my reason is, that in changing owners, they will be less liable to have their names changed. Here let me advise farmers not to allow themselves to become slaves to any one pair of names because their last oxen bore those names, neither does it follow that because an ox is called "Star" for the spot in the forehead, he must always work on the near side; but in buying, be sure to ascertain the name of each ox, and in selling do not fail to impart the same knowledge to the buyer, for the changing of names is very injurious to the discipline of well trained oxen. I frequently accustom steers to be handled with myself on the off side with the rod in the left hand, which I find very convenient in loading hay, back-furrowing beside fences, banks, ditches, &c.—*Mame Farmer.*

Economic Horse Management.

(Continued from last month.)

Oats, on an average, contain 4½ lbs. of husk in every 14 lbs.; maize, only 5 oz.; and peas, 7 oz. The percentage of husk, then, is very heavy in oats, and very light in peas and maize, so that we conclude, if the digestible portions of these substances are equally nutritive, there is a heavy loss in the use of oats. I am second to no man in my appreciation of the value of good oats as a feeding

material, either for man or horse. If our choice of grain is limited to one variety only, certainly the best, and if cost is no object, oats and bran form a feed simply unobjectionable. But oats vary considerably in value. They should be sound, sweet, & year old, and their annual weight should be at least 40 lbs. per bushel.

In my paper of 1860, I stated that two bushels of good oats, with a natural weight of 42 lbs. per bushel, would keep horses in condition better than three bushels of oats at 35 lbs. natural weight. Further experience has convinced me of the truth of this statement; and I believe that the heavy oats are really worth seven or eight shillings per quarter more than the lighter. When I first noticed this difference in feeding value between light and heavy oats, I considered it was due to the lighter grain carrying the greater percentage of husk, but my table shows that Russian oats have a smaller percentage of husk than the best short oats. Although I am unable to explain why, I think, being kiln-dried, they have the husk cleaner; yet it is certain that, weight for weight, foreign oats are unable to sustain hard working animals like the short potato oat. There is something more in many samples most injurious to horses. I have frequently been called to examine and report upon pit horses which were unable to stand their work, although allowed an *ad libitum* supply of oats. The history is always the same: "Our horses were all right till the last two or three weeks; since then the flesh has rolled off them. They are always sweating, as weak as rats, and knocked up before the shift is half over." I rarely always find foreign oats in use, and that the change in the horses followed close upon a change in the sample of oats. The symptoms shown are, a tight, dry skin, loss of appetite, debility, and excessive stalling; much the same set of symptoms as we get from feeding upon musty English or Scotch oats.

These foreign oats are, however, nearly free from smell, and therefore, I take it, their objectionable properties are due to some artificial preparation, or to the changes caused by mustiness, the smell of which has in some way been removed. I have noticed, too, that we have many more cases of colic when using foreign oats than when using good home-grown grain. Only last year, a lot of Lark oat oats—34 lbs. to the bushel—were sent to a colliery. We refused to use them, but were compelled to try one of the owners, who looked into the matter and pronounced them very good, saying he did not believe that a light natural weight was of any consequence, so long as we got 33½ lbs. per qr. The result was, that we had ten times our usual number of colic cases, and the animals out of condition. It has long been known that musty or kiln-dried oats are injurious to horses, but the really dangerous nature of some foreign oats is not appreciated.

In the *Veterinarian* for 1862 Professor Varnell reports a case in which a number of horses died as the result of such provender. A Mr. Mitchell, of Leeds, bought twelve quarters of oats, and when about half of them were used, four horses died within a few days of each other. Poison being suspected, the contents of the mangers and stomachs were analysed, and not found to contain any vegetable or animal poison. Suspicion next fell upon the oats, and an aged, but healthy, mare was bought for the purpose of testing them. She had three feeds a day; on the third day paralysis appeared, and was followed by death. The experiment was repeated on other horses, and a few days' feeding on these oats produced death in each instance. The oats were foreign, and had a musty smell. Placed in water they quickly became matted together by a filamentous structure, the fibres of which crossed and interlaced each other. Some floated at the surface, and some remained at the bottom of the vessel.

In the same volume of the *Veterinarian* is another report of the death of thirty-nine horses from feeding upon musty oats, the cause of mischief never being suspected till the injury was done. We can all "lock the stable-door when the horses are gone;" but it behoves us, as prudent and careful managers, not to cure but to prevent evil. In few cases have I directly traced death to foreign oats, but I have frequently met with serious illness as the result of such food, and I have frequently noticed the filamentous arrangement just mentioned, in the cisterns attached to underground stables. Bad oats of all kinds should be utterly avoided. Even small quantities mixed with a bulk of good grain produce ill effects, and soon spoil by contact that which was previously good. Referring to the table showing the proportions of husk on grain, you will see that oats show a very heavy amount, in fact, from 30 to 40 per cent. Now this husk has a value of less than 20s. per ton, whilst oats at 28s. per quarter are worth £9 6s. I have calculated that if the five thousand and odd horses, whose feeding I superintended, were fed as they used to be on hay and oats only, there would be a consumption of 134 tons of husk per annum. That is, we should be using a material costing £8 per ton more than it was worth, or more than it could be purchased for from the oatmeal dealers.

From these facts we conclude that the best oats are the cheapest; that though the market value of the heaviest oats is seldom three or four shillings higher than that of the lighter sorts, they are really worth seven or eight

shillings more as food, and therefore, are absolutely four shillings a quarter cheaper. We also conclude that musty or kiln-dried oats are positively dangerous, and should be utterly avoided. Foreign oats we seldom use; they are generally light, and not unfrequently injurious. There is, however, an objection to even the best oats as an economical feed for hard-working horses. They contain such a large proportion of husk—indigestible matter—that their market value is out of proportion to their feeding value. I have related one case where oats alone failed to keep in condition the horses on a colliery, and how a mixture of grain containing a larger proportion of nitrogenous matter succeeded in replacing and preserving the condition. Under the head of beans we may include peas and tara. For all these contain about the same proportion of nitrogenous or flesh-forming matter. Tara, however, contain a bitter principle which renders them somewhat objectionable. Between peas and beans there is no choice, providing both are in equally good condition. Sound, sweet, har beans, tara, or peas, are of all seeds the richest in flesh-forming material, containing, as our table shows, 26 to 28 per cent. They are, then, especially indicated for use when the animal body undergoes great loss of flesh or muscle, as it does with all hard-worked horses. But these leguminous seeds cannot be used alone in very large quantities; they have a heating and binding effect upon the system. They must then be used either in small quantities or be combined with some other article of food having an opposite or counteracting effect. Such articles are supplied in bran and maize, either of which may be used advantageously in combination with beans and peas.

IN BOILING POTATOES FOR PIGS, says the *Gardener's Chronicle*, they should be strained, as the water from them is injurious to a less or greater degree, as it contains the poisonous alkaloid called solanine, which, it should be noted, is more abundant when the tubers begin to bud out.

HOW TO TELL WHEN A MARE IS WITH FOAL.—Take a rope, strap or string, and measure around the girth where the harness goes on the back, and the belly-band buckle up; then measure again, just forward of the hind leg around the body; if larger around in the latter place than in the former, you may safely conclude she is with foal.—*Rural New Yorker*

GROWTH OF MERINO WOOL.—The merino sheep offers a singular proof how easily the annual change of the fleece. The annual change there is, may be suspended in the domesticated state of that animal. Lord Western has retained the wool of the merino without the slightest disposition to separate, during three years. The experiment was also tried at Rambouillet, and the fleece remained on firm and healthy during five years. It had attained its utmost growth at the fourth year, when it was thirteen inches long. But it had no disposition to separate from the skin, and probably it would not have fallen off during the life of the sheep. There were not merely a few cases of this, but the experiment succeeded in every sheep which it was tried.

FLIES IN STABLES.—Mr. Meek calls attention to the system of darkening cow stables by hanging up canvases over the openings, adopted by the late Mr. Hudson of Castle Acre, to keep out the flies. He says that on a visit there, he was "amused and instructed" by seeing the well fattened cattle get rid of their tormentors by passing between pendent canvas curtains, which admitted them enclosed after them, rendering the shed dark and flyless. Another friend who had many cows in a long shed, having its ridge louver-boarded throughout its whole length, and divided by a pendent board on Watson's principle, excluded light except from these openings in the roof, not a single cow's tail was in motion, for the flies would not descend into the darkness.

KEROSENE FOR LICE.—I wish, says a *Country Gentleman* correspondent, to give my experience with lice on cattle, though not a farmer, but a farmer's wife. Last winter we had some yearlings got lousy some time in February; the next day after John discovered them he was taken sick, and a few days later told me something ought to be done before he could get out to attend to them. Having read that a subscriber thought wood ashes an excellent remedy, I accordingly went to work. For nine head I used as many quarts (for I was anxious to do a good job) and waited for the result. After some days I noticed that the hair in places was all gone; in a few more days the skin began to curl up around the edges of the bare spots, and left them raw and bleeding. It continued to curl and come off until it was left in large sores, some as large as the palm of one's hand. Some were so deep that they have not healed yet; but as for the lice, they kept out of the way so they were not all killed, although not so numerous as before. One heifer was so lousy that we felt obliged to try something else, and decided that it should be kerosene. We gave her a good dressing of oil and a thorough carding. The next day John called me to see lice that (being disgusted with such treatment) had gone down on the under side of the animal, and there they were in large numbers, but did not seem to care "whether school kept or not," so he got the oil and gave them a finishing stroke. The heifer is now thriving and shedding her old coat; she has gained in her milk, and now I would recommend kerosene for lice on cattle.

Veterinary.

Parasitic Diseases—Round Worms.

The last number of the CANADA FARMER contained an article by Dr. A. Smith, upon worms in horses, to which we add the following from the London *Agricultural Gazette*.

The typical form of worm, according to the popular idea, is the round worm (*Nematode*), which, in some of its varieties, is found in all our domesticated animals. Horses, in common with other stock, harbor large numbers of these parasites in their digestive organs, and the tendency on the part of the carter or stable manager is to attribute all ordinary ailments to their presence. Chronic cough, rough coats, bad condition, hinds bound, are all looked upon as so many consequences of the presence of worms in the stomach or intestines. Bots, which are so well known as temporary inhabitants of the horse's stomach, are often charged with the production of fatal results by eating through the walls of the organ, or weakening the structure so much that rupture occurs. It will be worth while to examine the evidence on these points before we suggest any means of dealing with these forms of parasitism to which horses are liable.

First, it may be stated with confidence that immense numbers of large, round worms (*Ascaris megalocephala*) are often found in post mortem examinations of horses which during life gave no indications of being the subjects of parasitic invasion. At the same time it must be allowed that when these parasites are known to exist—and they are easily discovered in the dung, as they attain a length varying from four to eight inches—and the horse continues in poor condition, in spite of a ravenous appetite, which a good supply of food fails to satisfy, the temptation to ascribe the illness to the action of the parasites is well nigh irresistible; accordingly, energetic remedies are used to expel the obnoxious guests.

An old-fashioned mode of treatment which was generally successful in expelling a great number of worms was the administration of drachm doses of calomel or tartarized antimony on three successive mornings, before the animal received any food, and on the fourth morning a dose of physic—that is, about four drachms of aloes. Active purgation followed this treatment, and hundreds of long round worms were thus got rid of. Sometimes, it must be confessed, the remedies were worse than the disease, and the horse died from excessive purging; but with proper care this mishap need not occur.

The modern method of treatment is more simple, and in good hands more safe and certain; a single dose of santonine, twenty grains, combined with three or four drachms of aloes, will effect all that the three doses of calomel, followed by a dose of physic, is likely to do, with less risk in the animal.

Another variety of round worm, which is known as the pin worm or whip worm (*Oxyuris curvula*), occasions much annoyance by the irritation which it excites in the large intestines. The symptoms which indicate the presence of this worm are generally well marked—the horse rubs the tail and hind quarters persistently, and there is usually a quantity of yellow matter consisting of the eggs of the parasites, adhering to the anus. The worm when voided is easily recognized; the females, which far outnumber the males, are from two to three inches in length, the anterior part of the body is about the thickness of a crow quill, and suddenly tapers off to a fine, needle-like tail. Purgatives, if sufficiently active, will cause the expulsion of the parasites, and the mixture of santonine and aloes previously referred to is very valuable as a remedy for this form of parasite, but in some cases they can only be dislodged by an enema of salt and water, or an infusion of quassia, which is very deadly to them.

A powerful antiparasitic injection may be made by infusion of four ounces of quassia chips in a quart of water for some hours, then adding two ounces of common salt. This mixture is to be injected into the rectum by means of the ordinary syringe. In obstinate cases the use of the injection in combination with the internal administration of aloes and santonine will seldom fail in effecting a cure.

Heat as a Disinfectant.

EDITOR CANADA FARMER:—Referring to the article in your last issue, under the above head, it would perhaps be well to recall the attention of the public to the recent most conclusive experiments made upon his own person, by a member of the medical staff of one of the public hospitals in Paris, France. He tried the sweating bath as a remedy for hydrophobia, by allowing himself repeatedly to be bitten by small dogs which had been certified by competent persons to be afflicted with hydrophobic, and which subsequently died with the usual symptoms of that terrible disease. It would seem that here also the maxim is verified that "the more terrible the disease, the simpler the remedy."

The doctor alluded to, whose name I am unable to recall to memory, after having allowed himself to be bitten, each time and immediately underwent a process of forced perspiration, with the simplest appliances. He would place a pail containing hot water on a terra-cotta seat, and put a red hot brick into the water. Then, after having completely stripped himself of his clothes, he would take his seat on the chair and have a couple of blankets pinned around him so as to completely inclose himself, and the chair and pail. This simple remedy has in every case proved a sure and complete preventive of hydrophobia, for he lives yet.

As this is the time when hydrophobia is most dangerous, it might be useful to mention another effective and popular preventive, practised by the country people of Russia. Whenever they are bitten by a dog, they immerse the wound for several hours in salt brine, and if the poison is there, the parts swell but lightly, but the veins and arteries passing through and in the neighborhood of the affected part assume a dark purple color, and by this means can be traced in all their ramifications. The appearance of this discoloration is regarded as the sign that all danger is past.

To make assurance doubly sure it would perhaps be well to combine the two protective remedies, by taking the sweating bath and at the same time, soaking the wound in hot, salt brine.

These suggestions might be valuable where a physician is not to be had immediately, and perhaps even where there is no lack of them, for, as is well known, hydrophobia has stood its own against all the drugs that medical skill has hitherto employed against it.

Toronto

R. D'A.

Horses' Summer Colds.

Summer colds occur amongst horses as well as amongst men, and have been tolerably general during the last two months. Old-seasoned horses have suffered with the young, raw, recent purchases. As usual, the colds have been more frequent and serious in towns than in the country. Indeed, in London and many other English towns there has been since April more sickness amongst horses than for eighteen months previously. There has been no widely spread contagious epizootic influenza, but the changeable weather, hot midday sun, dry, cold winds, chilling rains, and low night temperature irritate the respiratory mucous membranes, and produce cough, sore throat, and sometimes congested lungs. Noticed early, and rationally treated by warm clothing, mash diet, saline mixture, perfect rest, and mustard to the throat or sides, these cases are seldom troublesome; but, where carelessly and cruelly the horse, dull, coughing, and feverish, is still kept at work, much mischief frequently follows. The lungs become congested, the patient labours, is much distressed, and often dies; or the sluggish liver causes much prostration and yellow mucous membranes; or the blood, imperfectly freed of its waste products, gets into a depraved state, and there succeed the nodulous swellings of scarlatina, the extravasations of purpura, or the outpourings of exudate in the lymphatic glands and vessels, indicating farcy.

Another class of cases at present frequently come under the observation of the veterinarian. Horses are found stiff, scarcely able to move or to lift a limb, dull, with head depressed and mouth hot, more thirsty than hungry, the pulse soft and a little quickened, the temperature increased, the limbs generally round and puffed, tenderness on pressure along the back and loins. Over-exertion and exposure to wet or cold are the chief causes of such symptoms. A willing steed with a heavy load has perhaps

been toiling for hours, has got greatly overheated, and is senselessly allowed to stand in a draught, or in cold, beating sleet, or rain, of which there has generally been ample abundance of late. The horses at the present season that drag the ponderous vans and omnibuses overlaid with pleasure-seekers, bent on a day's enjoyment ten or fifteen miles from the smoke and bustle of the town, often afford unfortunate illustration of these cases. Similar ailments also occur amongst railway and carriers' horses, often pushed along at six or seven miles an hour, with loads of several tons behind them, which an ordinary pair of horses could scarcely move at a snail's pace. It is hard to say whether it is the over-heating, exhausting work, or the subsequent standing still and becoming too rapidly cooled, which proves most injurious. But certain it is that the two conditions conjoined seriously impair the health of many good horses. If the animal is hot, exhausted, and perhaps hungry, the weakened powers of life cannot safely withstand the rapid chilling; perspiration is checked with dangerous rapidity; waste materials, which ought to be got rid of through the skin, are retained; the fibrous textures, especially of the skin and coverings of muscles are congested and highly sensitive; from the severe exertion the muscles of the back, loins, and limbs are stiff and sore, and are rendered still more so by exposure to cold and wet. These cases of "bucketing" sometimes give rise to congested lungs; disease of the kidneys occasionally supervenes; more frequently the irritation of the skin and other mucous surface extends to the sensitive laminae of the fat, and the horse in a few days is pained, fevered, and suffering from acute founder.

When an animal is found, probably the day after his severe work and exposure, stiff and with "cold all over him," he should be comfortably clothed; if the limbs are chilly, flannel bandages will be desirable; warm mashes and gruel will perhaps tempt him to eat and drink; the glass of warm whisky and water which his master in like circumstances would prescribe in his own case is eminently suitable for the faithful servant, or a different stimulant may be tried in the form of an ounce each of sulphuric ether and powdered gentian given in a pint of beer. In the mashes or in draught also give an ounce of nitre and about two or three ounces of Epsom salt—a saline mixture which must be repeated for about three mornings and will help to restore to sound working order, both skin, kidneys, and bowels. So long as the patient remains dull and does not eat well, the ether and gentian, or some other such cordial, should be continued twice or thrice daily. An airy, comfortable loose box will greatly hasten his recovery. Until the horse feels well and is entirely free from soreness, stiffness, and pain, work is likely to make him as bad or worse than ever.—*North British Agriculturist*.

BURNING WARTS.—Some years ago, I had a three-year-old colt, with a large bleeding wart on the left leg near the stifle joint. It was painful to the colt and annoying to me. I secured the colt so that I could properly treat the case. I cleansed the parts well with soft soap and water. Then I applied a strong silk cord around the wart, as tight as possible, and applied muriatic acid three times for one week with a soft feather, when the wart dropped off. I then washed and continued to keep clean, with soft soap and water, and applied lard oil twice a day. In six weeks, the part was healed and haired over and smooth with the surface.—*Cor. Country Gentleman*.

INFLAMMATION OF THE BLADDER.—The symptoms of inflammation of the kidneys and that of the neck of the bladder differ mainly in the appearance of the urine. When the seat of disease is the kidneys, the urine is clear but high colored and often nearly black; when the bladder is affected, the urine is thick and turbid, but of its natural color. The cause of the trouble may still be found in the kidneys, the secretion from which may be very concentrated and irritating to the bladder. It would, therefore, be well to remove this by giving no more copiba (which is itself productive of just this effect), but in place of it copious emollient drinks of linseed tea and no other drink. Give a pint of linseed oil for a purge and afterwards bran mashes with scalded linseed as food, with clean, good, sound hay. Musty hay is a prolific cause of trouble in this way. Trust rather to these gentle methods than to nitre, copiba, or other drugs which irritate instead of curing.—*N. Y. Tribune*.

TO DRIVE VERMIN FROM DOGS.—Mercurial ointment I found the most convenient and certain destroyer of vermin of the many other preparations I have tried. For a small dog—say under sixteen pounds—about the size of a pea rubbed at the root of each ear on the outside, and allowed to remain a night, will destroy every parasite on the skin. Next day wash the dog with soap made in the following manner:—Take half a pound of white soap, pare it down into thin slices, put it in a pot with a tumbler of water, and boil and stir till the soap is dissolved, adding more water if necessary. Put into it as much mercurial ointment as will give it a slight tinge, stir well so as to mix thoroughly, and pour into moulds, such as cups, saucers, &c. When cool it can be cut to any size, and will be found deadly to vermin, and cleansing to the skin and coat. Mercurial preparations have a very powerful effect on dogs, and when the ointment is applied externally, they must be kept dry and warm.—*Fanciers' Gazette*.

The Poultry Yard.

The Carolina Duck.

The Carolina Duck, also called the Summer Duck or Wood Duck of America, is the most beautiful of all our native ducks and is only equalled by the Mandarin Duck. In both varieties the drake possesses a beautiful crest, but the Carolina is bereft of the singular fans which give so peculiar an appearance to the Mandarin. The Carolina Duck is but seldom seen on the northern part of this continent, and then only during the summer months. It is, however, familiarly known in the United States from Florida to Lake Ontario.

It rarely visits the sea shore or salt marshes, its favorite haunts being the solitary deep and muddy creeks, ponds and mill-dams of the interior, making its nest sometimes in the old hollow tree that overhangs the water, hence it is sometimes called the Wood Duck. It is also called the Summer Duck because of its remaining with us during the summer. It may occasionally be seen in the winter in the states south of the Potomac, and instances are mentioned of their having been met with in January in a creek near Petersburg, in Virginia. It is also stated that in Pennsylvania the female begins to lay late in April or early in May. In Mexico and many of the West Indian Islands it is equally known. It breeds from Mexico to the Columbia river, and eastwardly to Nova Scotia.

There is no fixed standard in regard to the weight or size of the domesticated Carolinas, some prefer them as small as possible, while others prefer a good big bird, some of the most extensive breeders are of the opinion that size should have nothing to do with the judging, but prizes should be given to birds the clearest and most brilliant in color, including however to the smallness in size. Others again are in favor of largeness in size, and think as time goes on for practical reasons this latter will come most into favor. One of the most successful exhibitors of this breed, Mr. Matthew Leno, gives the following description of them, which we take from Wright's "Book of Poultry."

"The Carolina or Summer Duck is a native of North America. It is certainly one of the most beautiful specimens of ornamental water-fowl, and no poultry show is complete without it, where, if in full plumage, it never fails to have plenty of admirers. It is said rarely to visit the sea-shore, and in its habits to be somewhat solitary, while also strictly monogamous. It is usually seen flying singly or in pairs. The note of the male is like the syllables 'Put, peet!' The adult drake has a red bill margined with black nearly to the tip, with a spot of black between the nostrils, and a sort of hooked nail at the extreme point. The irides of the eyes are orange red. The crown, front of the head, and pendent crest are a rich glossy bronze green, changing into violet to finish off, and beautifully marked with a line of pure white running from the upper mandible over the eye, with another band of white proceeding from behind the eye; and both mingling their long plumes with the green and violet of the crest, produce a very striking appearance. The throat and a kind of collar in front of the neck are pure white, curving up in the form of a crescent nearly to behind the eye. The cheeks and side of the upper neck are violet, the breast dark brown or chestnut tinged with violet (we should call it claret color), and marked with small white spots, which increase in size till they reach the white of the belly. Each side of the breast at the shoulder, has a large crescent of white shaded by a broader one of deep black immediately behind it. The sides of the body, under the wings, are thickly marked with fine undulating parallel lines of black, over a ground of yellowish drab, the flanks being ornamented with broad semi-circular bands or stripes of white shaded with black. The sides of the vent are light violet; the tail coverts long, of a hair like texture at the sides, and in color, of a deep black tinged with yellow. The back is dusky bronze tinged with green; scapulars blackish green and purple, tail tapering, and black glossed with green above, dusky below; wing-spot, a speculum, blue and green, legs and feet yellowish red, with strong hooked claws. About June the plumage changes to nearly the same color as the female, the drake assuming his brilliant dress in September. The head of the duck also has a small crest. Behind the eye is a bar of white, the chin and throat

also being white. The head and neck are a dark drab; breast a dusky brown marked with white spots; back and part of the wings dark glossy bronze brown. The brighter reflections of gold and green over the duck, the more she is esteemed in value. She has a wing-spot like the male but not so bright. The nests of the duck, when wild, are mostly built in the hollow of a tree, whence the name of Wood Duck frequently given to them. The nesting time is April, May, and June; the eggs are of an oval shape, and nearly resemble polished ivory in color. It is a singular fact, but well established, that when the young are hatched, the parent carries them down to the water from the tree. The Carolinas bear confinement very well; they are now kept by many fanciers, and I think nothing can be prettier on a piece of ornamental water than those splendid birds. They will, however, only breed in confinement under very favorable circumstances, and great care is then necessary to protect them from rats and other vermin." To which Mr. Wright adds:

"With regard to the Carolina Duck flying in pairs, there is some difference of opinion among naturalists, Wilson states the matter so in his 'American Ornithology'; but Audubon, who in such matters is generally preferable, expresses downright astonishment at such a statement, and assures his readers that he has actually seen hundreds in a single flock, and has known fifteen to be killed by one shot. He also gives some interesting particulars of its habits. The flight, he says, is remarkable for ease and elegance, and the bird passes through the woods with almost the facility of a pigeon, and making little or no noise from its wings. Incubation lasts twenty-five days, and is generally carried on as stated by Mr. Leno, in some hole of a tree, during which time the drake joins the other males and roams in their company over adjoining lakes. When hatched, Audubon states that,—"if the nest is placed immediately over the water, the young scramble to the mouth of the hole, launch into the air with their little wings and feet spread out and drop into their favorite element; but whenever their birth place is at some distance from it, the mother carries them to it one by one in her bill, holding them so as not to injure their tender frames. On several occasions, however, when the hole was thirty, forty, or more yards from a pool or other piece of water, I observed the mother suffered the young to fall on the grasses or dried leaves beneath the trees, and afterwards led them to the edge of the nearest pool or creek." Wilson was told by an eye witness that he had seen a Carolina Duck carry down thirteen young ones from her nest to the ground within ten minutes. She managed it by seizing one at a time with her bill, by the wing or back of the neck, and thus bearing them to the foot of the tree, from which she led them to the water."

This beautiful bird is easily domesticated, and, it is stated, soon becomes so familiar as to permit one to stroke its back with the hand. A writer in the *Field* says:—"My Wood Ducks, though pinioned are not only unconfined by wire netting, but allowed to range at large in an open park, and on an open stream, without any fence or enclosure that would prevent them wandering over the whole country, if so inclined; they are, moreover, close to an unenclosed wood of some five and thirty acres, but never wander far, and are seldom out of sight of the house. They have no shelter beyond that of trees and bushes for three years past, night or day, summer and winter, and, in spite of the frost and snow of Aberdeenshire seem as contented in the one season as in the other. In the evening they generally wander rapidly over the lawns in search of slugs, insects and worms, which they devour greedily; they also appear to find a good deal of aquatic food in the bed and banks of the stream, and, with the exception of a small supply of barley brought every evening at a certain hour by the game keeper (whose coming they watch for with extraordinary punctuality) are left to shift for themselves. The Wood Duck evidently prefers the vicinity of man, and is, I believe, one of the most easily domesticated of ducks."

Mr. Hewitt states that his experience of both Mandarin and Carolina Ducks is, that they very considerably increase in size as they become quite tame and domesticated, and that this remark applies equally to both sexes. He further states that he had in 1873 a pair of Carolinas of which the duck had invariably laid during the last seven years—a strong proof of both longevity and doing well in confinement, and adds that he never knew of his own knowledge a pair of very small birds—Mandarins or Carolinas—bred at all, until time had rendered them reconciled to their new situation.

The Apiary.

August Management of Bees.

In many localities flowers begin to fail this month and bee pasture becomes scarce. Opening hives and removing surplus honey should now be done early in the morning or on a cool day. Expose the honey as little as possible to tempt the bees. When flowers begin to fail is the time of greatest danger from robbing. The entrance to all weak colonies should be so contracted that they can defend themselves. (One ounce of prevention, in this respect, is worth a pound of cure.)

Boxes nearly filled with clover honey may be removed before buckwheat honey—which is darker—is stored with it. If any stocks should be queenless, now is a good time to supply the deficiency. Examine a few of the centre combs and if they contain eggs all is well; if not, give them a comb from another stock containing newly-laid eggs and they will soon rear a queen.

Early sown buckwheat will produce honey the last of this month, which often causes swarming. A buckwheat swarm, if properly cared for, is as productive as any. Bees are more irritable this and the succeeding month than any other period of the year. All timid or fearful apiarians should be provided with a bee hat and fumigator—the former costing only 75 cents and the latter 30 cents—which will enable them to control the bees at their pleasure, and make such examinations as may be necessary without fear. In handling great care should be taken not to jar them in any way, and prevent the putrid breath discharged from the lungs from going among them, as it has a tendency to irritate them. When once aroused by bad treatment, they are restless for some time afterwards.—*Practical Farmer.*

How to Prepare Comb Honey for Market.

Make a strong case of rough boards in shape to suit the boxes, the weight when filled not to exceed 200 lbs.

Prepare the boxes by making all as tight as possible, so that should any leakage occur, the honey will be in the package.

Pack the boxes either in the original position as filled by the bees or inverted; never on the side or end.

Make all firm within the case; when needed, drive in a rough wedge.

When this is completed, fasten securely near the top on each side of the case a strip four inches by one, projecting eight inches at each end, to serve the purpose of handling in carrying, and prevent its being turned over or otherwise roughly handled.

Mark plainly on the cover, "Honey—this is to be up with care."

We prefer to return all packages, for the following reasons:

The producer generally weighs his cap boxes when new and dry, and deducts the same as tare when selling. The buyer purchases net weight, and after cutting out the honey finds that each box weighs from eight to twelve ounces more than the tare allowed him. This difference is almost certain to cause dissatisfaction on the part of either the buyer or seller.

We take the box apart carefully, and fasten the several pieces together with a nail or cord.

When packed in a case and shipped in this manner the freight seldom exceeds two cents per box. These packages, when wanted for use, have only to be tacked together, and they are equally as good as new ones costing from ten to fifteen cents each.

We refer to the box most commonly used (and really the most profitable for the bee-keeper), made of 3 inch stuff, 14 inches long by 6 inches square, containing from 12 to 15 pounds of honey.—*Cor. American Bee Journal.*

AMERICAN VARIETIES OF THE HONEY-BEE.—It is the opinion of some American Apianians that the great differences of climate, natural tendency to variation and sport, has produced in the United States distinct varieties of the honey-bee as dissimilar as the Italian and our common bee.

The Dairy.

Condensed Milk.

An immense quantity of milk now finds its way to England from Switzerland in a condensed form. The industry is of recent growth. It has passed through a great amount of derision, but is now an accomplished fact. John Bull is no longer wholly dependent upon *aqua pumpaynus*, chalk and sheep's brains for the wherewithal to dilute his maternal tea and coffee. The infant Bulls can now derive their supplies of bone and muscle from the mountains of Switzerland; the medium through which their little carcasses are built up being supplied in a condition but little inferior to the article as fresh drawn from the cow, and vastly superior to "new milk" which has passed through the hands of the average cockney milkman.

With the development of the cheese industry in Canada will arise the question, "what is to be done with the milk during the season when the factories are not at work?"

One way out of the difficulty is to feed the milk to pigs; another to make butter; yet another to make cheese at home on a small scale. But none of these ways promise so ready a relief as does the concentrating of milk (that is, the driving off of surplus water) for transport to the large cities, or for export to the crowded cities of Europe.

The process of condensing milk is an easy one, but the apparatus required is expensive, the chief items being a large vacuum pan and condenser, air-pump, boiler and engine, piping, and machinery to make the cans to hold the product. The manufacture is carried on in the United States to a large extent, the exportation amounting to \$200,000 a year. The largest establishment is at Elgin, Ill., where 8000 gallons of milk are used daily, the yield of about 3000 cans. The cost of the entire establishment there was \$30,000, but the price of the machinery has been considerably reduced and the machinery itself improved and cheapened in its construction since its starting. These are certainly large figures, but we do not see that they are out of the reach of Canadian dairymen, especially if it should happen that low prices for cheese should rule for a few years, and they should, in a manner, be forced to try other fields.

The process of condensing is described by Prof. Arnold in the *New York Tribune*. From his article we extract the following.—The milk for condensing must be of the best quality. The condition and quality of milk which are often accepted at butter and cheese factories, and sold in cities and villages, would not answer at all for condensing. If feverish or tainted, or produced from strong-flavoured food, or where the cows drink stagnant water, or are worried by dogs or otherwise, or where it is carried warm to the factory, it is ruined for condensing. The milk must not only be perfect, but it must be carried to the factory cold and in full vessels, so that it shall not churn on the way. The conditions for the Elgin factory require that the producer shall cool his milk in summer to 58 or below within 45 minutes after milking—the night's milk to remain all night in water not above 52°, and the morning's milk not to be over 60° when it arrives at the factory. In winter the night's milk must be cooled within an hour below 50°, and the morning's milk below 55°. The night's and morning's milk must be cooled separately before mixing, and no "strippings" or cream are ever to be reserved. Though no cheese factory ought ever to receive milk inferior in quality, the fact that they often do so compels the condensing companies to pay about one-half cent per quart more than it is worth for butter or cheese.

The general course pursued with milk at the condensing factories is to receive it by measure in cans of eight gallons, or some other certain size, and cold as above stated. The cans are emptied into a receiving vessel, from which, after being inspected, it is discharged into a cold receiving tank. When all is received, which is usually done once a day, and ready for working, it is drawn into a heating tank and raised to the boiling point, and one pound of white sugar for every ten pounds of milk is mixed with it. When the sugar is thoroughly dissolved, the whole is drawn by suction into a vessel called the vacuum-pan, which should be large enough not to be more than half filled with the amount to be condensed. The vacuum-pan is a close

vessel, made now of cast or boiler iron, and is heated by steam-pipes in the lower part of it, which pass directly through the milk. The vessel is usually somewhat of a jug shape. With the top of the empty space above the milk is connected the duplex exhaust air-pump which is rapidly driven by a powerful engine, giving 10 to 12 horse power for each thousand gallons of milk condensed. The action of the pump exhausts the top of the pan of air, steam and vapor as fast as it forms, and reduces the pressure in the pan so much that the milk will boil and foam rapidly at 140°. Between the pump and pan is placed a condenser, which by means of jets of cold water, condenses the steam and vapor and aids efficiently in producing a vacuum over the milk and thereby hastening the evaporation. Water to the amount of 75 per cent of the weight of the milk is evaporated in from three to five hours, when the mass is reduced to the consistency of half-grained honey. The pump is then stopped and the mass raised to a boiling heat, and then drawn out into large cans, which are rotated in a pool of cold water till it becomes cool, when, by an ingenious machine, it is run into tin boxes holding just a pound each and the boxes soldered air-tight. It is then ready for market, and will keep an indefinite length of time. In some cases the milk is condensed without the addition of sugar. If it is sealed air-tight while boiling, hot, it will keep indefinitely, like canned fruit, but will soon spoil upon being opened. When mixed with sugar at the rate named it will keep well a long time after the cans are opened.

Another course pursued by some is to condense only the skim milk, canning it hot and without sugar. Of course it would not keep when opened, unless sugar was added, but the product is palatable and wholesome and is rich in nutrition, and answers most of the purposes for which milk is used, by simply adding water enough to liquify it. If a market could be worked up for it in this shape, it seems to me it would be the most appropriate use that could be made of the large amount of milk that must be skimmed to furnish the necessary supply of butter. It would certainly be a much better use than to make it into any form of skim cheese, which is becoming such a drug in the markets, and toward which there seems to be a growing hostility.

It is an essential point in the successful condensation of milk, that, while drying, the heated milk should be relieved to a considerable extent of atmospheric pressure, in order that evaporation should go on rapidly, and at a low temperature, otherwise the process would be too slow to be practicable, and the milk would adhere and burn on the sides of the evaporating vessel, and the tubes passing through it, occasioning loss, bad-flavor, and much labor to remove the adhering milk. In the mode of condensing I have described, the pressure is removed by connecting the exhaust pump with the vacuum-pan. There is another mode of doing this which I have not had the fortune to see in operation, which is said to be cheaper than the pump and pan. It is to remove pressure, and at the same time vapor, by rapidly rotating a fan above the hot milk, driving the air and vapor away by a forced current, on the same principle that a blast is created in a furnace. The pump and vacuum-pan are, however, most in use.

The great burden of expense attending condensed milk lies in canning and setting, rather than in removing the water from it. In factories working 5,000 gallons or above per day, the requisite amount of water can be evaporated for one cent per gallon, while the condensed gallon, counting in the sugar, will fill three pound cans which will cost two and a half cents each, or seven and a half for the gallon of crude milk. The additional expenses of packing, boxing, transporting and selling, bring the condensed article so high as to find a serious competitor in crude milk.

Calves for the Dairy.

In breeding cattle for the dairy a different system should be followed than when the stock is designed for the shambles. It is a great mistake to let calves intended for cows suck their mothers, or to feed them to such an extent that they are made good veals—calves thus bred do not make good cows for the reason that there is an undue development of fat and muscle, and a consequent want of development of lacteal qualities. Any milking breed of cattle bred in this way will deteriorate. The proof of this statement, is the history of the Short-horns, which breed having been bred on the stuffing principle, contains hundreds of cows which do not give milk enough to raise their own

offspring. Calves which suck are very likely to have thick, heavy necks, heavy shoulders, coarse bone and muscles.

The most successful dairy breeder with whom I am acquainted never allows his calves to suck at all. My practice is to let them suck until a week old. I think this is an advantage to the cow, reducing the inflammation in the bag, and also preventing nervous excitement on the part of the mother at a time when such excitement might be very injurious. After the calf is a week old, it may be removed from the mother's sight without any injury to the dam, and meanwhile its digestive organs have been exercised naturally and the young animal is better fitted to be fed. It is, however, a fact that a young calf will grow faster and look nicer when sucking a very small amount of milk than when fed three times the quantity out of a pail. The reason of this is because, when sucking, the saliva is abundantly secreted and mixed with the milk, which promotes digestion and assimilation, whereas, when the milk is drunk, there is no secretion of saliva. It will not pay, however, for the dairyman to raise calves in this way, unless the milk of a cow could be divided among several calves, each one sucking its portion in its turn.

To have a cow as profitable as possible, in the flow of her milk, she should be kept entirely separate from her calf. Calves can be raised on skim milk, and will do well. If the milk is scarce, it can be mixed with a tea made by boiling bright clean hay. A calf can be raised on four quarts of milk—two at night and two in the morning—with the addition of hay tea. When three weeks old they will begin to eat a little hay or grass, and when four weeks old a little oat or linseed meal. If kept growing all the year round, calves raised even on such scanty rations will make good animals. Many a fine Jersey from superior stock has been spoiled in the rearing, and instead of making a good cow with a fine udder and milking developments, has made a meaty, coarse, useless female steer.

Calves should be halter-broke when young, and made so tame that they can be approached anywhere. Animals thus handled are never so liable to accident as when allowed to grow up wild and ungovernable, and besides, they are so much better to manage that this fact alone will compensate for all the trouble in breaking them. Often more time is spent in trying to force an unbroken cow or bull into a car or stable than to halter-break a dozen calves. Calves should never be handled about the head, unless to put the halter on them, or touched on their horns, or have their ears pulled, as such kind of petting is almost certain to make them ugly, and, when they grow up, dangerous. No animal is more grateful for a little extra feed in the winter than the calf, and none will show its effects more. The farmer who raises a few roots for his calves and forgets not a little meal will surely enjoy a lively frolic and a run when in the spring time he opens the gate and leads his pets into the green fields.—*New York Tribune*.

HOLSTEINS AS MILKERS.—G. S. Miller, a dairyman in the State of New York, has been able to report some very large yields of milk from his Holsteins. His latest report gives 70 2/7 lbs. of milk per day for a week from Crown Princess, and an average of 46 1/3 lbs. per day for a week from four Holstein cows. One cow when four years old had produced three calves and 14,500 lbs. of milk.

DESIRABLE POINTS IN JERSEY COWS.—Col. George L. Waring names the points he considers most desirable in Jersey cows as follows: Good constitution; dark mirrors, combining width, height and maturity; evenly developed large udders, with a good width and depth behind, and running well forward under the belly; large and evenly placed teats; full and knotted milk veins; heavy hind-quarters and light fore-quarters; thin necks; yellow-lined ears, and small horns, free from much white. Coloring of hair and size has been disregarded, and even form has been held secondary.

TO PREVENT A COW FROM SUCKING HERSELF.—A correspondent sends to the *Local New Yorker* what that journal calls "an excellent method, probably the best," to prevent cows from sucking themselves:—Take a half-inch board, five or six inches square; cut a hole with an inch and a half or inch and three-quarter augers close to the edge that part of it is cut away; apply this to the cow's nose, using the slit to hold it on, and the work is done. No cow thus provided will attempt to suck herself or any other cow, and Mr. Smith assures us it does not interfere with her in pasture.

DROP AFTER CALVING.—In the *Norfolk News* of April 9, 1872, there appeared a letter from Chas. Crawshaw, Esq., of Hingham, Norfolk, describing his successful treatment of two cows with stimulants. He had previously lost five Alderney cows successively from the same kind of fever, but under a different method of treatment, that is, bleeding, &c. The "two cows (one an Alderney and the other a Norfolk polled cow) were attacked with milk fever 12 hours after calving." Acting upon the advice of Mr. Woods, of Merton, he "had recourse to stimulants, the effects of which were perfectly marvellous." He "gave each cow half a pint of brandy with one quart of strong ale every four hours for two days, and after the fourth dose both cows rose from the ground and began to chew their cud, and in about three days rallied and recovered their milk. Both were in 12 days milked as if nothing had ailed them."

The Agricultural matter published in the WEEKLY GLOBE is entirely different from that which appears in THE CANADA FARMER.

The Canada Farmer

TORONTO, CANADA, AUGUST 15, 1875.

Work for August—September.

In the greater part of Canada the cereals, with the exception of corn, will have been gathered before this issue reaches our readers. With the exception of winter-wheat, abundance is the rule, and, even with the winter-wheat, the yield is greater than could have been anticipated after such a terrible winter as it passed through. The upward tendency of the price of wheat, brought on by disastrous floods in France and England at harvest time, will go far to reconcile farmers to a shortness in its yield. From all information at our command, Canada is better off as respects her harvest, both as regards quantity and quality of the yield, than any other section of the continent.

Corn is looking well generally, except on undrained soils where it presents a sickly appearance. A good deal may be done in the way of letting off surface water after showers, to remedy this state of affairs. Some good hot weather, such as we may expect to have, is what is needed to ripen the crop properly.

Where fall wheat is to follow barley, peas or oats, the stubble should be gone over with a harrow, and then lightly ploughed, so as to give a start to the seeds of weeds and to the shed grain that may be lying in the ground. As soon as the weeds appear, the ground should be well-manured, ploughed, harrowed and rolled. The wheat should then be drilled in. A successful and practical farmer tells us that it is better not to harrow in the fall, but to leave it just as the drill leaves it. In selecting variety of winter wheat, it is false economy to choose a variety that is known to be running out, merely because the newer variety is a few cents a bushel more expensive.

If using seed of your own growing, select the heaviest and plumpest grains. This may be readily done by throwing the grain with a shovel from one side of the barn to the other. The best grains will roll the farthest.

From the first to the fifth of September is considered the best time to get in the wheat in the neighborhood of Toronto. It is best not to plough so early that the land has to lie over, but to bring in the ploughing so that the seed-bed is in a nice mellow condition at the time when the seed is to be sown. All wheat does best on a strong, limestone soil, notwithstanding the notion of some book-farmers that the red varieties will succeed better on gravelly soils.

To prevent smut, seed grain should be soaked in strong pickle made by dissolving a peck of strong coarse salt in 20 gallons of water, to which add one pound of blue vitriol. Remove all the grains which float on the surface. Stir the seed and remove it from the brine. Let it dry by lying on the barn floor, or, which is better, dust it with finely-slacked lime.

As we write, barley maintains a remunerative price, but the trade in that grain is in so few hands that there is no knowing when a combination of buyers may agree to lower prices. Should the bottom fall out of the barley market, the grain may be used to good effect in fattening swine and in that shape profit may be realized from it even when the selling price of the grain is below the cost of production.

Rye, both for forage and a crop, should be prepared in the same manner as wheat, and should be got in about the 25th of September—not earlier, or it will suffer during the winter. Rye will succeed on poor, gravelly soil where wheat is not profitable.

Rats and mice should be exterminated from the granaries before the new grain is stored. Good cats are the best rat-traps that we know of. Open up all the runways of the vermin so that the cats may follow them. Granaries which are not cleanly kept are liable to the depredations of the weevil which eats the flour out of the grain and

leaves only the shell. Scald the woodwork with hot water previous to storing the new grain. Grain that is infested with weevils should be put through a fanning mill to separate the weevils from the grain.

Potatoes should be dug as soon as they are ripe, or a warm wet spell may rot or set them growing again. It is well to put them on the floor of a barn before taking them to the pit or root-house; or they may be kept in the field, in small heaps covered with the vines and a few inches of soil for a month before taking to their final destination. Without this precaution, they will sweat and rot. In digging, only leave them on the surface exposed long enough to become dry. If you have a chance to see the working of a potato-digger, go and see it, for that is one of the implements for which there is urgent need. We have not yet seen one that was at once cheap, simple and workable in all soils. Do not store potatoes if you can sell them at a remunerative price now.

Those farmers who have not got an ice-house should set about providing themselves with one.

The wet weather we have had may cause an extension of foot-rot among sheep, a disease which is always more prevalent in wet than in dry weather. The sheep should be frequently examined and any animals showing signs of foot-rot should be separated from the rest of the flock, as the disease is very infectious. An infected sheep should be laid on its back, and the diseased portion of the hoof should be cut away without drawing blood, if it can be avoided. The cut surface should then be dressed with a salve made by rubbing together thoroughly a mixture of equal parts by weight of lard and finely-pulverized blue vitriol. In about a week, dress again, but no cutting should be necessary. In a very bad case a third dressing will be wanted, but, if well done, one application will be sufficient.

Old sheep and inferior ones should be separated from the flock and put up to fatten for market. If early lambs are to be bred, the ewes must be put to the ram about the end of September.

Flesh can be put on stock at this time of the year at half of its cost in the winter. Very little, comparatively, is used up in hot weather in furnishing animal heat, to which purpose a large part of the winter's feed is devoted. The young animals should be kept growing and should have shelter from cold showers. Old stock should be fed up and sold off.

In the orchard, budding may still be done as long as the bark parts freely from the wood where the cut is made for the insertion of the bud. Grapes may be layered by making a groove in the soil, which should previously be well prepared, and laying therein a shoot of the current year's growth pinned to the ground with sticks and partly covered.

See that no unnecessary damage is done to the fruit trees on gathering the crop. Do not let the help or the young folks break off spurs or branches or rub off the bark. The eye of the owner will be wanted all over the orchard.

Strawberry beds should be freed from weeds, and new beds can be set out.

The ploughing and manuring for intended new orchards can be done now.

Old canes should be removed from raspberries, and the new ones tied up to stakes or wires. Suckers should be removed from currant bushes.

Save a few ears of the best corn from the garden patch to be used for seed. Commence earthing up celery plants as the nights are cool. Take care that no earth is pushed inside the plants.

Cellars should be thoroughly overhauled and purified. Many a precious life has been lost from miasma arising from decaying vegetables or other refuse which was "out of sight and out of mind" in the bottom of the house. Many houses, the very perfection of neatness and order, are pervaded with a charnel-house-like odor arising from a foul cellar that is as fatal to the health of its occupants as the breath of a pestilential swamp. Open drains are another source of disease and death, to say nothing of their repulsiveness, but they are less deadly than a neglected cellar, for there is an escape for its odors.

Covered drains want occasional flushing or they are even more deadly than open drains. Covered drains should have a sharp fall and be provided with a trap which will

prevent the gas generated therein from being drawn up into the house.

The Tree-Peddler—Why Not Take the Field Against Him?

It will be from accident only if we neglect any opportunity of putting a nail in the coffin of that unmitigated nuisance, the wandering tree-peddler. He is around this year in greater force, and, if possible, is more brazen and pertinacious, than ever. His "novelties" have more taking titles, his tongue is more glib, and his skin is thicker than ever. Hard times have had their effect on him, but only to increase him in numbers and to render each individual "him" a greater bore than he was before.

If all the cheating he did were by selling to his customers common and well-known varieties under high-sounding names, with impossible characteristics and at exorbitant prices, he would not be an unmixed evil—for, to do the fellow justice, he is often a splendid salesman, and he can sell fruit trees in places which without him would be treeless. But in ravenousness he will surpass the father of hogs. A little matter of three or four hundred per cent. profit which amount he would often realize, even if he had bought his stock at retail price—will not satisfy him. He is by nature a cheat, and cheat he will. He sells to his victims articles which he knows will not grow. He knows that he can only go through a section of country once. He seems to take a fiendish joy in doing his clients in the brownest of manners. Has he blarneyed or bullied his victim into buying his "new variety of Russian apple?" He will sell him not for 25 cents, its price under its right name, but for a dollar or two—a Tetofski or Duchess of Oldenburg readily obtainable anywhere; or in sheer diabolism will put off on him an unadulterated crab.

It is just the same with his other staples. Were he only to palm off cheap and hardy varieties of strawberries at high prices, he would only be robbing his customers of a part of their money. But, no! He must cheat them in the article as well as in its price. So he resurrects an exploded humbug like the "Mexican Ever-Bearing Strawberry" and re-christens it as the "Alpine Bush Strawberry," or by some other high-sounding name; and it goes off like hot cakes. And so on, *ad nauseam*.

We will do CANADA FARMER readers the justice to suppose that they do not furnish many victims to the irrepressible tree-peddler, except in that they are sometimes hurried nearly to death by the fellow's talk. It is the class of farmers who do not read their professional journals who are the almost pre-ordained prey of every shallow swindler that passes along. Hence, if we were to go on denouncing for a month, we should only be closing a door through which the tree-peddler does not care to enter. So we will point our remarks to a quarter in which it is possible they may do some good.

Great blame is to be attached to the proprietors of the nursery establishments where the peddlers procure their stock in trade. At some establishments, it is the rule to destroy all the inferior stock to which the firm would not care to have their name attached; and at others such stock is sold out at low prices as admittedly second-class quality. But some nurserymen—and reputable ones, too—sell their refuse stock with a full knowledge that it will be put off upon the public under false pretences; generally with the proviso that no sales shall be made in their own immediate neighborhood. And these same nurserymen will pull long faces over the injury done to the trade by the rascally crew whom they furnish with the means of defrauding the public!

It is by inducing nurserymen who sell their refuse stock in bulk to cease the practice, that an effective blow can be struck at the tree-peddling nuisance; for, as before said, the non-reading public, who form the mass of the victims, cannot be reached. And, perhaps, even a more deadly blow could be dealt by high-class nurseries adopting the trade which the peddling fraternity find so remunerative. Let them send out agents, the best salesmen they can get and armed with proper credentials, to offer good stock at reasonable prices. We are mistaken if the adventurous tree-peddling crew would not find the wind taken out of their sails. By themselves thus taking the field, nurserymen would be fulfilling a four-fold object. They would be doing good

missionary work, by inducing a love of the beautiful; they would relieve the profession from a scandal; save thousands of dollars to a class of people who can ill afford to be robbed of them; and at the same time can be breeding up a numerous class of customers whose wants will grow by what they feed upon.

A Young Missourian after Mr. Julyan.

Mr. Julyan's sensible article in our June number, on "The Education of Farmers' Sons," was copied among other papers by the *Missouri Farmer*. In reply to Mr. Julyan, that journal prints a communication from one who describes himself as "a country lad," "a farmer's son," "yet in the midst of my 'teens." Our country lad, whose letter is sufficient evidence that there is one farmer's son whose education has not been neglected, does not altogether agree with Mr. Julyan's idea that farmers' sons intended for farmers "ought to commence their lessons in ploughing etc., etc., as soon as they are able to guide the plough."

Clearly under a misapprehension of Mr. Julyan's meaning, the Missouri boy says: "The 'common country lad' who commences, and continues incessantly, his lessons at the plough from the time he is able to guide it until he is called upon to mount the stage of action and act out his allotted portion in 'life's eventful drama, bears the strongest analogy to the plough he has been taught to guide so dexterously. He acts as a part of the machinery which cultivates the soil. He, without an education, is at once an animate and inanimate being, at the same time alive and dead—alive to the events transpiring around him, but shamefully dead to the causes which occasion these changes. But the gentleman (Mr. Julyan) would have the 'country lad' to exercise and cultivate his mental faculties of the long winter evenings. Exercise them. How? He must first be, to some extent, advanced in his education before this kind of exercise will be at all beneficial. In order that he at first make any advancement, he must have a teacher; and where is the parent, who after a hard day's labor, will take the proper care to give the instruction so much needed, or where is the boy of ten or twelve, who, after working hard all day in the cold rain, wind or snow, will take that interest in his studies which is calculated to develop him into a rare specimen of noble manhood."

All of which is sensible enough, especially as coming from a youngster. But it is apparently written on the supposition that Mr. Julyan would not have farmers' sons taught anything but plough holding, etc., while they are young, which is a long way from his true position. Mr. Julyan's meaning clearly was that the technical education should commence and proceed, *pari passu*, with the commercial education which is instilled (or knocked, according to the capacity of the pupil and the manner of the teacher) into the youthful intellect in childhood's happy hours. With which position we presume the young Missourian will not differ.

The Amalgamation of the Granges.

EDITOR CANADA FARMER:—Your remarks on the proposition of the Secretary of one of the subordinate Canadian Granges to amalgamate the Dominion and National Granges, strike me as sound. I cannot see any reason why we should disturb the existing state of things. In my Grange, I know that a proposition to unite would be voted down summarily—in fact no member would dream of submitting it. It appears to me that with us it would be a case of "Heads, we lose; tails, you win,"—all the advantages being on the side of the National Grange and all the paying being done by Canadian patrons. I hope the proposer of the amalgamation is convinced, from the telling arguments you brought against it, that there is no hope of its being carried just yet.

GRANGER.

Lambton Co., Ont.

EDITOR CANADA FARMER:—I see by your last issue notice taken of an article in the *Farmers' Friend*, advocating a union between the National Grange and the Dominion Grange. Such a union I hope is far in the future. The writer, if a Canadian, surely could not understand what he was asking for. Our interests are adverse and in direct opposition to each other. What is adversity to us,

is prosperity to them. How then could we work in unison with each other?

The Grange of the United States was organized for the protection of the farmers there in all their interests, which are numerous; amongst other things the importation of foreign grains, wool, lumber, horses and cattle. For every bushel of wheat that goes into the United States, we have to lose 25 cents; barley, 15 cents; potatoes, 13 cents; oats, peas, corn and roots, 10 cents; butter, 4 cents per lb; horses and cattle, 20 per cent. and so on. Were all these duties taken off, it would be so much less per bushel from the American farmer, and so much into the Canadian farmers' pockets. They are not only not satisfied with that much protection but asked Congress last year to make the duty on potatoes 35 cents per bushel instead of 15 cents, but they did not succeed in getting it through.

With those facts before us, how could we ever think of joining our Granges, if asked to do so. We have enough to do at home. Let us consider well what is best to do for our own protection and the general good of the country. Farm produce comes into this country free of duty from the States, which places them on an equal footing with us in our markets, and also gets our good money instead of their greenbacks, which are not worth so much on the dollar by 14 cents, which is quite a profit of itself.

I am a free trade man myself, believe in buying where we like, and selling where we like, and we fear no competition with our brothers over the line, as we are better farmers in general and have a fine country to farm in. If I cannot get free trade, I want the next best thing to free trade, and that is, equal rights with our neighbors. What is good for the goose cannot be bad for the gander.

I think this is a subject the Grangers ought to take up, and discuss in all its bearings, as it is a subject that concerns them greatly to the amount of from \$70 to \$100 for every 100 acres of cleared land annually, which is quite an item at the end of ten years.

I hope brother Fox and others will give this matter their serious consideration. Let us discuss this subject at our meeting, rather than the question of union by which we have nothing to gain, as the CANADA FARMER justly remarks, but the pass-word, which will make little difference to us as a Grange, and will be of value only to those who travel.

J. S. T.,

Master, Division Grange No. 8.

The Ontario School of Agriculture Farm.

On August 5th, a party consisting of Mr. Hugh Miller, Agricultural Chemist, Mr. Wm. Rennie, Seedsman, both of Toronto, Mr. Purvis, of Arnprior, Co. Renfrew, and Mr. Avern Parloe, of the CANADA FARMER, went over the School of Agriculture at Guelph and the farm attached thereto. The institution, as respects the farm, is now under the supervision of James Laidlaw, Esq., under whom is the foreman Mr. McNair, formerly of Richmond Hill. The internal economy of the School is under the charge of Prof. Wm. Johnston, the Rector.

The visitors found the crops on the farm to be looking well, notwithstanding the long drouth which had only just been broken. The areas under the several crops were:—Spring wheat, 11 acres; barley, 56 acres; oats, 46 acres; turnips, 23 acres; rape, 16 acres; potatoes, carrots and mangolds, 6 acres; summer fallow, 36 acres; 10 acres newly-seeded grass; 50 acres, meadow. The crop of hay was very light, a consequence of the drouth. The barley was in shock at the time of the visit. It is an extraordinarily good crop, going considerably over forty bushels to the acre. A piece of newly-drained land, last year a worthless boghole, had upon it at least fifty bushels to the acre, and has paid for its draining in one year.

The rape crop was looking exceedingly well. It was sown in drills; and thus has several advantages over the ordinary method of sowing broadcast, as the crop can be got at and cleaned when young, and the sheep, when turned upon it, walk up and down the rows, not treading the crop down as they do when it is broadcast.

Among the oats were somewhat less than an acre of Hulless oats. They were sown side by side with Nova Scotia Whites. The Hulless oats were looking very inferior to the ordinary variety, being a few days more advanced, but in other respects a worse crop. The School authorities have done well in giving the oats a trial. When the crop comes

to be harvested, we should like to have a record of their product and weight per bushel, as from this quarter the figures will be above suspicion.

Several varieties of Swedo turnips are being tested side by side, a stated number of rows having been sown after the application of 200 lbs. plaster, 200 lime, and 150 lbs. superphosphate per acre. At the time of our inspection, they were about as follows in order of merit:—Rennie's Prize, Sharpe's Prize, Skirving's Improved, Sutton's Champion, Marshall's Improved. All of them were looking well, the farm being well suited to root-crops. Of course, the product of these varieties will be recorded and the results published, for in this direction lies one of the principal uses of the institution.

Of peas, the varieties in cultivation were Prince Albert and Golden Drop, both of them good crops, but the former looking the best.

The stock on the farm consists of about 210 Cotswolds, Leicesters and Lincoln, which were in first class order; the Short-horn bull, Cranberry Chief, dark red, three years old, fine looking animal; Cambridge 10th, a three-year-old heifer, red, showing breed at every point; Martha, a beautiful roan; 5th Louan of Brant, which, at the date of our visit, had been sent to be put to a bull of Hon. D. Christie; three or four nearly pure bred cattle, which would pass for pure-bred to the ordinary eye; and a few other common animals.

During harvest time the students are working from 7 A. M. till noon, and from 1.30 to 6.30. At the time of our visit, the weather was showery and harvesting had been interrupted. The students were busy at various tasks, such as hoeing turnips, grubbing up dead apple-trees; road-making, whitewashing, fence-making, gardening, etc. Before harvest, they used to work from 7 A. M. till noon, and the rest of the day was devoted to studies.

The farm, as a whole, has a "new" look that would disconcert any one going there expecting to satisfy preconceived notions of what the School of Agriculture of so important a Province as Ontario should be. But an institution of this kind, for which there is no model to take pattern from, either on this continent or the others, cannot be made in a day. Our School of Agriculture is but the germ from which will develop an institution proportioned to our wants. The grand scheme is yet in its infancy, and, while it is developing, Canadian farmers whose sons are learning their profession at Guelph may rest assured that the youths are not being untrained for the business they are intended to follow.

Canada is seeking the solution of the great question of Agricultural Education from below, upwards the United States from above, downwards. In our case a failure (which is not to be feared, however) would merely result, as far as the pupils are concerned, in the making of practical, instead of the desired scientific farmers. The United States system has already failed in every case where the attempt has been made to commence at the top. And the failure has been not only of the institutions but of the students; for it can not be contended that a young man who goes to a school that professes to make agriculture its leading feature, and who leaves that school disqualified for and disgusted with agriculture, is anything but a failure.

AN ARTICLE IN TENSOR COMPLEMENTARY to Canadian Patrons appears in the *Farmers' Friend* of Pennsylvania. In the course of its remarks our contemporary says, founding its observation probably on the letter of Secretary Fox, of East Whitley Grange, mentioned in our last number:—"There appears to be a desire among many of the Patrons of Canada to unite with and become subject to the jurisdiction of our National Grange." We can assure the *Farmers' Friend* that there is no such desire among "many of the Patrons of Canada;" and that, if there were such desire, it would show that there are "many Patrons of Canada" who are not very wise. We showed, in our last issue, that the amalgamation would cost Canadian Patrons some \$20,000 down and \$15,000 annually; and in return they would get the sentimental gratification of belonging to the National Grange, together with the pass-words and privileges that the same implies. As it is, the Grange in Canada is doing well, and has good prospects. To peril itself by submission to the National Grange, would be an absurdity which is not likely to come to pass.

The Ferns of the County of York.

EDITOR CANADA FARMER:—As some notices of ferns have appeared in your periodical, I submit to you a list of species found in the County of York. The range of habitat and variation, and localities mentioned, are the result of personal observation during a number of years. As well as the giving of some localities, and the general distribution in the county, I will give the nearest locality to Toronto where each species will be found.

Adiantum pedatum, L.—One of our most common and most beautiful ferns, very constant in its form; its habitat is the bush, but it has a range from open cedar swamps to high pine ridges. Toronto, St. James' Cemetery.

Pteris aquilina, L. Common everywhere, very constant in its form; has a range of habitat from closely shaded damp woods to high, dry, sandy fields. Toronto, St. James' Cemetery.

Asplenium angustifolium, Michx. Very rare; found in Lewis' woods, rear of lot 35, 5th concession, Markham. I have lately seen fine specimens gathered at Cobocok by Dr. Cowdry of Tororo.

Asplenium thelypteroides, Michx. Not common, found sparingly in ravines opening into Wilcox Lake, Whitechurch; Taylor's wood, upper Don; ravines along Humber. Toronto, Helliwell's bush and field south, growing with *Aspidium thelypteris*.

Asplenium filixfoemina, Bernh.—A large and beautiful fern, exceedingly variable; its habitat is from dense, hardwood bush to partially shaded openings, common everywhere. Toronto, St. James' Cemetery.

Phegopteris hexagonoptera, Fee.—Rare; found in dense, underbrush thickets, half mile north-east of Rosedale, Yorkville.

Phegopteris dryopteris, Fee.—A small and delicate fern, with the aspect of an *Adiantum*: abundant in woods everywhere. Toronto, St. James' Cemetery.

Aspidium thelypteris, Swartz.—Very common in swamps and marshes throughout the county. Toronto, Alnus swamp; gaol farm; St. James' Cemetery.

Aspidium noveboracense, Swartz.—Not common, resembles the last, and found in similar situations. Mud Lake, 9th concession, Whitechurch; marshes upper Don.

Aspidium spinulosum, Swartz.—Perhaps the most abundant and most variable of our ferns; presenting among many more the following described forms—Var. *intermedium*; Var. *dilatatum*; Var. *Boottii*. In woods everywhere. Toronto, St. James' Cemetery.

Aspidium cristatum, Swartz.—Common; growing in damp shaded situations; somewhat variable, passing through Var. *clintonianum*, into forms resembling *A. Goldianum*, but the fronds of all surviving the winter.

Aspidium marginale, Swartz. Common in woods and openings throughout the county, fronds surviving the winter; a variety is found which is sometimes mistaken for *A. Filix-mas*. Toronto, St. James' Cemetery.

Aspidium acrostichoides, Swartz. Very common throughout the county, in woods, especially wooded hillsides; fronds evergreen, rather constant in its form, though var. *incisum* is sometimes met with. Toronto St. James' Cemetery.

(Continued next month.)

"TODD'S YOUNG FARMERS' MANUAL" is a good book, a practical book, one containing matter to which a man need not be ashamed of putting his name. At least, so appears to think Mr. Mapes, who appropriated therefrom an article, "How to Plough," and sold it to the *Ohio Farmer* as his own production. From that journal it was copied (properly credited both to the *Ohio Farmer* and to Mr. Mapes) into the May number of CANADA FARMER. There it caught the eye of Mr. Sereno Edwards Todd, agricultural editor of the *New York Herald*, the author of the work. That gentleman, no doubt, feels flattered, both by the implied compliment paid him by Mr. Mapes in appropriating his thunder, and by the fact that the CANADA FARMER complimented his article as "concise and practical," without knowing that he was the author of it. But we can excuse Mr. Todd for feeling somewhat angry about the matter, as it is not the first time, he says, that Mr. Mapes has reproduced articles of which he (Mr. Todd) was the author.

SOME FARMERS WILL SMILE at the announcement that a Pennsylvania man has started the manufacture of wooden shoes for the use of farmers and others compelled to be outdoors, but the idea is not so ludicrous as it may appear at first sight. The maker sent a pair of them, by mail, to the *Practical Farmer*, the editor of which journal seems to be delighted with them. "Wooden shoes," he says, "are well adapted for the use of farmers about the barnyards, or driving in the cows in the morning when the grass is wet; also, women in the garden, milking-yard, scrubbing, or at the wash-tub. Not that we suppose that they will supersede leather shoes where persons do much walking, but to be used as a person does a pair of overalls or common clothing, thus saving their better ones and having dry feet. Parties who are now using them inform us they give entire satisfaction, easily slipped on and off, and the first feeling of awkwardness is soon overcome."

SOME YEARS AGO, a great excitement was raised upon Chufas or earth almonds which were to revolutionize everything and to become a great staple. They did not do it, however, and we judge from what an Iowa correspondent of the *New York Tribune* says, that it was lucky no more people were bitten by them. "Some ten years ago," he says, "I unluckily saw highly recommended a small root called Chufas, or earth almond. I sent for seed, planted well, and cultivated thoroughly, and in due time harvested a bountiful crop. From present appearances, our children's children will never lack a plentiful supply of these miserable edibles. Burdock and beggar-lice form a slight comparison with these everlasting. I would like to know if there is any way to destroy them without sifting the whole garden through a fine sieve. Perhaps this will bring the man who recommended them out to defend their bad habits and recommend their good ones. If he should appear, I think he will hear 'Hail Columbia' sang from more States than one."

THE NEW POTATO DISEASE in England seems to have been a false alarm, in that the disease is neither a new nor particularly formidable one. Our readers will notice what our correspondent "Saravak" says, elsewhere in this issue, of the disease being noticed at Owen Sound. With respect to the cases at the Chiswick gardens, where it was first noticed in England, the editor of the *Agricultural Gazette* says, after a personal examination of the disease on the spot:—We have never seen more healthy or vigorous growth than is displayed over the large area occupied by the potato crop here. It is only in the case of three or four rows, generally of imported sorts, that the shrunk, half-developed, and sometimes wholly withered plants betray the mischief that is at work. That such mischief was gradually developing in these few cases has been known for many weeks to the officers of the garden here; but so far as a rough examination goes, it is apparently nothing new. One has seen potatoes similarly affected elsewhere, and long ago, and the dying plants look very like they used to look forty years ago, when the curl was a common disease among them. The old cut sets were not in every instance rotten. In some cases they were perfectly sound, but a corroded surface and ultimately shrivelled condition of the stems between the set and the upper surface root fibres seemed to betray the cause of the failure. Since the rain, the upper root fibres are so developing and feeding the plant that it appears to be on its way to recovery.

"HAY FEVER," not the kind that a farmer is supposed to have when a flood walks off with his crop, but the form of summer catarrh with which some persons are afflicted as regularly as the haying season comes round, is a most distressing complaint. Hitherto there has been no remedy for it but to go far away from the presence of hay, just as Mr. Beecher goes every year to the Peekskill Mountains, and as some English gentlemen that suffer from it, bury themselves in the heart of London. A peculiar feature of the disease is that few families—we have only known of one—are subject to it, and yet, if the disease arises from the presence of spores thrown off by the hay, farmers should be the chief sufferers. Prof. Helmholtz, of Germany, himself a sufferer from hay fever for twenty years, observed that the malady was invariably characterized by the presence of very minute infusoria, not unlike the queer little creatures that we sometimes see in rainwater butts, only very much smaller. These he found sticking most

tenaciously in the lower cavities and recesses of the nose, and he noticed that at a lower temperature they were very sluggish and inactive, but woked up as it were, when they were warmed. It was found that infusoria might be poisoned by quinine, and of this fact Helmholtz availed himself. The learned professor made a very weak solution of sulphate of quinine, and lying flat on his back with his head down, he poured a little of it into each nostril, and found instant relief. By occasionally repeating the operation he completely routed the enemy, who, in spite of all his efforts to prevent them, had for so many years thus audaciously taken up their summer quarters not merely under his very nose, but in it. By this mean she could, he found, enjoy entire immunity.

IN GREAT BRITAIN, the loss every year from the spoiling of the hay by rain, and the damage by spontaneous combustion caused by the stacking of the grass in too wet a condition in anticipation of rain, amount to enormous sums. With the view of preventing this loss, reaching some years to from ten to twenty millions of pounds sterling—this year probably to the larger sum—an implement has been invented which is to dry the hay or the straw as it goes into the stack, the crop being passed through as through a threshing machine. The wet hay or grain is exposed to the action of a continuous stream of hot air, and at the same time is tossed lightly, as by the common hay-fork, so as not to bruise or hurt the tender fibres. A portable stove with a blast fan forces heated air beneath a long funnel which is itself subjected to oscillation by an ingenious contrivance, and the hay, thrown in at one end from the cart, is tossed along continuously by forks, resembling exactly in their action the movements of the human arm and elbow joints, and comes out at the other end dry and fit for stacking. A small portable steam-engine, or a water-wheel, keeps the apparatus going, so that it can be taken from field to field, or ho fixed permanently near the hay-sheds. The process is not intended to supersede the sun and winds, but to aid when occasion requires in the final and most important stage of hay-drying. Foul and sodden hay dried in this way, and mixed with a small proportion of fragrant herbago comes out raised to a very respectable quality and much increased in market value. The inventor's name is Gibbs, and his machine is the product of fifteen years of patient study and of many thousands of pounds of money spent in experiments. One of the machines will be shown at the meeting of the Highland and Agricultural Society.

OF "WAYS THAT ARE DARK and tricks that are" anything but vain, so far as the unfortunate victim is concerned, the *New York Tribune* gives a notable instance, the publication of which may save some farmer's pocket a drain and his temper a trial:—"I was in the field, two years ago," says the narrator, "just after haying, when a man drove up and wished to know if I would like to buy a hay-fork. I said, 'No; the haying season is over.' Well, his fork was just as good for getting in grain as hay. But I had very little grain, and besides, my barn was not conveniently arranged for using a hay-fork. He would like to show me the fork and take a look at my barn. The fork was a queer looking thing, the shape of an old-fashioned sugar tong. 'Why, my dear Sir, your barn is a splendid one for using a horse-fork in; just let me put one of mine up.' No; I would rather wait until another year. 'Now I'll tell you what I will do. I will hang a fork and wait for you to try it next year, and if you do not like it, you need not keep it. The price, including ropes, is \$23.' 'Very well, you can put one up on your own responsibility.' So he put it up. The next year I used it to unload a few tons of hay, and then hoisted it into the peak of the barn, there to stay until the inventor should come. In a few days my hay-mow began to smoke like a chimney, and I was compelled to throw most of it out again. After haying the gentleman came. 'How do you like the hay-fork?' Don't like it, not worth a cent. I get my hay in too green to use a hay-fork; it packs the hay too solid.' 'That is strange; however there is my bill; hope you will like the fork better next year.' 'But you put up the fork on your own responsibility, and I was not to take it if it did not suit.' 'Not a bit of it; you must take me to be a fool; I don't do business in that way.' Being rather a peaceable man, and having never yet fallen into the hands of a lawyer, I paid the bill."

Agricultural Intelligence.

A Split in the English Laborers' Union.

The English Laborers' Union has a tremendous split in it, and over-the-left compliments are being exchanged in profusion. The committee of the Union became dissatisfied with their organ, the *Labourers' Union Chronicle*, and took steps to start another. Vincent, the editor, in reprisal, took steps to form another Union, which was to be conducted more economically than the existing one, complaints being rife about the lavishness of their expenditure.

The *Chronicle* published a letter from Mr. Joseph Arch, the father of the movement, assenting to the new Union. Mr. Arch branded this letter as a forgery, whereupon Vincent retorts that it is not more of a forgery than other of the utterances that have appeared in Mr. Arch's name—the editor claiming that he wrote nearly all the documents which Arch from time to time has put forth as his own, including the preface to the "Life of Joseph Arch," same preface being stated in the body of it to be the writing of Arch himself. And the editor also says that Arch fully approved of the letter in dispute, although he did not sign it. Altogether, it is a pretty kettle of fish.

We do not, however, anticipate any serious damage to the cause of the English laborers from the scandal. The ball is now fairly in motion. "Revolutions do not go backward," and it is a revolution of the landed system that was inaugurated when a few laboring men met under the chestnut tree at Wellesbourn, four years ago, to talk over their grievances. If the present leaders are unworthy or incompetent, others will arise.

The Sale of the Eighth Duke of Geneva.

The great event of the month in English Short-horn circles was the sale by Messrs. Loney, at Watlingtonbury, Kent, of the Eighth Duke of Geneva who was offered at the upset price of 2,000 guineas and was bought back for his former owner, Mr. Groom, of Kentucky. *Bull's Messenger* thus describes the sale:

The business at the ring was conducted by Mr. Strafford, who after selling twenty-two of the female lots, handed the glass to Mr. Housman, resuming, however, his post when Eighth Duke of Geneva came forward. This was the grand point in the doing of the day, and the chief interest was here centered. To borrow, Mr. Strafford said, something from the turf, he would describe Eighth Duke of Geneva as the "Stockwell of Short-horns." The upset price was 2,000 guineas. He would allow a few minutes for gentlemen to deliberate, and then, if the price, he did not say an advance, but the 'upset' price itself, were not offered, the bull would be passed. If any gentleman chose to claim the bull at 2,000 guineas, while he stayed in the ring, it would be a sale, subject to competition.

For the space of a few minutes there was silence. Inquiring glances were cast in various suspected quarters, but not a token of design could be detected. At length, in clear and deliberate accents, the words "Two Thousand Guineas" drew all eyes to the side of the ring on Mr. Strafford's left. The glass went up, and in the silence of the company its last particle of sand went down, and Eighth Duke of Geneva was declared the property of Mr. Fox, of Harefield, whose nephew, as bidder, claimed the purchase. The fact, however, afterwards transpired that Mr. Fox had bought both the bull and Seventh Maid of Oxford, previously sold, for Mr. Groom, of Kentucky.

Eighth Duke of Geneva was bred by Mr. J. O. Sheldon, and exported from America in December, 1869, when one year old. He was bought by Messrs. Harvard, of Winterfold, and Downing, of Furners Hill, at the price we believe, of 800 guineas. At the Winterfold sale in September, 1872, Messrs. Loney bought him for 1,600 guineas; and now, after using him nearly three years, selling one of his offspring for 2,000 guineas, and receiving (at a rough, but we believe not far wrong estimate) about 2,000 guineas in service fees, they sell him at a considerable advance upon cost price, to return to America.

The old bull looked fresh and well, not near so fat as at Winterfold, but in better condition than last year, when lameness had reduced his flesh. His front is very imposing, magnificent, and his whole character masculine; not such as would most command itself to a hank critic, who insists upon perfect harmony of detail throughout the frame and flesh, but that which is appreciated when a bull is fairly judged as a bull, with due allowance for the extravagance and irregularities properly incident to his sex.

THE SOVEREIGNS OF INDUSTRY is the name of a secret order, fashioned after the Grange, but intended to be principally among artisans and mechanics. It was founded by Mr. Earle at Worcester, Mass., and a year ago was spreading rapidly. Lately it has dropped out of sight somewhat. We notice, now, an announcement that "the Worcester, Mass., Council of Sovereigns of Industry have unanimously voted to disband. The action was based on a general dissatisfaction with the workings of the order."

AS BEING OF INTEREST TO ALL BARLEY GROWERS we quote some recent statistics about the consumption of beer. In Austro-Hungary the consumption is at the rate of about 8 gallons per head; Bavaria, 48; Wurtemberg, 34; Saxony, 13; Great Britain, 34; Belgium, 32; and in France, where the juice of the grape assimilates more with the climate and the habits of the people, the consumption of beer is only 4 gallons per head of the population. One Austrian establishment, that of Anton Dreher, at Klein Schwechat, near Vienna, in the first year of its existence brewed merely 333,832 gallons of beer, and now brews 8,798,300 gallons, an increase of more than twenty-sixfold.

THE CASE OF FARLEY & Co., the swindling "Grangers' Store" firm alluded to several times in the CANADA FARMER still engages the attention of the *New York World*. Mr. O. R. Ingersoll writes to that journal, suggesting that the friends of Secretary Kelley of the National Grange, on the faith of whose recommendation Farley & Co. received much money, (not a little from this side of the line,) should subscribe and make up such a sum as will return to each Patron the amount of which he has been defrauded; and Mr. Ingersoll offers to subscribe \$400 to such fund. To which, all the people say, Amen. Let Secretary Kelley bring on his friends, and relieve his name of the odium which now attaches to it to the extent, as we glean from the *World*, of about \$3,700 worth.

AT THE ANNUAL SALE of Mr. Alexander's yearlings at Woodburn Farm, Ky., the prices realized were good. Thirty-six colts and fillies averaged \$925 as against \$624 each on 50 in 1874, and \$663 each on 38 in 1873. The highest average ever made before was that of 1872, when \$835.70 was reached on each of 43. The averages on several sires mostly used by Alexander, have been as follows for the past 5 years:—

	Lexington	Australian.	Planet	Asteroid
1871	6—\$1145	19—\$387	13—\$402	7—\$313
1872	9—1247	10—1077	11—774	12—514
1873	8—1364	9—832	12—614	8—176
1874	11—1193	15—753	17—300	4—292
1875	8—1755	8—958	7—833	11—792

THE EUCALYPTUS, Australian gum tree, it is discovered, will not only dry up marshes and render malarious places healthy, but will drive off the Phylloxera and other parasites from vine-growing in its vicinity. Experiments in the south of France during several years have uniformly shown this result. It is supposed to be due to the fact that the leaves contain an ethereal oil of which even half-dried leaves contain 6 per cent., which oil is a very powerful antiseptic. It will be a tantalizing thing for the French and German vineyardists when they learn of the parasite-protective properties of the Eucalyptus. Unfortunately, that wonderful tree will not stand the winter of the parts of those countries where the vineyards are principally located.

A NEW FLOUR BARREL that has the several good points of cheapness, strength, durability and economy of space, has been introduced into use. It is a Canadian invention. The shape of the barrel is a perfect cylinder, thus avoiding the loss of room from the taper necessary in a stave barrel. It is made of cheese-boxing and is in two skins, in the inner one of which the grain runs round, and in the outer one across. The head is kept firmly in place by a rim of wood, but is readily removable at pleasure. The barrels are made upon an iron cylinder and are exactly alike in contents and shape. The weight is twenty pounds. The cost is considerably less than that of the common stave barrel, and there is the further advantage that inferior wood can be used in their construction, as it would be unlikely for the inner and outer skins to be defective in exactly the same place. Machinery now in use will turn out a perfect barrel in four minutes.

English pointer and setter dogs, to the value of over \$100,000, were imported into the United States last year.

IN A LIST OF SALES OF STOCK by Mr. T. S. Cooper, Linden Grove farm, Pa., we observe the sale of a Berkshire sow to Mr. A. Dickson, Galt.

NEAR THE UNION MARKET STATION, in Watertown, Mass., is a cow which is claimed to be the largest in the world. She is four years old, and weighs 2,875 pounds.

A FARMER at Faye-du-Bois, France, has a Short-horn cow, 22 months old, that recently dropped four calves, two male and two female, all born alive and of the usual size.

MESSRS. BIRRELL & JOHNSON, Greenwood, have purchased the first and second prize pens of yearling Cotswold ewes from the recent show of the Royal Agricultural Society at Taunton.

THE FAMOUS FRENCH HORSE, GLADIATEUR, the first foreigner which ever won the English Derby, and which also won the Two Thousand, the St. Leger and the Grand Prix de Paris, is offered for sale to dissolve a partnership. He is thirteen years old.

"SARAWAK" WRITES US:—A friend from New Brunswick lately stated to me that potato-beetles are unknown in that province. I have seen it stated that the beetles travel eastward at the rate of 51 miles a year. Perhaps, they may reach Gaspe and the Maritime Provinces in a few years from now.

BAILEY'S SHORT-HORN REPORTER, first number, has reached us. It is a well-edited, and well-printed record of the doings in the Short-horn world for the preceding quarter, and is designed to occupy the same place on this continent as is occupied in England by *Thornton's Circular*. It promises to be indispensable to Short-horn breeders. It is published at Buffalo.

THE ANNUAL CHEESE EXHIBITION of the Canadian Dairy-men's Association will be held in Ingersoll October 6 and 7. Over seven hundred dollars are offered as prizes, and competition is open to all the world. All entries must be made with Secretary Hegler at Ingersoll, before noon of the first day of the exhibition. All information can be obtained by addressing the Secretary.

AT THE STRANRAER, Scotland, Annual Horse-Fair, last month, prices were considered lower than in the former year. Good horses moved off briskly; well seasoned animals for agricultural work, went as high as £90, and general rates would range between £50 and £70 for three-year-olds. Two-year-olds and inferior animals brought less money. A few Irish horses, shown by Mr. Pentland, met with purchasers at from £40 to £60.

A GRAND SALE OF TROTTING STOCK took place at Crystal Lake, Ill., lately. Lakeland Abdallah was knocked down to Mr. Rabbit of Beloit, Wis., for \$7000 after a spirited contest. T. J. Scott, a son of Lakeland Abdallah, brought \$2000. Sixty-eight animals brought \$30,000. Two fillies, Ursa, by Alhambra, and Vivid, same sire, were bought by Mr. Simon Beattie, Whitevale, Ont., for \$270 and \$330 respectively.

MR. COMER'S HOLSTEINS were sold, recently, at Goshen, N. Y. They realized:—Opferdoes 10th, \$245; Bella, \$180; Lina, \$175; Leda, \$262.50; Opferdoes 16th, \$300; Beta, \$575; and one other, \$150; all bought by Charles Robinson, New-York, who also took two imported yearlings, Lady Eva and Maid of Goshen for \$305 and \$175 respectively, and bulls Ajax for \$75 and Kurt for \$205. Texelae 12th went to M. H. Gifford, Syracuse, for \$360, and two bull calves brought \$95 and \$100.

MESSRS. T. W. SAMUELS & SONS, of Deatsville, Ky., have lately purchased in Canada 50 pure-bred Cotswold sheep, including the ram Cotswold Champion, from John Snell's Sons, Edmonton. This ram was two years old last March, and weighs now 425 lbs., and girths 6 ft. 3 inches. His first fleece, at 13 months old, weighed 21½ lbs. Notwithstanding his great weight he is quite active, and would carry fifty pounds more mutton without any great inconvenience. Messrs. Snell have also sold three fine Cotswolds to Messrs. Brown & Crabb of Eminence, Ky.—*Country Gentleman*.

AT A RECENT SHOW of the United East Lothian Agricultural Society a competition of a novel character, which was first introduced by that Society, was witnessed. It consisted in a trial of collie dogs belonging to farmers and shepherds in the district. Sheep, which were divided into fives, were penned at the east end of the field, and on their being let out by the shepherd, the dog had to drive them all over the park. Sometimes the sheep were allowed to mix, and then the dog had to "cut out five," of course with the assistance of the shepherd. The fives were again split into three and two, and afterwards the fives were driven by the dog into the narrow pens. After some consultation among the judges, it was agreed to give the prize to Mr. James Bald's "Bob," a really fine-looking collie, which took second prize in the competition last year, Captain Baird Hay's dog, which was first last year, had to be content with second honors.

Short-Horn Sales of the Month.

During the past month, a remarkable series of Short-horn sales took place in Kentucky, opening with the sale of the herd of Mr. Vanmeter, at Stockplace, on July 21. This was followed by the sale on July 22 of Messrs. Kinnaid & Cunningham, Ashwood; July 23, Messrs. Handy & Lowry, Pine Grove; July 27, Innes & Burgess, Cynthia; July 28, Muir & Offitt, Paris; July 29, J. Sudduth, Paris. The results of the sales, most of which we glean from the Kentucky Live Stock Record are given below, together with the names of the purchasers of the animals which realized the best prices:

Mr. Vanmeter's Sale.

Table listing various cattle sales including Julia's Rose, C. D. Chenault, Madison Co., Ky. for \$3,900 and other lots with prices.

Messrs. Kinnaid & Cunningham's Sale.

Table listing cattle sales including Pride of the West, J. Scott, Paris, Ky. for \$600 and other lots with prices.

Messrs. Handy & Lowry's Sale.

Table listing cattle sales including Mazurka Belle 2nd, W. N. Offitt, Georgetown, Ky. for \$1,200 and other lots with prices.

Messrs. Innes & Burgess' Sale.

Table listing cattle sales including Sue Eaton, W. H. Richardson, Lexington. for \$600 and other lots with prices.

Messrs. Muir & Offitt's Sale.

Table listing cattle sales including Princess of Elmwood, B. Sumner, Woodstock, Conn. for \$2,000 and other lots with prices.

Summary of the Above Sales. Table with columns for lot description, price, and total.

Table listing specific cattle sales including Van Meter, 26 cows and heifers, average \$2,007 and other lots with prices.

Mr. GEORGE FOX'S American purchases arrived safely in England on July 12th.

COL. TAYLOR, London, Ont., announces a sale of part of his herd of Short-horns.

Mr. DAVID E. DAVIS, an extensive short-horn breeder, of Salem, N. J., died recently, aged 34.

LOUON DUKE 12TH was lately sold by Wm. Warfield, Kentucky, to John Comstock, Wabash Co., Ind., for \$1,500.

Mr. JAMES COCHRANE, Little Haddo, Aberdeen, has sold a Short-horn bull and cow to His Majesty the King of Denmark.

THE DUCHESS DUKE, by 18th Duke of Airdrie, has been sold by Mr. Dunlap, Galesburg, Ill., to Mr. T. Johnson, Mercer Co., Ill.

Mr. WADSWORTH, Genesee, N. Y., has offered his herd for sale at private contract in consequence of a contemplated long absence abroad.

THE AYRSHIRE HEIFERS, Princess Louise, Anna, and Spottie, have been sold by Mr. James Lawrie, Malvern, Ont., to Mr. A. J. Wilson, Loraine Co., O., for \$590.

LADY 15TH.—This Duke of Devonshire heifer, that cost 500 guineas when a calf, has added to the Holder herd a dark roan heifer calf, by Baron Barrington 4th.

VICTORIA VICTRIX, a very fine Booth cow, first prize at the Bath and West of England Show at Bristol last year, died rather mysteriously, a few weeks ago. She belonged to Lady Pigott.

Mr. F. C. CORNELL, Ithaca, administrator of the estate of the late Ezra Cornell, has sold the Short-horn bull Baron Bates 6th, out of Lady Bates 7th, by 10th Earl of Oxford, to Robert Otley, Kewanee, Ill.—Country Gentleman.

HON. M. H. COCHRANE has received from England the following Short-horns:—Siddington 5th, purchased of Mr. Slye, for 750 guineas; Grand Duchess of Barringtonia, tracing to Bates' Lady Barrington; and Princess, tracing to Sir C. Knightley's Cold Cream by Earl of Dublin.

THE SIXTEENTH DUCHESS OF AIRDRIE recently purchased of Mr. Alexander, of Kentucky, for \$17,000 by Mr. Cheney, of Leicestershire, has given birth to a red heifer calf, by the 24th Duke of Airdrie, the bull recently exported to England by Mr. Fox. The Duchess is still in this country.

THE SHORT-HORN SOCIETY announce that they "have under consideration the question of duplicate names of cows as entered in the Herd Book, with a view of promoting certainty and convenience of reference." They also intimate that they are prepared to undertake arbitration of Short-horn questions, as well as investigate cases of doubtful or suspected pedigrees.

Mr. JOHN MASON, Highgate, Ont., has made the following sales of Short-horn bulls:—Prospect, to Mr. James McLelland, Toronto, \$200; Lord Dufferin, to James Street, Palmyra, \$120; Lord Morpeth (calf), to J. Green, Howard, \$100; Prince of Guelph, to A. J. Stone, Highgate, \$80; and eight head of females and a bull calf to Isaac Gardner, Morpeth, \$1,200.

JOHN H. HOWES, Sidney Grange, Belleville, Ont., has sold the following Pure-bred Ayrshires to Mr. W. O'Hara, Cadiz, O.:—Imported Bull [569] Pride of the Hills (470), winner of the 1st prize N.Y. State Fair, at Rochester, N.Y., September, 1874; Imported Cow [594], (97), Bessie Bell 826; her calf, Lady Bell; yearling heifers: (893), Lady Nanette; (920); Lady Snowball; [539] Lady Helen Mar.

Mr. DAVIS LOWMAN, Toulon, Ill., has just bought in Scotland through his agents, Messrs. Smith, of Perth, the following Short-horns:—From Mr. Cruckshank, of Sittonton, three yearling heifers—Lovely 15th, Butterfly 45, and Butterfly 46; from Mr. Marr, of Uppermill, two yearling heifers—Goldie 18th and Red Lady 3d, and a young cow, Missie 35th; and from Mr. Cochrane, of Little Haddo, a yearling heifer, Geraldino 7th.

NOT LONG SINCE, 128 choice graded steers were shipped from the Union Stock Yard, Chicago, direct for England. The cattle were raised and fed by J. D. Gillett, of Logan, Co., Ill., and were bought by George Roddick, of Liverpool, England. They weighed over 1,600 lbs. average; 88 of the number cost \$7.37 1/2 per 100 lbs., and 40 cost \$7 62 1/2. They were shipped via Boston.

PURCHASE OF A BATES' BULL.—At the recent Taunton Show of the Royal English Society, Henry Denis de Vitru sold his very promising eleven months old red and white bull calf, which was first prize winner there, to Mr. Brydon, the representative of the New Zealand Land Company. We have not heard the price, but we have no doubt it is a handsome one, for the animal, in addition to fashionable Bates' blood, displays handsome shapes and beautiful hair, and fine quality.

Mr. A. M. BOWMAN, Waynesboro, Va., writes the Country Gentleman:—"The massive white cow Rosamond 9th, by Royal Briton (27351), dam Rosamond 7th by Weehawken 3260, which I purchased at Mr. Coffin's sale, and which had aborted two calves and had never brought a living calf, and on this account and her extreme high flesh, sold at a very moderate price, has dropped me a fine red roan b. c. to Don Bernardo 11641, a red son of imported Royal Commander and Louan 44th. I attribute my success to the use of hemp seed and plenty of exercise."

THE WESTON PARK HERD of Sir George Philips were sold lately. The averages made were:—10 Knightleys, £125 9s. 6d; 13 J's, £78 15s. 10d; 7 Didos, £51; 2 Craggs, £82 8s. 6d; 4 Queens, £53 11s; 16 miscellaneous, £33 8s. Total—52 cows and heifers averaged £68 5s. 10d, total, £3551 2s; 11 bulls, averaged £19 13s. 3d, total, £216; 63 head of cattle averaged £59 16s; total, £3767 8s. The highest prices were:—Julia Cherry, Lord Bective, 200 guineas; Galleon 2d, J. H. Blundell, 165 guineas; Walnut Duchess, same, 190 guineas; Polly 2d, Mr. Levey, 175 guineas.

SALE OF SIX ROSE OF SHARONS.—The Kentucky Live Stock Record says:—"Mr. Abraham Renick, Bourbon Co., Ky., has sold to Mr. Simon Beattie, Canada, for Lord Dunmore and Earl Bective, six Rose of Sharon heifers for \$20,000. The following are the names of the six heifers: Rosebud 10th, by 4th Duke of Geneva 1750, out of Rosebud 6th, by Airdrie 643; Duchess 17th, by 4th Duke of Geneva 1750, out of Duchess 3d, by Dandy Duke 774; Lenora 2d, by 4th Duke of Geneva 1750, out of Lenora, by Airdrie 613; Duchess 16th, by 4th Duke of Geneva 1750, out of Duchess 8th, by 13th Duke of Airdrie 800; Nora 7th, by 4th Duke of Geneva 1750, out of Nora 6th, by Airdrie 2d 645, and Poppy 11th, by Airdrie 3d 646, out of Poppy 8th, by Joe Johnson 946.

THE BATES PORTION OF MR. COCHRANE'S HERD, says the Country Gentleman, now consists of 21 females, with the 2nd Duke of Hillhurst at their head. Among them are no less than five Duchesses, two Moss Roses, four Louans, two Knightleys, and one each of the Miss Wiley, Mazurka, Vollum, Princess, Barrington, Kiklevington, Secret and Place tribes. Airdrie Duchess 2d is due to calve early in September to 11th Duke of Geneva, and 10th Duchess of Airdrie in December to 2d Duke of Hillhurst, while the other three (Airdrie Duchesses 1st, 3d and 4th), having been but recently served, cannot yet be pronounced safe in calf. Mr. Cochrane writes us: "My cattle are all doing remarkably well this season, as the pastures are very luxuriant. I think I never saw such a profusion of white clover as we are getting."

THE SHORT-HORN SOCIETY OF GREAT BRITAIN AND IRELAND is now formally incorporated. In the formal registration of the Society it is named as a company limited by guarantee, each member undertaking to contribute £10, if needed in the event of winding up. The objects are thus described:—"To maintain unimpaired the purity of the breed of cattle known as Short-horns, and to promote impartially the breeding of all the various tribes, families, and strains of such cattle. To further the objects by continuing the issue of 'Coates' Herd Book,' and for that purpose to acquire the copyright and other matters relating to the said publication, upon terms of an agreement of 9th December, 1874, between Henry Stratford of one part, the Earl of Dunmore, Baron Skelmordale, and Baron Penrhyn of the other part." Under license from the Board of Trade the use of the word "Limited" is omitted.

THE PRINCIPAL SUMS REALIZED AT Messrs. Lency's sale at Wateringbury lately, in addition to the 2000 guineas for the 5th Duke of Geneva were:—Columbia, 11 years old, cow (Lord Moreton), 150 guineas; Charming Maid, 10 years (Mr. Sheldon), 150 guineas; Seventh Maid of Oxford, 9 years (Mr. Fox, for Mr. Groom, Kentucky, America), 365 guineas; Kirklevington XX., 7 years (Mr. Leicester), 580 guineas; Duchess II. (Mr. Sheldon), 305 guineas; Wellington III. (Duke of Manchester), 200 guineas; Baroness Fausley III. (Mr. Mackintosh), 300 guineas; Wild Princess II., and Wild Duchess IV. (both bought by Lord Penrhyn), 830 guineas. Mr. Fox bought a bull calf from 7th Duke of Oxford for 305 guineas. The demand for the bulls was not brisk, and some were passed unsold. The 37 head sold realized an average of £212 6s. Mr. Angerstein also offered his white bull Third Duke of Claro, 9 years old, at 500 guineas reserve, and Colonel Kingscote claimed the animal at that figure. Two young bulls, from Mr. H. A. Brassey's herd at Preston Hall were also offered and sold for 190 guineas.

New Granges Organized.

Division Granges.

17. WEST MIDDLESEX.—Hector McFarlane, Master, Glenoe; Wm Webster, Secretary, Strathburn.

18. ELGIN.—Stephen Wade, Master, Union; E. D. Scott, Secretary, Union.

Subordinate Granges.

219. KINTORE, County of Oxford.—Angus Shaw, Master, Lakeside; D. R. Calder, Secretary, Kintore.

220. DOUGLAS, York County.—New Brunswick Ludlow McFibbin, Master, Frederickton, N. B.; Charles McGibbon, Douglas W. O. N. B.

221. ACADIA, Colchester County, Nova Scotia.—Wm. M. Blain, Master, Truro, N. S.; John W. McCurdy, Secretary, Truro, N. S.

222. BRYANSTON, County of Middlesex.—W. Johnson, Master, Bryanston; Edward Dunn, Secretary, Bryanston.

223. ELMBANK, County of Peel.—Thomas Graham, Master, Elmbank; Edward Garbutt, Secretary, Elmbank.

224. CENTRE, County of Middlesex.—D. A. McRae, Master, Appin; Arch'd McIntyre, Secretary, Appin.

225. MACVILLE, County of Peel.—Richard B. Shore, Master, Macville; J. H. Newlove, Secretary, Macville.

226. OROSO, County of Durham.—Ezra Hall, Master, Orono; John Rickaby, Secretary, Orono.

227. ROBE ROAD, County of Simcoe.—Francis Bell, Master, Shanty Bay; William Butcher, Secretary, Shanty Bay.

The Executive Committee of the Dominion Grange meets on the 17th of this month, when the day and place of the second annual meeting will be decided upon.

THE HEADQUARTERS OF THE NATIONAL GRANGE of the United States were removed on July 17th from Washington to Louisville, Ky.

AN INSECT WHICH ATTACKS and destroys growing corn has appeared in Saratoga County. Its operation is to eat the long leaves that they drop from the stalk.

AN IMMENSE QUANTITY OF FRUIT TREES, says the *Orillia Packet*, were imported into Muskoka this season, and at the present time look very well, adding much to the appearance of the farms.

MR. O. S. BLISS, of Vermont, the well-known dairyman, will shortly commence the publication of the *Vermont Farmstead*. Mr. Bliss is competent to run a first class agricultural journal, and he will be certain to spare no pains to render the new paper an acquisition to farm literature.

IN SOUTHWESTERN MICHIGAN much attention is given to raising peppermint, spearmint, etc. Last winter killed many of the plants. Near Centreville, in St. Joseph county, Wolf Brothers are said to have 130 acres in peppermint, spearmint, wormwood, pennyroyal, tansy, horse-mint and sweetmint.

"THE CANADA POULTRY JOURNAL" is announced to appear on Sep. 15. It is to be a monthly, devoted entirely to poultry and pet stock. Messrs. H. M. Thomas of Brooklyn and E. R. Grant of Port Hope will be its editors and proprietors. There is room for such a journal as the name indicates, and the gentlemen who are instituting it are competent to make it a good one.

TWO AMERICANS have invented and patented a horse-dock designed for use when ploughing, so as to avoid the use of traces or whiffletrees. The ordinary collars are used. To the lanes bars are attached which are connected by a horizontal bar. To a ring in the centre of this the draft-chain is attached. The invention is ingenious, but, says the *Chicago Times*, we do not believe it will come into general use.

THE BROCKVILLE *Recorder* gives some figures showing the effect of the use of the Brockville Superphosphate on the farm of A. Abbott, Esq. Rye treated with the manure had heads an inch longer than that not so treated. With grass, the manure gave an increase of 50 to 75 per cent. in the crop. Potatoes were 20 per cent. better. Oats 15 per cent. better, the dividing line between the manured and the unmanured portion being visible at a considerable distance.

THE ONTARIO VETERINARY COLLEGE, Temperance street, Toronto, Principal, Dr. A. Smith, V.S., was established in 1862 and has since then enjoyed a career of unchecked progress. It is under the patronage of the Council of the Agricultural and Arts' Association, and of the Governor-General and Lieut.-Governor. It is the only Veterinary College in Ontario, and its past students rank in this country and the United States at the head of their profession. The institution must not be confounded with the new department of Veterinary Science attached to the Ontario School of Agriculture, which is intended only as a part of the course of the studies of the agricultural students, and not for teaching veterinary science as a profession.

Seeds, &c.

Winter Wheat—Seneca, Tappahannock and Silver Chaff.

There is no question at this time of the year of more interest to the Canadian farmer than the subject of the most profitable variety of winter wheat to sow. Some farmers go for the kind that they can obtain readiest and cheapest, whether nearly run out or not. Those sorts always turn out in the end to be the least profitable. What is wanted by the farmer who depends on his farm for his living and who has no time or money to invest in experiment, is a sort of wheat that has been tried in his climate and soil, and is found to be adapted to them. Such a wheat is the Seneca, or Clawson as it is also called, a white wheat which originated with a farmer named Clawson, of Seneca County, N.Y., seven years ago. In its early days, it was named by a Pennsylvania seedsman, "Early May Red Chaff White" wheat, for the abolition of which lengthy names thanks are due to somebody. The same wheat has also been called Eureka, but public favor seems to be concentrating on "Seneca" as the future name for it.

The Seneca is a white wheat, with smooth head, red chaff, and long straw; a thrifty grower, and thoroughly hardy. It came through the trying time of last winter, both in Canada and the United States in better condition than any other variety that we know of. It is from ten days to a fortnight earlier than varieties now in use. The yield is larger than that of the common kinds, many instances being recorded where, in the same field and under the same treatment, the Seneca has yielded thirty-five bushels against the twenty bushels of the Diehl, Fultz, Treadwell or Mediterranean. For those of our farmers who want a reliable wheat—one that it is safe to tie to—the Seneca is the thing.

The Tappahannock wheat is a white, beardless variety, originating in Virginia and sent out by the United States Department of Agriculture a few years since. We know of but one instance of it having been tried in Canada; in that case it proved very successful, having stood last winter well and having ripened very much earlier than neighboring sorts. In earliness it is claimed by growers in Ohio, New York, Vermont and Michigan to be two to three weeks ahead of Drehl and other common sorts. The straw is short and stiff, rendering it not liable to lodge. The head is heavy, and the grain is large and gives a superior quality and yield of flour.

The Silver-chaff is another new wheat, well thought of across the line, but not yet much known in Canada. It is a white wheat, with white chaff and medium straw; it has a long smooth head with large grains. A peculiarity about it is, that its flower extends about three-quarters of an inch from the head when in bloom. This gives it a silvery look from which it derives its name. The Silver-chaff originated in New York State. It is claimed to be perfectly hardy, having been tried alongside of other varieties and to have come out of the winter as well as any of them.

There is every probability, from all the information we can glean, that both the Tappahannock and the Silver-chaff will prove valuable acquisitions. We recommend those farmers who are disposed to experiment, to try these varieties.

India Wheat.

The following about this species of buckwheat is from the *Country Gentleman*—

India wheat, a hardy and prolific species of buckwheat, is adapted to a great variety of soil and climate, and with favoring circumstances, ripens in 9 days from sowing, producing from 15 to 85 bushels, of 46 lbs., to the acre. It is sown from the 1st of May to the 15th of July, a half bushel to the acre the first season, less afterwards, the same land being devoted to it many years. With a good coffee mill and a sieve of the finest bolt cloth, as good flour can be made from it by hand as by any grist mill, if the grain is washed after being well cleaned in a fan mill. It is suitable for all the family uses of buckwheat, which it has superseded in Northern New-England—is a surer crop and better for provender.

With a large coffee mill, combined with a hopper and sifting device, attached to a horse-power, I have ground and bolted many thousand bushels, at the rate of six bushels per hour, in Randolph, Vt. The middlings, con-

sisting chiefly of the cuticle or sack holding the flour, (which resembles marble-dust) is good cow or hog provender; the hull is good stock bedding, and the straw, if cured just right, I value higher than any other. Those wishing to try it can probably get it of any of their friends in Northern New-England, or by applying to A. W. Tewksbury & Sons, West Randolph, Vt., or to the Randolph Farmers' Club, either of which would ship a car load or less at bare cost. As India wheat is self-seeding, English wheat should not be the next successive crop.

SWISS OATS.—The *North British Agriculturist* mentions the Swiss oats as an early and largely yielding variety. Mr. Wright, of Dowhill, Scotland, commenced to cut a magnificent crop of them on July 12th. They were fully ripe and remarkably well-eared. The variety was distributed all over the Kingdom last year, and has proved itself adapted for high and late as well as early localities.

WHAT OF THE HULLESS OATS?—We came in for some abuse last spring, because we stated that the Hulless oats had heretofore been proved and found wanting. We should like to hear how these much-vaunted oats are turning out, and so, no doubt, would our readers. We would prefer to hear from some one who has not got any Hulless oats for sale.

Correspondence.

COLIC IN HORSES.—H. J. J., Oshawa, Ont.—In the May number, you will find the causes and cure of colic fully described.

HAY PRESS.—J. S. B., Gorrie, Ont.—The Dederick Hay Press is the best we know of. It may be procured through Mr. Rennie of Toronto. The price is from \$300 to \$500.

CANADA FARMER for 1874. J. M. R.—We have all the CANADA FARMER for 1874 at the subscription price which was then \$1.50.

PLAN FOR PIG-PEN WANTED.—J. M. R. wants some one to give, through the CANADA FARMER, the plan of a pig-pen, such as would be suitable for the raising and feeding of ten or twelve hogs.

BUCKTHORN FOR HEDGING IN IOWA.—C. R. A., Hampton, Ioa.—Buckthorn would be almost certain to succeed as a hedge plant in your section, but we have no knowledge of it ever having been tried there. The seed or plants can probably be secured from any of the leading nurseries. Messrs. Leslie, Leslie, Ont., can certainly supply you.

TREATMENT OF HOUSE-PLANTS.—J. C., Mariposa.—Geraniums, after they have done flowering, should be cut down and placed in the open air to recuperate. Before frost comes, they should be removed to the cellar, or other cool place secure from frost, where they should be watered slightly. Fuchsias, when through flowering, should be cut back and treated the same.

MACHINE FOR SOWING GRASS SEEDS.—W. Gilliland, Crossplains, Ioa.—There is no machine that we know of, and we do not think that one could be contrived, which will sow light grass seed, such as Blue grass, Red top or Orchard grass by themselves. Mr. Rennie of Toronto has a very simple seeder, which would sow those seeds mixed with clover or timothy.

PHOSPHORUS SOAP.—C. E. B., Ottawa, writes that he tried the combination of phosphorus and soap made by Mr. Lyman, chemist, Montreal, for use against the Colorado beetle. He found it to be perfectly useless against them, and, in addition, destructive to the plants. Our correspondent will see, by reference to our last number, that we have already chronicled the fact of the failure of the compound.

PAINTING ROOFS.—J. C., Mariposa, Ont.—It is impossible to say how much paint will go over a square yard of surface, as it may vary as much as a half accordingly to the manner in which it is laid on, and the dryness of the wood to which it is applied. The cheapest and most durable paint is that known as "Fire-proof," which should be mixed with raw oil in the proportion of four pounds of paint to the gallon of oil. We should not advise the use of petroleum as the first coat. The present is a good time to do painting, as the materials are all unusually cheap. Mr. Hugh Miller, of Toronto, can supply all the articles.

Miscellaneous.

Against Horse-Racing and Gambling.

EDITOR CANADA FARMER.—I am sorry to say that horse-races were got up again on Dominion Day. With such representatives as we have, it would be scarcely possible to get a law passed to prohibit pool-selling on any occasion, and to restrict horse-racing to those places where at least one prize of \$500 is given. Those petty races which are fast extending into the country, with their usual accompaniments of gambling, intemperance, and profanity, are doing more harm amongst the farming community than are the races of more importance. The practice of pool-selling, which I believe has only been introduced into Canada within these last three or four years, seems to have fostered a taste for betting which is now practised on all possible occasions, such as base-ball and lacrosse matches, athletic exercises on public holidays, etc., etc., to an extent formerly unknown in Canada.

The American dime novels which this province was formerly flooded, have proved a curse to the country; and the evil is increased by the Toronto dime novels which are still sold in the book stores and the railway cars everywhere.

CHARLES JULYAN

The Growth of Salmon.

Each adult female salmon lays from 800 to 1,000 eggs to every pound of her weight. In their healthy condition, the eggs are generally of a pinky or amber color, with opalescent hues, semi-transparent, and exceeding pretty in their effect. Sometimes, however, the eggs are very pale—nearly white—in color; others, again, are of a bright coral red; but all that have a peculiar transparent iridescent hue are unmistakably healthy eggs. A tough, horny membrane is the “shell” which holds the embryo salmon and preserves it from injury. This external shell is exceedingly elastic; an egg dropped on the floor will rebound like an india-rubber ball.

For a month or so no change is apparent in the healthy egg, as it lies in its bed of gravel in the running stream where it has been deposited by the mother, with the temperature of the water at about forty-five degrees. The eyes of the fish appear in about forty or fifty days; these may be perceived as two small black specks; and in another three or four days, a faint red line is apparent, running round the interior of one side of the egg, and in the centre a small globule appears. The “thin red line” represents the vertebrae of the fish, just forming; and the red globule is a minute quantity of oil, which is destined to be absorbed by the fish after it comes out of the shell.

Gradually the faint indications of life within the semi-transparent shell become more marked till, about twenty days after the first appearance of the eyes, the fish bursts its prison. It now presents a most ludicrous appearance, with the lower side of its slender transparent body affixed to an oval sac which it carries wherever it goes. The vital organs of the fish can be distinctly seen; the pulsations of the heart are easily perceptible; and the rapid vibrations of the gills show that it is, for the first time, breathing just as an adult fish breathes. The empty “shells,” as they float about in the water, showing the tent by which the young fish breaks its prison-bonds, now appear like little bits of an india-rubber air-ball, or portions of the white membrane found just inside the shell of a hen’s egg.

Sometimes the shell clings round the umbilical vesicle of the fish, and, as it has no hands to free itself, it may be seen wriggling about among the gravel, endeavoring to escape from its uncomfortable burden.

The fry are now “all alive,” and as active as fish can be. Some of them will be found with their tails turned upward in an impudent manner; others bear their bodies in a becomingly staid longitudinal position; while others, again, are strangely deformed; These unfortunates are unable to swim in a straight line, and can only turn round and round as on a pivot in one spot, lying all the time on their side, instead of swimming upright; and falling helpless to the bottom as soon as they cease their efforts at locomotion. These cripples generally die; though some of them, no doubt, arrive at maturity, as is proved by the instances—rare it is true—of deformed salmon, with the backbone bent, and crooked in various ways.

But the most curious instances of malformation are the fishy “Siamese Twins.” A double-headed creature is of frequent occurrence in a family of baby salmon, but these enormities seldom survive more than three or four days, though instances have been met with of a longer term of existence being granted to these “monsters.”

For some time after birth, the young fish do not seem to grow very fast; they are exceedingly active, and,

though burdened with the umbilical vesicle, they swim swiftly about, rushing for a few seconds, and suddenly falling again to the bottom of the stream; they are unable to rest without touching the gravel.

The young fry do not require any food for some time to come. The contents of the sac they bear about with them serves as food for the first six weeks of the salmon’s life. The poor little fish has no mother to nurse it, so nature has provided it with a commissariat of its own. This vesicle or sac contains an albuminous secretion similar to white of egg, and a small globule of oil, the whole of which are gradually absorbed into the system. After six weeks of this self-sustaining process have elapsed, the outer skin of the bag appears to diminish in size, as the body of the fish increases, and in due course the fry appears as a complete miniature of an adult salmon.

The fins and even the scales are now fully apparent. The gills can easily be perceived. The eye—that first sign of life in the egg ten weeks ago—is completely developed; while a slight red spot under the pectoral fin is the only sign of the late symbol of babyhood.—*Chambers’ Journal.*

Some Simple and Serviceable Knots.

EDITOR CANADA FARMER.—I send you a practical illustration of different knots and splices which, if thoroughly learned and understood, cannot fail to be of the utmost service to any one who has to handle a rope in any shape or form.

The long splice is principally used by sailors for making block straps, but it is at the same time useful in a good many cases to the farmer. In making this, it has to be all taken separate in cords and commenced thus:

Nos. 1 and 2 are twisted together until No. 3 comes opposite where you are at work and then all twisted together until No. 1 goes out, then join the outer end of No. 3 in No. 1’s place until all be twisted up together and then fasten in the ends.

Below we have an “eye splice.” This is a very useful



knot, for instance, on halter ropes. How much neater it would look on a nice halter than would an awkward knot.

Next we have what is called a common “short splice,”

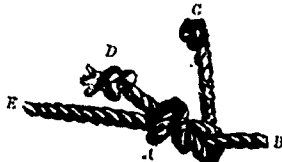


which is a very useful knot to the farmer. Take, for instance, a plough-rein. A new one is apt to get broken some times, and if a splice cannot be put on, then a rough knot has to be put on, and then perhaps this knot has to be run through some part of the harness every time at hitching and unhitching, and, of course, in most cases, the knot has to be unloosed, whereas, if a splice can be put on, the rope is little or none the worse, and everything looks neat, and runs smooth.

The knot below is what is called the “bowline knot,”



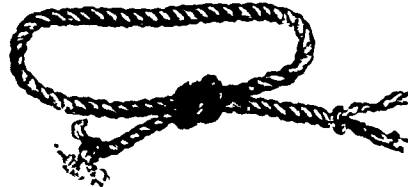
which, also, is also a very useful knot in many cases, say for a plough rein; it is always best to have it a little longer than just the neat length; so, by putting on a bowline, you can have at all times only one fold of rope in your hand, (I do not believe in having the reins round my shoulder as is a great custom with some) and in wet weather when ropes shrink they can easily be let out or in by means of a bowline by making the loop larger or smaller. A bowline serves very well for an eye splice too when a noose has to be made in a hurry. In the engraving the knot is run together a little too hard.



The above is a “double bend,” which is a knot always used by sailors when two or more pieces of rope have to be

used to reach any part. It is also one of the easiest knots to undo, as it will not run together so hard as a square knot. In the engraving, A represents the bent; E and B the ropes fastened together; C the “full crown” knot, and D the common “twist” knot, on the ends of the rope. See how much neater the “crown” knot looks beside the other.

Last, we have a common “square” knot, and two “crown”



knots partly made, the end with the longest fag-ends being one-third part made, and the other two parts made. As will be seen, when the square knot is run hard together it is very difficult to undo, and a sailor using a square knot when fastening two pieces of rope together is held in the same disgrace as one who descends through “lubber’s hole.”

I have now tried to bring before the public some of the knots and splices which have been useful to me wherever I was. The best lesson I ever received was this:—I got hold of a piece of rope with an “eye splice” and a “short splice” on it, and by carefully taking it apart and watching how it was put together, I got so that I could do it myself. I hope these few lines will encourage all to try and improve themselves in what I call a useful piece of handwork.

ARCHIBALD SPENCE.

Cayuga, Ont.

Japanese Fans.

For the manufacture of the common, flat, gaudy fans, now exported in considerable numbers to America and Europe, a soft kind of scrub bamboo is selected, cut into lengths, split into from sixteen to thirty, or even sixty, tiny splints, and then easily flattened out, ready to receive the paper, which is already printed and cut into the required shape. To make the picture paper, the design is first drawn by the artist on thin paper. This is pasted on a slab of wood and engraved; and the pictures are printed off by laying the paper on the block, and pressing it smooth. They have printed for centuries in Japan without presses. The colors are put on by means of sometimes as many as twenty different blocks. The pictured papers are then pasted over the frames. Sometimes musk or other perfume is laid between the sheets. The pictures on Japanese fans sent to America usually represent native scenery, life and costumes. People outside of Japan, think them in most cases, caricature or grotesque exaggeration. On the contrary, though a certain mannerism pervades them, they are wonderfully true to fact. One must be in the lands of the Gods itself (Japan) to realize how very correct, even to minute particulars, they are. Of course, in Japan, as elsewhere, dead “old masters” still sway the sceptre over the living artist, and guide his pencil into lines never found in nature; but, in general, the almost microscopic accuracy of detail, and truth of scene are acknowledged by all who study Japanese life, character, and scenery. A favorite subject on these fans is the *geisha*, or singing-girl, and her sister, who is always known by her resplendent apparel, with her girdle tied in front, and a multitude of tortoiseshell hair-pins stuck in her hair.

CAUSE OF A TROTTER HORSE BREAKING.—Says a correspondent of *Turf, Field and Farm*—Some experienced horsemen say that a horse in his effort to respond to the whip overbalances himself and is forced to break to prevent himself from falling. I am satisfied that this cannot be true, for if it were, a horse would very often stumble when he broke; but a horse in the act of breaking does not stumble, on the contrary he flares up with a plunge and seems to loose control of the movements of his legs for a few moments. Some first class trainers, again, will tell you that a horse when trotting very fast, looses confidence in himself and breaks from fear of striking himself. Now if this were the case, the horse would lurch and go awkwardly from the moment he was forced into a fast gait. My theory is that the power of trotting fast lies more in the brain than in the muscles. And, when a horse under the excitement of the whip increases his speed above a certain point, his brain becomes unable to keep up with the rapid continuous motion of the muscles. He looses control of himself. He is unable to put his legs where he wants them, and he goes into a gallop because that gait requires little or no exertion of the brain. I am almost satisfied in my own mind that I have hit on the true theory, and that a horse should be so handled as not to loose confidence in his ability to do the work required of him.

Trapping the Skunk.

The skunk has a wide acquaintance and needs no introduction. But he is more widely than favorably known: for it may truly be said he is in bad odor with most people.

I will tell how I and my neighbors did it, easily and effectually. We trapped them, using a common steel trap as light as will securely hold them.

The animal knows the range of his battery, and is not likely to waste his ammunition—will not unless you approach him suddenly, threateningly, so as to frighten him.

The Uses of Charcoal.

I lately noticed in your paper a good description of the way to burn charcoal. I will give some of its uses to the farmer, from experience.

Cow stables will receive the same benefit and produce the same results. It is also invaluable in the poultry house, in keeping it wholesome for the fowls, and making a most valuable manure.

When charcoal is powdered and a little dropped in a potato hill when planted, it will double the crop, and will improve the quality beyond expectation.

Length of Roots.

Prof. W. J. Beal of the Michigan Agricultural College publishes the following interesting facts, mostly the result of his own examinations, in relation to the length of roots in plants and trees:

The soil has much to do with the length and number of roots. In light, poor soil, I find roots of June grass four feet below the surface.

to show that clover and Indian corn have any more weight of roots than June grass. They probably do not contain more.

The roots of a two-year-old peach tree in light soil were found seven feet four inches long. In a dry, light soil, this season, we pulled up one parsnip three feet long, and another three and a half feet long, small roots even still longer.

The noted buffalo grass on the dry western prairies, is described in the agricultural reports at Washington as having very short roots; but Mr. Felker, one of our college students, found they went down seven feet.

The roots grow best where the best food is to be found. They grow in greater or less quantity in every direction. If one finds good food, it flourishes and sends out numerous branches.

HORSE-SHOEING.—Murray writes: Never touch the bars, frog, sole or outer surface with a knife or rasp. Shoe with light thin shoes that allow the sole bars and frog to be brought in contact with the ground and thus bear their due proportion of the horse's weight.

PETROLEUM OILS FOR DRESSING LEATHER.—Petroleum oils are coming into use for dressing leather, and it is stated that their use for this purpose is largely increasing. It is claimed that by the use of petroleum many advantages are gained, among which are: that the leather can be reduced to the pliable condition more rapidly and with less cost than with pure animal oils.

A CALIFORNIA SPIDER.—What I am about to relate is nothing new to entomologists, but may be of interest to some of your readers. The California Spider, of which I am writing is one of the most ingenious of insects, and she constructs her dwelling as follows.—A hole is made in the ground six inches or more in depth, three-fourths of an inch in diameter.

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.

MANUFACTURE OF COCOA.—We will now give an account of the process adopted by Messrs. James Epps & Co., Homoeopathic Chemists, and manufacturers of dietetic articles, at their works in the Euston Road, London."

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