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THE CANADA FARMER.

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Agriculture.

The Atmosphere as a Fertilizer.

This is a subject which, practically, receives but about half the attention it merits. Substantial manures, when obtainable, are of course the great desideratum and no soil, however fertile, can long sustain nutrition without them. But in many instances these are not readily attainable, at least in appreciably large quantities, and it is well to know in such cases how best to adapt our soil for the absorption of those inexhaustible fertilizers which are chemically combined in the air around us.

The composition of the atmosphere is so well known that it need not here be repeated. It is however worthy of note, as illustrative of the wonderful resources of the air, that a young sapling, planted in earth that had been oven-dried, and receiving no other nourishment thereafter than that derived from the air, and an occasional watering, more than quadrupled its weight in a twelvemonth; whilst the earth in which it grew, having been again dried and weighed, showed a loss of only two pounds—a fact which proves that we are indebted almost solely to the atmosphere even for the solidity of our trees. The same truth on a smaller scale, as well as on the large, is being illustrated every day and all around us, but the principle could be much more effectively utilized in agriculture than it is, and that simply by a more thorough pulverization of the soil.

The decomposition of animal and vegetable matter keeps constantly filling the air with fertilizing gases, and perfect tillage is the first step necessary to condense these in the pores of the soil. It follows moreover that if air is such an essential source of vegetable nourishment, the more of it supplied the better; and so it is, provided only it be supplied through the proper channel viz.—the soil. The nature of soil too must here be taken into account, for some kinds are much more easily permeated than others. For instance, in testing with water, one hundred pounds of pure clay, dried, absorbed seventy pounds of water before any came through so as to drop. A similar weight of clay loam took in fifty pounds; English chalk, forty-five pounds; loamy soil, forty pounds; calcareous sand, twenty-nine pounds, and dry quartz, twenty-five pounds. The experiment illustrates strikingly the degree of tillage or pulverization requisite in each case as compared with the others. Carrying the test still farther, five hundred pounds of good, fertile soil taken from various parts of the world and made perfectly dry, gained nine pounds in weight in the course of an hour by simple absorption from the atmosphere, and this gain varied with different qualities of earth, in proportion as they were more or less productive. The lesson to be derived is obvious—always bearing in mind that that soil is best fitted for the simultaneous action of air and water, which will retain about forty per cent of the latter.

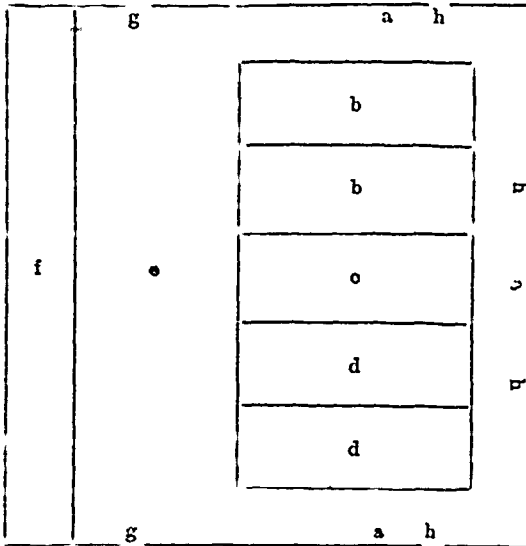
Reclamation of Swamp Lands.

This subject is one of great importance, in many parts of Canada, where vast tracts of excellent land are partially or wholly submerged in water—an importance which has been anticipated and recognized by the Legislature in its passing the Drainage Act a few years ago. Referring to the best mode of treating swamp land, which has been newly or recently drained, Mr. Erastus Osborn, of Decatur, Mich., in a paper read by him before the Farmers' Institute of that place, a short time ago, said:—"In 1864 he bought a piece of low land considered almost worthless and commenced to improve it by ditching and ploughing. His neighbors said he could never get his money back, that it would grow up with the briars and willows which had previously covered it, and be worse than ever. It did

grow up, but, to good crops of oats and hay. He first cut drains sufficient to carry off the water rapidly. The mowing marsh is usually tough, should be ploughed in the fall so that the ground will freeze and be ready for cultivation the next season. He regarded buckwheat as the best crop to sow the first season, and found it almost as profitable as wheat. In no case would he recommend seeding to grass until the second season. He found potatoes a profitable crop on this kind of land."

An Excellent Grain House.

The following plan of a grain house has been sent by a recent writer to the *Ohio Farmer*. Its claim to superiority is that there is no place in the building in which rats or mice can hide from a cat or dog:



The entire building is 20x25 feet. b b are wheat bins, c c rye or barley bins, d d are oat bins, around these bins is an open space or walk, a, a, a, 20 inches wide; e is a floor to clean and sack grain on, and to keep the fanning mill on; f is a corn crib 4 feet wide at top and 3 feet at the bottom; g g are doors, h h h windows.

Chilled Iron Ploughs.

The great end of force being to overcome friction and attraction, it follows that whatever lessens either of the latter will proportionately aid the former. In other words, if by any contrivance we can diminish the friction of a plough, for example, in passing through the soil, we lessen the draught on our horses by just so much. Now the ordinary method of effecting this end in machinery is to use oil or some other lubricator, which, of course, we could never apply to the plough. But failing one principle, we can fall back on another which generally, though not invariably, holds good in mechanics, and that is that friction is usually diminished or increased in proportion to the hardness or softness of the rubbing surfaces.

Acting upon this principle, manufacturers have recently been turning out chilled, i. e., hardened mouldboards for ploughs, and the results, according to the testimony of some at least who have tried them, are highly satisfactory. Mr. Ives, of Batavia, N. Y., narrating his experience of chilled ploughs to the Western New York Farmers' Club, said:—"In ploughing a few acres of turf ground the last days of December, I took my best common plough, which is made for either two or three horses, and with two horses commenced ploughing about seven inches deep, but soon found it was too much for the team, so I was obliged to hitch on the third horse, when I was able to go on steadily with the ploughing. The next day I sent my man with the three-horse team, and I took two lighter horses and a chilled plough to the same land, and after gauging it to

the same depth and width of furrow, I followed the other plough readily that day and the next, and the horses did not appear to have any harder draft than those on the other plough, both turning the same sized furrow, as near as any one could see, after it was done.

Now, in looking for the reason or cause for so much difference in the draft of these ploughs, we will suppose the form of both to be alike, then the diminished draft comes in favor of the chilled iron. Now let us see how much difference that might make. It takes, we will suppose, about one-third of the draft of the plough to cut and divide the furrow from the land, and two-thirds of the draft goes to overcome the friction caused by the plough carrying and turning a heavy furrow while being drawn over bare ground, as it necessarily is. Now, in the case of a hard or a soft sleigh-shoe, we see the difference between drawing hard or soft iron over bare ground to be probably fifty per cent. in favor of the hard shoe. Or turn the grindstone for sharpening a hard or a soft ax, and we find about as much difference. So then if friction causes two-thirds of the draft of the common plough, and if by having the plough made of hard chilled iron we can save half the friction, then two horses might draw the chilled plough as easily as three would the common one. We were also told that the chilled plough would outlast three or four common ploughs; but the practical farmer will see readily that where he saves a dollar's worth of plough iron because it is hardened, he will save some twenty-five dollar's worth or horse-flesh in the draft of it.

Leaves from Farming Experience—No 5.

Crops and Feeding.

To provide for \$10 tons yard manure, and \$4,400 wanted, we must manufacture the produce, either into cheese and butter, or cheese alone, or into cattle for the butcher. I reckon that every ton of hay, straw and grain used will make 2½ tons manure, and every ton of green food used will make 1000 lbs. of manure, one month old, so that a cow will make 13 or 14 tons annually. The stuff grown on these 180 acres will feed 64 cows, 16 young cattle, and 7 horses, which will make plenty of manure if care is taken of it. A cow between 1100 and 1200 lbs. will eat daily in summer 100 pounds cut grass or corn, and two pounds of peas or oats ground; and when hay was used, each cow got 30 lbs of hay and 9 lbs of barley, or beans, or mait—varied every 14 days. The food and dung being analyzed by Dr. Thompson and assistants, shows that about two thirds of the nitrogen and carbon of the food was voided as manure, and three fourths of the inorganic matter was expelled as manure. See the following statement.—

A cow eating 14 days, at the rate of 100 pounds grass daily, will eat of—

	181½ lbs. in dung	64 lbs. assimilated	97½ lbs. voided
Carbon	21	7½	13½
Hydrogen	21	2½	4
Nitrogen	149	12	63
Oxygen	183	15½	5
Ash	1070	600	210

This shows that three fourths of the potash, soda, lime and phosphoric acid remain in the dung, and care is necessary to prevent waste by rain, air or heating; and if the food is rich, the dung will be rich. Mr. Sibson states that a ton of these mentioned kinds of food, after being converted into manure, may be worth about, say 1 ton linseed cake, \$18.40; 1 ton peas, \$12.50; 1 ton oats, \$6.90; 1 ton corn, \$6.30; 1 ton barley, \$5.90; 1 ton clover hay, \$9.00; 1 ton meadow hay, \$6.00; 1 ton of oat straw, \$2.40; 1 ton of turnips, \$0.85, as manure. The values are based on the amount of inorganic materials and nitrogen contained in each crop named.

There is not much value set on the carbonaceous parts; still, carbon is of much use to start the plant strong, along with nitrogen; as when it starts with a broad thriving leaf it is able to absorb nitrogen and carbonic acid from the atmosphere.

Bell's Carriers, Ont.

JOHN ROBERTSON.

(Continued Next Month.)

Stone Fence Posts.

Cedar fence posts are becoming expensive, and at no very distant day a substitute must be found for them. Cedar is a tree of exceedingly slow growth and only thrives well in peculiar situations. It is hard to say that it is capable of cultivation with any prospect of obtaining gain. We believe no attempt has been made to cultivate cedar for the purpose of raising timber, and it is obvious that no one will embark in the enterprise, as an ordinary lifetime would be required for the trees to grow of sufficient size to be used for posts. In this country no one is willing to wait some scores of years for a crop.

Of late cedar has come in demand for quite a number of purposes aside from furnishing fence posts. Almost all the telegraph poles in the country are cedar, and the demand for them for this purpose in the future promises to be immense. Considerable cedar lumber is also sawn into shingle and materials for cooperage. Much is used for piling and for furnishing protection against the action of water. It is now proposed to use cedar for pavements, as ordinary woods go to decay so quickly when placed in contact with the moist earth.

It is true that other sorts of wood can be used to tolerable advantage for fence posts, though nothing has been found to be the equal of cedar, which has a large number of qualities that especially fit it for the purpose of sustaining a fence. It is very durable, even when exposed to situations where it is alternately wet and dry. It is one of the lightest woods known, and accordingly it can be easily transported and handled. The sticks are ordinarily very straight, so that they require very little preparation for posts. The wood is easily split with a saw or with wedges.

It is evident that the supply of good material for boards will outlast the supply of good material for posts, and that at no distant day a substitute must be found for wood. In some European countries iron has been used for supports of telegraph wires and panels of fences. With iron so high and land so cheap, it is hardly likely that we shall have iron fence posts in this country to any considerable extent. Most likely the substitute for wood will be stone. For more than a century granite fence posts have been used in some parts of New England with the very best results.

We have in many portions of the west quarries of stone that are singularly adapted to forming fence posts. The stone is ordinarily impure limestone, very easy to split, and lying in horizontal layers of about the thickness required to form a single post. These deposits are generally very near the surface of the ground so that little labour is required to open up a quarry. The stone requires no dressing, and holes for nails are very easily drilled in it. No expensive tools are required to split the stone.

The advantage of stone posts is permanency. Once in place, they are good for many generations. They are only liable to injury from breakage, and this liability is very slight. Experience has shown that stone posts are less liable to be destroyed by breakage than wooden posts are by fire. Of course, the labour of preparing and hauling stone posts is greater than in the case of those of wood but the work can ordinarily be done when farmers have little to do, and in many instances stone posts can be obtained for less money than wooden posts.—*Chicago Times.*

Construction of Barns.

A correspondent of the *Country Gentleman*, after submitting for criticism the contemplated plan of a barn, asks the following questions:—How large ought hay sheds to be? (1) How large ought ventilator tubes to be? (2) Ought they to be tight all the way till they pass out of the roof? (3) Should the ventilator tube be closed about tightly where it passes out of the roof, or should the open and unoccupied space under the roof also communicate with the outside ventilator? (4) My plan (liable to change) now is 48 feet square, with cellar for cows and sheep; next above, horse-stable, granary and carriage floor, and above this a threshing floor 16 feet wide, with bays each side 16 feet each; cellar, 8 feet high (clear); intermediate story, 8 feet 8 inches (clear); upper story 20-feet posts. I send a little sketch of the arrangement I have in mind of the three floors. I should be glad of criticisms and suggestions but be assured I shall not be surprised or mortified, however little attention you may give it. I am convinced that the economy of a square, or nearly square building, is not generally appreciated, but there may be some disadvantages. (5) How shall I strengthen the great beam on the north side of north bay, and on the south side of south bay, to prevent their being pressed inward in the middle by the pressure of hay—by a long brace from about the middle of the cross-sill to near the top of the posts, or by cross-beams? (6) What is the best style of roof for such barns—would not what is called the French style (plain) be

more expensive and render more difficult the arrangement of the ventilator tubes and track for car of horsefork? (7) I have seen a five-eighths iron rod put up for track—is it as good as any? (8) How are the floors of horse-stables constructed so that the filth does not go through? (9) What is the method of carrying water to cattle in their stalls? (10) Have I posts enough in my plan—16 feet from post to post, each way, and in each story? (11).

These are answered in succession thus:—1. The common size is about 20 by 30 inches inside. They should be planed smooth to allow the hay to slide easily, and should be slightly smaller at the top, and gradually enlarge in descending, which prevents danger of the hay lodging.

2. Ventilator tubes will be large enough if one-half or two-thirds this size. 3 and 4. There should be opening into the ventilators from the upper part of the hay loft, if the barn is tight, to allow any vapors from the hay to pass off. These vapors will pass into the ventilator and escape (and the fumes from below will not pass through these openings and into the loft), if the ventilator cap is placed at the top, like that represented in fig. 1, and in section by



Fig. 1.

fig. 2; it is made of plank, except the four iron rods at the corners. 5. There is economy in building nearly square, both in material and in the retention of heat in winter; the disadvantages are, a want of light for the central portions, and more difficult side-ventilation. 6. If the posts are stiff enough, all the necessary bracing or ties may be placed in the floors above and below; but if not, cross timbers or iron rods may be used. The pressure against the side walls is comparatively slight, where hay is stored within, as the mass is held together by its fibrous texture, and does not settle, like earth or sand, with resistless force against them. 7. The French, or gambrel roof, is a saving of board siding, by substituting shingle roof instead, and it holds a greater cubic content for the material. When builders are familiar with this mode of constructing the roof, it would be attended with no difficulty—otherwise we would recommend the common and simpler form, as there is no great advantage in the former. 8. If the rod or bar is firmly supported, the precise form is not important. 9. It is well to have good, tight-matched floors, but no well-managed barn will ever emit much foul odor from the basement. Manure, if allowed to remain within doors, should be supplied with a sufficient amount of some kind of



Fig. 2.

absorbent, (straw, muck, dry loam, road dust, &c.) to prevent all offensive smell. If this cannot be accomplished, wheel all the manure out into the yard twice a day. The odor of manure injures the building, corrodes harness, hurts the animals, wastes the manure, and indicates neglectful management. 10. Water may be conveyed to cattle by pumping it into horizontal troughs; or by underground pipes, with sufficient head; or by the method represented in fig. 3, all the tanks being connected by covered curved pipes. When water is poured into one, it will fill all alike. It is important to secure the pipes from freezing. 11. Yes, if the cross-timbers are strong enough and are well supported by braces—the strength depends on braces, ties, sufficient timbers, &c., as well as nearness of posts. It would be well, however, as buildings are commonly made, to provide the basement with at least double the number of posts.

The sketches of the plan of the barn do not represent the details; so far as we can see from these outline sketches, the design appears to be good in its leading features. The three-story barns, like this, will be likely to undergo considerable modification as the horse-fork and horizontal hay-carrier come into more common use.

The Farmer's Tool-house and Workshop.

A farmer can never fully appreciate the usefulness of a good set of tools and a workshop, in which he can on rainy days, or in the winter season, repair his farm implements in many cases, or make useful articles to be used on the farm, and become expert in the use of planes, saws, bits, drawing-knives, &c. On nine farms in ten in the United States, probably, all the edge tools to be found consist of an old saw, not filed within ten years; a rusty auger, with handle-loose; one or two gimlets, made half a century ago, and an axe, in pretty good order from sheer necessity, to be able to cut wood enough to keep from freezing in the winter season. Every good farmer should

have a room in some outbuilding where a stove can be placed in the winter, in which he can do any little jobs that one may be able to do who is not a practical mechanic. After this workshop is provided he should purchase a fair assortment of good tools, as follows:—Fine and coarse teeth saws, two or three augers, of different sizes; bits of five or six sizes, with brace, to be used in the place of gimlets, being much better; several planes, drawing-knife, files of different sizes, a vise, hatchet with a broad cut, nail hammers, large and small—a small sledge-hammer, weighing about two pounds, and other things that will occur to him when purchasing. A cooper's shaving horse is a very useful thing to have in such a workshop; also different sized wrenches, with which any nut on the iron-work of farm implements may be removed.

Let any young farmer supply himself as above stated, and in two or three years he will be surprised at his advance in the use of such tools and his ability to repair many things that are generally sent to the blacksmith or wheelwright to mend. He should always provide in advance hardwood timber, cut in the most convenient sizes or such uses as he may require it, so that if he wants to repair an implement, he can instantly find just the piece of wood needed and seasoned. A man who accustoms himself to the use of good tools and brings up his boys to use them, may frequently repair his farm buildings quite as well as a carpenter. Suppose that a roof is to be shingled—any man of tact who is accustomed to the use of the hammer and chalk-line can do it. So it is with clapboarding—a little care in lapping and keeping the courses level, and any farmer can do it, or frame a small out-house, if he has suitable tools and has had some practice. Every farmer knows how very often something upon his premises becomes "out of order;" how frequently he has to go or send "to the village," from one to five or more miles distant, to have some little thing done that he could do in a few minutes if he were properly prepared for it. For instance, he commences haying; the weather is fine, and he is anxious to cut all the grass he can on that day. He works an hour or two, and a bolt in the machine becomes loose, a nut having come off, which is lost. He is not accustomed to swear much, but on this occasion he uses pretty rough language, as the machine must be idle the rest of the day, in order to go to town and have a new nut made.

Now, suppose that this man had provided extra nuts and bolts for his mowing-machine, as every farmer ought to do—that is, those that are liable to break or get loose and be lost—in such case his detention would have been but a few minutes. This provision of extra bolts and nuts, extra plough-shares, hoe and hay-fork handles, &c., comes in as a consequence of forming the habit of keeping a good supply of workshop tools and looking ahead in regard to farm labors. Farmers can often, on rainy days, employ hired men in their workshops in helping repair some implement. It is very bad management for a farmer to have nothing for his farm hands to do in wet weather, and something should be prepared for them on such occasions. The good farmer will always look ahead, and have something that his help can do profitably when they cannot work out of doors.—*New York World.*

Right vs. Left Hand Ploughs.

A correspondent writes as follows to the *Ohio Farmer*, on the comparative merits of left and right handed ploughs, evidently favoring the former:—

Nearly every farmer in this neighborhood uses a left-hand plough. Why is this so? Is it because the left hand has any advantage over the right? I have never found out what this advantage was, but I claim the right hand has more than one advantage over the left. One is in breaking a colt; a man generally wants to hitch a colt on the off side, and with a right-hand plough the colt will soon learn to follow the furrow; then when he has learned to turn at the end, if the nigh horse is a single-line horse, the single line can be put on him, the colt jockeyed off, and all will go well.

But with a left hand plough the colt is put on the land, with nothing to keep him to his place but a jockey stick, and he will go just where he pleases—sometimes in and sometimes out—picking the best place to walk, of course, and it is impossible to make a straight furrow. Another is, in finishing up a land, there should be three narrow furrows left, and in ploughing the third from the last furrow, there is barely room for a horse to walk on the land; with a right hand plough a person can keep the nigh horse on the land by using the line, but with a left hand plough the furrows are mostly made so crooked that the horse can neither walk on the land nor in the furrow all the time. When the strip is of a width all along, the off horse can walk in the furrow easier than on the land, and there is where he will walk. It always seemed to me, when I was ploughing this furrow with a left hand plough, that I ought to have two jockey sticks—one before and

one behind. The furrow next to the last should be ploughed shallow; for ploughing this furrow I would just as soon have a left as a right hand plough, as each horse takes a furrow. The last furrow should be left six inches wide, and then turn up about half of the bottom of the other furrow, and to do this, the high horse often has to walk on the last furrow, after it is turned over, and with a right handed plough he can be made to do it with the line; but I cannot jockey the off horse off so as to make him walk just to the spot. I heard a farmer ask a plough agent, who had three left and no right hand ploughs at the fair, why he did not bring a right hand plough along with him? The agent replied that he sold ten left to one right hand plough, and I say there are ten poor ploughmen to one good one. We don't very often see first-rate ploughmen use left hand ploughs. I was once at a ploughing match at which there were three right and two left hand ploughs. The men who had the right hand ploughs made very straight furrows, and those with the left hand ploughs made very crooked furrows. I will close by saying that if the left-handers convince me of the superiority of their ploughs, they will have to tell something that they have not told yet.

Advantages of Broad-Rimmed Waggon Wheels.

Proprietors of farm waggons and carts the wheels of which are made with narrow rims, have no adequate idea of the amount of feed and flesh of teams that would be saved, if the wheels of their vehicles were provided with rims three to five inches broad. Of course, where the ground is hard, no perceptible advantage will appear in favor of broad-rimmed wheels. But when hauling manure over soft ground, or hauling loads of grain and hay from fields where the wheels sink only two or three inches into mellow soil, if the rims of common waggon wheels are four or five inches broad on the periphery, a team will draw fully one-third more per load than if the rims were of no usual width.

am accustomed to keep only one horse on my cattle farm, which does all the teaming, ploughing and other work. When the tillable land is dry, the rims of wheels of usual breadth would sink in the soil four or five inches, even when the load would weigh only seven to eight hundred pounds. If the rims were broader, the reasoning is that the horse would be able to draw nearly one-half more per load without exerting any more force. In order to put this conjecture to a practical test, I purchased an old waggon for ten dollars, the spokes, hubs, axle-arms and springs of which were nearly as good as when new. A set of bent rims for the four wheels was purchased in New York city for three dollars. The rims were one and a half inches deep by three and a half broad. The expense of putting the new rims on the old spokes was two dollars. Iron for the new tire one-fourth of an inch thick by three and a half broad, cost two dollars and seventy-eight cents. The blacksmith asked one dollar per wheel for setting the tire, which was an exorbitant price. Paint, oil and red drier, one dollar and fifty cents, amounting in all to twenty-four dollars and twenty-eight cents. I did the painting and made the box for the waggon myself, when I would have been doing nothing. On this waggon with broad-rimmed wheels, the old horse will draw a ton of coal or stone with the same force, to appearance, as he would take to draw ten to twelve hundred pounds on the other waggon, the wheels of which have narrow rims. When hauling muck from the bog-meadow, he will take more and larger loads than he can draw in the other waggon. When passing over soft ground where his feet sink in the depth of the hoofs, the broad rims roll along over the surface as if there were no load on the waggon. There is a great advantage in having the rims of farm waggons broad, say four inches for two-horse waggon — *Practical Farmer.*

MEASURING HAY IN BULK — A. B. Allen, in *N. Y. Tribune* says: "So many things have to be taken into consideration in calculating the weight of hay in bulk it makes it difficult to get at precisely. For example: fine, new-mown hay, like red-top or herd's grass, would probably require 500 cubic feet for the ton; timothy, 550; clover, 650; coarse meadow hay, 700 or more. After being stacked 30 days the bulk would be decreased from five to ten per cent., possibly more, according to the size of the stack and the pressure upon it. Again, hay will vary somewhat in measurement according to the time it is cut. If this be done when it is just coming into blossom, as it always should, it will pack closer and weigh more per cubic foot than if left till the seed begins to ripen, and the stalks and leaves have grown coarser and become drier. Good judgement and some experience in measuring and weighing are required to get at this correctly. A neighbor of mine informs me that he once had the curiosity to weigh his timothy hay as he put it into the barn in July. He sold it about nine months after, and on reweighing it, as it came out of the barn, he found, greatly to his surprise, that it had shrunk to within a fraction of 25 per cent."

The value of manure depends on the amount of potash, phosphoric acid, and nitrogen which it contains.

Meadow Foxtail.

The illustration on this page represents the Meadow Foxtail (*Alopecurus pratensis*), the technical name of which is derived from two Greek words, *alopez* a fox, and *oura* a tail. This is one of the principal grasses in most of the rich pasture regions of Great Britain, and is a native of nearly all the northern and north-western countries of Europe. In appearance it closely resembles Timothy, but differs from this latter in, and may be distinguished from it by, three essential particulars, viz.: 1st, it flowers in May, a month or more earlier than Timothy; 2nd, it has but one chaff or husk, while Timothy has two; and 3rd, its head is soft and yielding, while that of the other is comparatively coarse and rough.

In this country the Meadow Foxtail has not as yet become very common. In some States of the Union it has been raised successfully, the culm in some cases reaching a height of four feet—this, however, is probably the exception rather than the rule. As a field crop it is not likely to become popular, because of the general lightness and paucity of its stems and leaves; but as a pasture grass it has no superior among the grasses. The zest with which cattle relish its great sweetness; its early start and rapid growth in spring; the quickness with which it renews its



leaves after cropping, and the rich aftermath that follows, will always secure its popularity with those who have tried and proved its merits.

The following table by Prof. Law, of the Royal Agricultural Society of England, shows its nutritive qualities, chemically considered, as compared with the other grasses:

FORAGE PLANTS.	Water.	Fresh forming principle.	Fatty Matter.	Starch, gum, etc.	Woody fibre.	Mineral substances.
Meadow Foxtail, or (<i>Alopecurus pratensis</i>)	60.20	2.44	.52	8.59	6.70	1.55
Timothy, or (<i>Phleum pratensis</i>)	67.21	4.30	1.50	22.85	11.32	2.26
Red Top, or (<i>Agrostis vulgaris</i>)	no data.
Orchard grass, or (<i>Dactylis glomerata</i>)	70.00	4.00	.94	13.30	10.11	1.69
Ry. Bluegrass, or (<i>Poa pratensis</i>)	67.14	3.41	.86	14.15	12.49	1.95
Green. Dry.	10.35	2.63	43.00	33.02	5.94

In the matter of weight, the grass is very light, less than half as heavy as an equal bulk of Timothy. Its nutritive

capacity too, as seen from the table, is in about the same proportion. Its seeds are scarce, expensive, and very liable to the attacks of certain species of insect pests, whilst the grass itself is subject to blights which sometimes smother vegetation at the outset. Its main claims to superiority as a pasture grass are those already mentioned. Though, under favorable circumstances, it will thrive on nearly all soils except the driest sands and gravels, it is of course partial to those best adapted for its sister grasses.

White Schœnon Oats.

Amongst many varieties of oats, the Norway, the Surprise, the Excelsior, the Hulless, &c., experimented upon by our American neighbors, none appear to have given greater satisfaction in yield and quality than the White Schœnon, which is described as a hardy grower, containing several kernels to the hull. It was first brought under the notice of Vermont farmers through experiments made by Hon. L. Bartlett, of New Hampshire, who succeeded in raising as much as ninety bushels to the acre. We read in the *Vermont Farmer* the results of additional trials. One writer says:—Six years ago I received from the agricultural department with other seeds a small package of these oats. They produced, at harvest, five bushels of very nice, white, heavy oats that weighed thirty-six pounds to the measured bushel. These five bushels were sown the next spring on two acres of land, and produced 125 bushels of very nice, heavy oats. I have raised no other kind since, and am thoroughly convinced that they are very much superior to any of the various other kinds which I have tested.

With common culture, sown after a corn crop, the yield has been from sixty to seventy bushels to the acre. Some of my neighbors, who have procured seed of me, report equally good crops, and itinerant threshers, who are good judges, speak highly in favor of the oat. The White Schœnon oat is a strong, hardy grower, about as early as the common Vermont oat, and like that oat, has several kernels in one hull. It is entirely distinct from the Surprise or Excelsior oat, which usually contains but one kernel in a hull.

I do not know how widely this oat is known or cultivated in this state, or whether it would succeed equally well in other locations as here. But it seems to be one of the good things sent out by the agricultural department, and worthy of a careful and thorough trial by farmers.

We should be glad to hear if the White Schœnon has been tried in Canada, and with what results.

June Grass or Blue Grass.

The CANADA FARMER recently published an illustration and description of the qualities of this well-known but variously esteemed grass. In Kentucky the Blue Grass is considered the very best of grasses. In an address before a Shelby County Grange, published in the *Farmers' Home Journal*, Chaplain Blaydes gave the following three prominent characteristics as especially commending it to favor:

First—Its capacity to yield an abundant pasturage. This characteristic of the variety named is apparent to all whose attention has been directed to this matter, as it will yield rich grazing the year round, and may be almost classed with the evergreen. All this conspires to give it a very high place in our favor for winter grazing. It is a familiar fact that in what is proverbially known as the Blue Grass region, this grass has attained a very high state of cultivation, specially for winter pasturage; while in an adjoining and sister state (Indiana), there are a number of counties in which this grass is fostered with a view to both summer and winter grazing.

Second—Its fattening qualities are conceded by all to be equal, if not superior to that of any other grass, and for cattle it has no equal among all the grasses, giving rise to the most savory of meats. Especially for milch cows does its excellence manifest itself, in the rich flow of sweet and oily cream from which the choicest butter is made. I once heard a brother farmer remark that he had a large woodland pasture, set in blue grass, which he usually used for summer grazing; but, being advised by a friend to cut the pasture in two and keep one half of it for winter pasture, he was prevailed on to act out this suggestion, and he remarked that he turned about thirty head of cattle on in the early part of winter, and they remained on it during the winter, without having been fed any, except only when there was snow or sleet on the ground, so that they could not get to the grass. "And," said he, "they kept in good beef order throughout the winter." I mention the foregoing circumstance as it is an attestation of the superior fattening qualities of this most

excellent variety of the grasses. Much more might be said in this direction, but I will pass on to the next prominent feature of this variety.

Third—Its capacity to hold the soil from washing away is perhaps more than double that of any other grass. Embracing with its network of ten thousand thready rootlets, it thus clasps almost every atom of the soil, and, when it has thus taken possession of the soil, it admits of no rival, forming a heavy, rich, green sward on the surface, upon which the gushing rains may descend and pass off, almost as crystal-like as when they first fall. Thus, it may be seen that our soil is safest from the ravages of the watery element when in the keeping of this most beautiful variety of grasses.

Charity towards Mother Earth.

EDITOR CANADA FARMER:—Ingratitude is a sin of the worst character, yet boys and young men are seen to treat their mothers, who have loved and petted them from their birth, with neglect, and in some instances with cruel contempt.

This abominable ingratitude is exhibited toward the mother of all in very glaring colors, and nowhere more conspicuously than in Canada and the United States, where the rich and magnificent prairies and the deep fertile valleys have fed and fattened the poor half starved emigrants from all parts of Europe. These men and their descendants have sent off the corn and grain, but the money obtained is none of it expended with ideas of reimbursing the earth, and though the strength and very heart has been extracted, till the body has become so feeble as to be unable to produce half what was formerly forthcoming, no sort of recompense is made, and in many instances the wretch who has despoiled his mother's wealth leaves her to the tender mercies of others, and employs the money stolen from his benefactress in city speculations and in any way rather than to replace her life blood—some of those who have robbed their poor mother will build themselves a fine residence, and, not being able to obtain enough to satisfy their greed, will divide out on shares to those who will scratch the skin, and by frequent scarifications draw out all the latent life left in the poor worn-out body.

These men instead of keeping herds and flocks to make use of the produce, and in that way cause a reaction in the soil, will not do it because sheep get killed by dogs for want of a shepherd to take care of them, or the fences are so badly constructed that sheep will creep through or jump over them, and for the reason that cattle require attention in the winter they will not keep enough of them to do any good, and they will sow clover and actually plough it under to give food for one more crop of wheat.

Charity is exhibited by many, and is a leading characteristic in many dispositions, but there is none shown toward the land they live on. I know a gentleman who has given bread to the hungry on a large scale, and who is exceedingly considerate of every man's happiness in his employ, and who carries out his kindness of feeling to the old horses, which have become aged in his service, and who farms well too, but he has some thousands of cattle near a river, and the manure from more than 2,000 goes for weeks at a time into the water, and is gone to the benefit of no one, while neighbors' land all around is worn down to the last stage of sterility. He allows them to have what they like to take, and it is gratuitously filled into their wagon boxes by steam in less than two minutes, yet there are men, several, within half a mile who will not take it, and many more who would not have to haul it a mile, who suffer it to go upwards of a hundred tons per day into the river. There are also many more cattle on the banks of the same stream from which the manure is thrown into the water, and while daily, from now till next June, this wholesale waste of hundreds of tons of manure per day is proceeding, hundreds of teams per day will be hauling to within a few yards of the cattle stalls, and passing by them, corn, wheat, oats and barley, seeing and knowing of the waste, yet never thinking how it might be utilized. One would think the whole community incogitant—but when it is well known by everybody that all the greatest cities lay out millions to run all the rich manorial matter from the houses into the streams or the sea, and no means are devised whereby this sinful waste could be brought to replenish the earth, it appears as if incogitancy reigns in governments.

Walkerville, Ont.

A.C.

Lucerne.

As supplementary to the information already given in the CANADA FARMER about Lucerne, we append the following, written by Mr. A. B. Allen, for the New York Tribune:—

Lucerne is a perennial, and if properly taken care of, usually continues to produce large crops from seven to ten years. In a very favorable soil and climate it lasts much longer. It is sown in the spring as soon as severe frosts have passed. The earlier it is then got in the better, so as to insure a fair growth before hot, dry weather comes on. It should not be cut the first year after sowing, but must be suffered to grow freely and get strongly rooted. After that it may be cut annually from three to five times, according to climate and season. To produce largely, it requires abundant rain or irrigation; and yet it stands a drouth the best of all forage crops, owing to the long tap roots it is able to send down so deeply into the soil.

Although of the clover family, it has the advantage over it of coming earlier in the spring; but it is not quite so good for hay, as the stalks have a larger, ranker growth than any of the clovers. It is the best of all crops for soiling—that is, to be cut and fed green to the stock. It should never be pastured.

All kinds of domestic animals do extra well on Lucerne, but caution must be observed, as with clover, not to feed so much, particularly when wet, as to cause hoven. It is especially well suited to increase the flow of milk from cows, and it will keep any decent breed of swine in fine condition till ready to be taken up for fattening on corn in the Autumn.

Latitude 40° is probably one of the best east of the Rocky Mountains for this crop. I have grown it with moderate success as far north as 43°, and some of my friends at the South inform me that it yields abundantly as low down as 27°, and then it grows and keeps green all the year round.

Heavy clay, unless well drained, or wet soils of any kind, are unsuitable for Lucerne. It requires a deep, rich, light loam, with a porous subsoil in order to get the largest yield. The land should be in fine, deep tith, and clear of all weeds; it may then be sown broadcast, or, what would be better, in drills from 9 to 12 inches apart. In this case it makes it easy of cultivation with a coulter or a very narrow plough. It is absolutely essential to keep the crop perfectly clear of weeds the first year; after that it shades the ground so well as to keep them down. If sown in drills, about ten pounds of seed is sufficient. If broadcast, two or three pounds more would be required. The seed fluctuates in price according to its scarcity or abundance in market. The average price here is usually fifty cents per pound. When properly cultivated, Lucerne is the largest producer of all the forage crops, except Indian corn stalks. Three to five tons dried is not an uncommon annual yield for it. Cut for green feed or for hay on the appearance of the first blossoms.

Grasses for Pasture.

EDITOR CANADA FARMER:—Will you please answer the following: What is the best mixture of grass seeds to sow for permanent pasture, for cows, on clay land? State the quantity.

EX-STUDENT, Cirencester College.

Good orchard grass will answer the purpose, and will probably prove as serviceable as any other kind. It may be mixed with Timothy, June or Blue grass, White Clover, Red Top, or rough-stalked Meadow grass, in the proportion of about eight quarts orchard grass to four of either of the others. The best pastures, however, are those that have the greatest variety of grasses in them. Flint, an authority on the subject, recommends the following, which, as far as the quantity is concerned, is a liberal allowance—and liberality is necessary if a good sward is wanted: Meadow Foxtail, 2 pounds; Orchard Grass, 6 pounds; Sweet-scented Vernal, 1 pound; Meadow Fescue, 2 pounds; Redtop, 2 pounds; Kentucky Blue Grass, 4 pounds; Italian Rye Grass, 4 pounds; Perennial Rye Grass, 6 pounds; Timothy, 3 pounds; Rough-stalked Meadow, 2 pounds; Perennial Clover, 3 pounds; White Clover, 5 pounds.

WHITE GRUBS can be driven out of any soil, says a correspondent of the Rural World, by a very small quantity of salt sown broadcast over it. Five pounds per acre will banish them in twenty-four hours, if there is moisture enough on the soil to dissolve the salt.

HOW TO GET RID OF STUMPS.—Gen. Colquitt, of Georgia, in a recent address, said: "To remove stumps from a field, all that is necessary is to have one or more sheet-iron chimneys, some four or five feet high. Set fire to the stump and place the chimney over it, so as to give the requisite draft to the bottom. It will draw like a stove. The stump will soon be consumed. With several such chimneys, of different sizes, the removal of stumps may be accomplished at merely nominal labor and expense."

FLAX STRAW, or flax trash, is said to be an excellent non-conducting material to use between the ice and inner wall, when filling the ice house.

ANALYSIS OF THE SOILS is of little or no value to common farming. The soil is so bulky that valuable ingredients are not easily detected; besides, a coarse, sterile soil has been made fertile by finely pulverizing its ingredients without changing them. There are several other reasons. The only satisfactory way to find what the soil wants is to try the experiment of applying the fertilizers.

A FARMER who has profited by experience writes this sensible paragraph: "In building a new barn, I would study to put in all the windows I could possibly get in, of course not making a greenhouse of it, but as many as most folks put into dwelling houses. It is so much better doing the work in a light barn than in a dark one, cattle are more easily taken care of and are more quiet and better contented in a light place than in a dark one."

AGRICULTURAL IMPLEMENTS IN NEW BRUNSWICK.—We learn from the annual report of Queen's County Agricultural Society that, in that county alone, there have been expended during the past nine years, \$2,839.45 for imported stock, mostly short-horns from Ontario, and \$1,393.85 for improved implements of husbandry from the same quarter.—all of which have been followed by the most gratifying results. If all the other counties of our sister province can make as favorable an exhibit, they are evidently on the high road to prosperity.

EFFECTS OF ELECTRICITY ON VEGETATION.—I always like to read the articles in your paper contributed by your intelligent correspondent "Sarawak." I notice his communication on page 221, Dec. 15th, under the above head. Perhaps as his was a Galvanic mode of application, the necessary acid was not supplied. I hope, he will not be discouraged from repeating the experiment, with the addition of the acid.—J. P. Wilkey, Exeter, England.—(From "Sarawak's" description it appears that he had not established the circuit. No acid wanted.)

DRILL AND HAND SOWING.—Farmers will be interested to know the results of an experiment made during the past season as to the relative merits of broadcast and grain drill sowing, which was made on the State Experimental Farm in Pennsylvania, and from which we learn that 2½ bushels, hand sowed, produced 116½ bushels; while the same quantity of seed on the same amount of land sown with a grain drill produced 127 bushels. In the face of such facts, it is astonishing that so many farmers fail to become purchasers of the valuable adjunct to husbandry—a Grain Drill.

STORAGE OF MANURE.—The Sanitary Record gives directions as follows relative to the storage of manure so as to mitigate the effluvia arising from it: If it is on the premises of the consumer, it may be mixed with such articles as pulverized clay, or by the fixture of the volatile matters by the addition of mineral acids, or the mechanical admixture with some oleaginous substance, which will enable it, to a great extent, to be stored without losing its agricultural value. On the other hand, if the article is to be sold, the admixture of pulverized clay, &c., would tend to depreciate its value to a great extent. We believe the best plan of preventing the diffusion of the noxious effluvia arising from artificial manure when stored in bags would be to keep them well covered with charcoal in a granulated form. If it is in a building, it may be fitted with arrangements for containing charcoal, so that no air can escape without passing through the charcoal. There are many other ways of dealing with the question, such for example, as by good ventilation, the collection of the escaping vapours, and consuming them in a furnace, &c.

USEFUL FARM MACHINERY.—A few days ago, says the Guelph Mercury, we had an opportunity of seeing in operation at the Model Farm, a small horse power on the "Pitt's Patent" principle, which is used for the purpose of cutting hay or straw, slicing or pulping roots, sawing wood or any of the ordinary work on a farm, apart from driving a separator. The horse power is in very small compass, of sufficient strength to be freely used by four horses, yet can be worked by two with the greatest possible ease. It is firmly staked down in the usual way outside of the barn door with connecting rods reaching to a "Bevel Jack" on the barn floor. A short belt is then attached to the straw cutter, or to the root cutter, which is in the cellar or stable, as the case may be, through a small hatchway cut in the barn floor, in either case doing its work with rapidity and ease. The root cutter is one of Watson's triple action machines. By simply reversing an iron plate, which can be done when the machine is in motion, it will cut roots in slices for cattle, or smaller pieces for sheep, or pulp, in a most perfect manner. At the Farm the cut straw and roots are mixed together and allowed time to slightly ferment, and then fed to the stock, which they devour with evident relish. The whole machinery is from the agricultural implement works of J. Watson, Ayr, and is another triumph of Mr. Watson's mechanical skill made to subserve the interests of the farming community. The authorities at the farm speak in the most flattering terms of these machines in all their workings.

Horticulture.

Old Apple Trees.

Mr Bateham, of Cleveland, Ohio, a sexagenarian, who is accounted an authority on fruit, writes a very sensible and practical letter on the above subject to the *Country Gentleman*. Having bestowed considerable attention on the deterioration of orchards in the older settled regions of his own and other states, he is convinced that a large number of trees have outlived their period of usefulness. On this point he says:—It seems to be the common belief that there is no limit to the natural age of apple trees. But this is certainly a mistake. We all know that the peach tree usually fails to be profitable at 12 or 15 years of age, and the cherry and plum average only 20 to 40 years; the pear in favorable circumstances, 40 to 50 years—in rare cases a much longer time. So, also, the apple tree has its natural limit, and although, like man's life, the duration of the period of health and vigor varies greatly, according to constitution, nature, climate, etc., its approaching termination is clearly indicated by signs of debility and disease. On very deep and favorable soils, and where the trees are not damaged by severity of climate, apple orchards are occasionally found bearing fair crops of fruit at 80 to 100 years of age, but these are nearly as rare as for their owners to live so long. Very few farms have soil of the best kind for an orchard, and everywhere our climate is either too warm, or at times too cold, for the best health of the trees. Injury by severe cold, blackening all the wood, except as new growth is formed, I am convinced, is a very common cause of the premature failure of orchards; but starvation, in consequence of exhaustion of the soil, is still more common, and this is a more difficult matter to remedy than most people suppose, especially when trees have attained full bearing size.

Speaking of the effects upon trees of periods of heat and drouth, the writer says that if the parching time comes before summer growth has taken place, it destroys all the feeding rootlets that extend themselves in spring into the surface soil, thereby vastly injuring the tree; and he deprecates mere top-dressing and shallow ploughing as a remedy against the evil. "I would manure heavily," he says, "and plough deeply in the fall, at the risk of breaking some roots."

"Trees of from forty to seventy years of age," he continues, "are capable of bearing only every alternate year, and then their fruit is deficient in size, and of second class quality. Old orchards, too, are much more infested with the codling moth and other insects of every description." The remedy he offers is to cut down all over-aged trees, leaving only a few for family use, until such time as young orchards can be planted and commence to bear. Those at first retained may then be got rid of in the same way, and the ultimatum will be a thrifty young orchard, bearing uniform, annual crops of good fruit. Of course, he adds, care should be taken not to set the new trees on the ground formerly occupied by the old ones, and if they can be planted at a considerable distance from the old ground, so much the better.

What I Know about Parsnips.

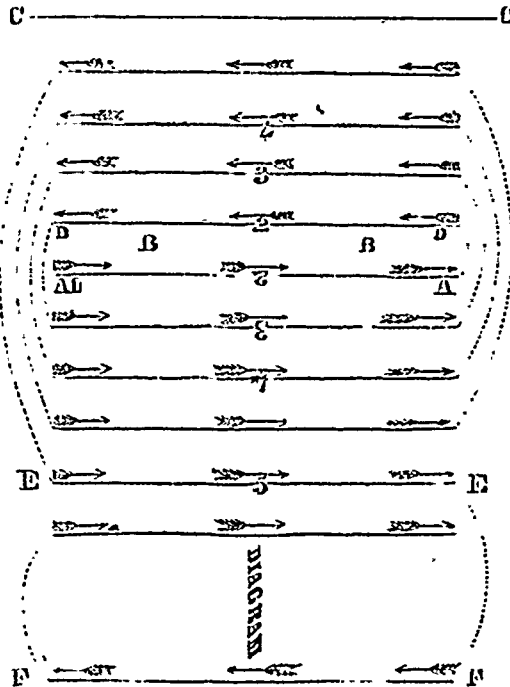
EDITOR CANADA FARMER:—I will now endeavor to show how farmers can grow the parsnip for profit. I have seen no writer as yet that (directly) gives instructions about growing the parsnip further than this "cultivate the same as for carrots." Now, farmers at the present raise but few carrots and no parsnips, and so their experience amounts to but little more than nil.

The parsnip is one of four vegetables belonging to the umbelliferous class that figure so prominently in all market gardens, namely, the parsnip, parsley, celery and the carrot, and as a rule neither has enemies to prey on it. I think the sole cause of the farmers ignoring this valuable root is for want of knowing how to grow it, or how much it is worth, or else that it is a garden, and not a field crop. Perhaps the most economical distance for rows is twenty inches, and the plants 24 inches apart in the row, which will produce in round numbers fifty thousand roots to the acre, and, allowing one pound per root, the yield will be 25 tons. But, should this appear too glowing, strike off one-third, and say 15 tons per acre, when this latter weight

will more than equal 30 tons of turnips. I must promise that every farmer has a portion of his land that is naturally or mechanically drained, otherwise no great results will follow.

There is no land more suitable for this crop to follow than that which has borne a crop of early potatoes. When the stalks are all cleaned off, harrow it well different ways, and let it lie a few days, after which plough not less than 10 inches deep, if it is necessary to hitch up the third horse. This should be done not later than the first week in October. It should lie in this condition for a week when it should be again well harrowed. The compost heap should now be in a condition to afford 12 good loads of well rotted manure per acre, spread broadcast and ridged up in the manner below illustrated.

I know of no one practising this method but myself. Mark off a distance, say 30 feet at A. A. parallel to C. C. Begin the first ridge at A. 1. At the other end haw to the left and come down to the line D. D., leaving as a centre B. B., then haw to the left, ploughing another ridge to the right of the first, which makes the second ridge at 3. 3., and so continue till the first panels E. E. and C. C. are completed. The last time, when going up 5, gee, by turning to the right, and back at F. F., which must be parallel to E. E., and so continue till a whole field, or any part of it is done. In this method of ridging there are two things to observe: First, your left hand horse becomes the furrow horse, when, by adjusting the bridle of the plough, a ridge can be made of any width from 18 to 30 inches. These ridges, when so made, are just half done. The second



thing to note is, when you proceed to split or finish them, you must begin where you end the first time, and end where you begin, following the same direction as at the first, and no short or odd bouts can possibly occur. But, before this second operation of ridge-splitting is done, there is one thing of paramount importance to all others to be attended to in root-growing, namely, the subsoiling between the ridges. The heaviest subsoil-ploughs are not needed for this business, as depth is the principal thing required. The way to perform this work is to drive two horses tandem, the operator to drive with one hand and hold one handle of the plough with the other, as when the work is done, not a footstep (man or horse) should be impressed on the disturbed subsoil; and this is done by the man walking in the next furrow to be done.

Continued next month.

PUBLICOLA.

Growing Peaches in Cold Climates.

Concluded.

Peach trees do wonderfully well in tubs, pots, and vases, as may be seen in any old country orchard house, where they are invariably grown in that manner, and with great success. The dwarfing of the tree does not affect the size or quality of the fruit, nor its quantity; far more mischief is done by rampant growth than by any amount of dwarfing.

Of course by this system artificial watering of the trees is rendered necessary. Where the necessary irrigation can be obtained from natural sources, or from water works, no difficulty on this head can arise; where it cannot, the trees must be regularly watered as they are in the orchard houses.

Trees for this purpose ought to be grafted or budded on the best and most dwarfing growth of stocks which can be had. The permanency of the tree is thus secured. American peach trees seldom produce more than five full crops, and are then replaced by younger plantations. English wall fruit peach trees last in full bearing as long as any other fruit tree. The writer has pruned and attended to trees fully thirty years old, but which still continued in full and perfect bearing, and seemed to produce quite as good crops as younger trees.

The same treatment may be extended to the more tender kinds of grapes, which winter-kill, and which require assistance in the fall and summer, when the black board would supply the necessary amount of heat. Glass fronts could be added by loose frames and thus all the best kinds of grapes would be secured to perfection.

To guard against mice a tray of poisoned grain beneath each tree, when laid down, should be used.

Another incalculable advantage would be secured by this system: the roots of the trees being so absolutely under control, the application of the "special manure" the peach requires, would be easy. Peaches, like all other fruit trees, are subject to years of barrenness, or a comparative failure of crop, and there is no doubt that this might be remedied or at all events greatly relieved, by the application of "special manure." What that manure is, can only be ascertained by burning the peach stones and analyzing the ashes. These at once tell the tale. It has long been proved that the mineral elements of plants are derived or manufactured by the spongioles of the roots from the soil alone, while the soluble portion of the fruits, roots, and seeds, are derived from the atmosphere.

The doctrine of special manures is now so well understood in Britain, and on the continent of Europe, that no farmer raises a special crop without purchasing the special manure to apply to it. He uses all the ordinary manure he can obtain, but in addition applies the special manure, and from this fact special manure manufacture has become a very large business in all countries where the manures are used.

It may be safely said, that when once this system is inaugurated with success, no gentleman's garden will be without its supply of peaches, nectarines, and other delicate winter killing fruit which in other respects will withstand the northern climate. Where water-works are to be found, or irrigation easily had, the boxes will be planted in long rows about 14 or 15 feet apart and will be commanded by a single pipe stretching from end to end with a small aperture opposite each tree, and a stop cock at the end, the entire trouble of watering the trees would then be the mere turning off and on of the water, for of course the boxes may touch one another in the rows.

The writer believes that the better plan of growing the wall fruit class, would be, merely nailing the principal branches to the boards as they extend, and allowing the trees to take a natural growth after that. This would require less pruning and attention, and the pressure of the weight of the trees on the branches, when put down for the winter, would always keep the bearing branches sufficiently near to the boards to insure the benefit of the radiated heat from the blackened surface.

So far this plan has been submitted to two of the most experienced peach-growing establishments in the northern portion of America (which is the doubtful ground of the peach, and the only part treated on,) and has met with their unqualified approval. One of these establishments is in Canada, and the other in the Northern States. As their opinion was asked, without the idea of publication, the names are not mentioned, but they can be obtained at any time by application to the Office of the CANADA FARMER. Both these establishments prepare peach trees for this especial purpose.

The Canadian firm says. "I have carefully read the enclosed paper, and I know that the gentlemen in the County of Prince Edward have grown peaches in tubs in the open air with success, merely placing the tubs with the trees therein during winter, under cover of an outhouse or shed." The American firm (and they are the largest nurserymen

in the United States, their grounds containing 600 acres) say:

"Your paper on the culture of the peach in cold climates is very good. It is almost the same as our own method. We take up the tubs or boxes, and lay them in a shed protected with leaves, during the winter. We have usually placed ours in a house, until the fruit is well set, and the weather settled. We thus avoid the changes which produce the "curl" and also avoid the curculio. When the fruit is well set, we plunge them in a warm place outside."

In the face of these two opinions no one need hesitate to go deeply into peach growing in any part of Canada, provided they attend properly to the details, and have sufficient water at hand for artificial watering of the tubs, or a sufficiently damp border or plot in which to plunge the tubs to do without watering.

E. L. C.

A Cheaply Managed Grapery.

Mr James Dougall, one of our successful Canadian nurserymen narrated his experience on this subject before the Ontario Fruit Growers' Association. He said:

The sashes are made stationary, but so that they can be unscrewed and taken off for repairs at any time. They extend from the front wall to within a foot or ten inches of the back wall at the top, leaving an opening of ten inches wide along the top to be closed by sheet-iron ventilators in winter or when requisite, but which are kept constantly open from the time the vines are uncovered in the spring till they are laid down and covered in the fall.

The principal peculiarity is in the glazing. The glass is laid end to end without lapping or putty, and merely kept in its place by small pieces of tin, and a space of half an inch is left open between every third or fourth pane, so that all the rain that falls on the house is distributed pretty equally over the entire house, very little running off the roof except in very heavy thunder storms. There is no ventilation whatever below, as a draught I have found injurious to the vines. Any air that comes in is by these openings in the glazing and the heated air finds vent at the top.

Last year was a very dry one, as well as this, we having no rain here for months; but the vines never suffered from drouth though they were never watered or syringed from the time they were uncovered in spring, when it was done copiously, till again uncovered this spring. Nor were they the least affected either last year or this with mildew or red spider; though previous to adopting this plan, I was annually troubled with both, in spite of syringing copiously morning and evening.

The ends of my present vinery are not glazed, having only a small window and door on each end. Were I to erect a new one I would have the ends glazed to within three feet of the ground, and would have openings in the front wall to allow the roots of the front row of vines to extend into a prepared border outside.

For those who may wish to try this plan, I would recommend the following varieties as being the most successful with me, and of the finest quality:

1, Black Hamburg; 2, Muscat Hamburg; 3, Champion Hamburg; 4, Lady Downes; 5, Golden Hamburg; 6, Bowwood Muscat; 7, Buckland Sweet Water; 8, General de la Marmory.

Flowers and Hedges.

The following hints on floriculture are gathered from the proceedings of the Iowa State Horticultural Society:—Prepare ground for flower buds in autumn, by applying a heavy coat of manure, turning under with the spade so as to leave the soil as loose and friable as possible. It will be much easier worked in spring if left this way than if smoothed down. In the spring fork over early with a broad tined garden fork, and plant at proper time. The next spring add a dressing of freshly rotted sod, and each season vary the treatment, adding the fertilizer needed. Annual plants should be planted in a different place each season, to rest the soil. Dig deeply about perennial plants and bulbous roots, removing exhausted soil and replacing with fresh from another part of the garden.

There is an improved system of training climbing roses. Take willow branches, set one end in the earth by the rose bush, and bend the other end over and fasten into the ground in the form of a bow. Fasten the growing rose down to this, and the bloom will be much better than by the upright training in common use.

Jerome Buck, Burlington: Of all hardy plants for yard culture, roses are first, and the Chinese peony next. For house culture, gladiolas, canna indica, geraniums, heliotropes, and feverfew are fine. The best geranium is the Gen. Grant. Thorough drainage is necessary for all plants in pots; broken charcoal is best of all, an inch deep in bottom of pots.

A discussion followed on the cultivation of hedges, the

Honey, Locust and Willow being recommended for damp places; the Osage Orange for dry. The hedge-row should be ploughed very deep, throwing soil outwards, then turn back and harrow down well. It will not usually pay farmers to raise their own plants at present prices, but be sure to get good healthy plants. In planting, 1st plant straight, 2nd plant deep, three or four inches deeper than plants grow in nursery, and 3rd press earth well over the roots. Cultivate well as soon as plants start, keep it up till July 15th. The last time throw the earth to the plants and in winter mulch well. In spring examine carefully and reset all damaged plants and cut down to within three inches of surface of ground. The following spring cut back to within six or eight inches of surface and cultivate as before. The succeeding spring the plants may be topped at two or three feet or plashed, that is, cut half off at surface and sloped.

Double Scabiosa.

Almost every one (says Vick, in his *Floral Guide*), is acquainted with the old-fashioned flower, the Sweet Scabiosa, or Morning Bride.

This flower remained without improvement for at least a century, and up to within a very few years, but the improvement has been rapid and important. The new



Sweet Scabiosa.

varieties are more compact in habit than the old sorts, while the flowers are more dense, the head being covered with fully developed flowers quite to the centre. We give an engraving of one of the better sort, which we picked in the autumn, after several severe frosts.

The plant is so hardy that those that have not been exhausted by flowering will often endure the winter and flower freely the second summer. The Scabiosa will never



Double Scabiosa.

take a very high rank among our floral treasures, but will always have a good many friends, and these we know will be pleased with a truthful representation of one of the newest and best varieties. Scabiosa has been so long in cultivation that its native country is unknown. The doubling of the Scabiosa is simply the enlargement of the central flowers, as will be seen by the illustration of the old and double flowers.

Greater Length of Arm for Concord Grapes.

In grapes, as in every other branch of Horticulture, progress and improvement are the order of the day, many old and revered notions concerning them being completely overturned through the results of new experiments. One of the latest of these is the discovery that the Concord will grow better and bear more fruit when its arms are allowed to extend considerably beyond the usual regulation rule of four feet. In the Orchard Committee's Report, read recently before the Michigan State Pomological Society, by Mr. D. R. Waters, chairman, the subject is treated thus:—Acting upon the belief that grape vines, and especially the Concord, required more to do than was

allowed them, or at least would do more successfully; and further recognizing the fact that a certain amount of pruning is necessary to produce marketable clusters to all parts of the vine, Mr. Whittlesey began growing greater length of arms than the regulation length of four feet recommended by Fuller, until at this time he shows Concord vines covering 48 feet of trellis, the arms being 24 feet each way. This treatment of a grape vine precludes the renewal of the main canes every year. The growth of the vine is confined to spurs on two arms that are kept from year to year without renewal. The vines are summer pruned when tied, and are not tied until the fruit is set. Mr. Whittlesey has practised this treatment of the vine for twelve years. The advantages claimed are:

More work for the vine and better health.
More room for the fruiting branches, producing more and better fruit that ripens earlier.

A better distribution of fruit of equal quality.

Less work in laying down the vine when necessary.

Less work in pruning and tying up.

We were shown a Concord vine with arms 20 feet long, 15 years old, pruned in this manner 12 years, upon which the usual crop is 120 pounds, another vine of same variety that for two years had produced 120 pounds, also one with 24 feet arms that produces from 150 to 200 pounds.

A vine was also pointed out at the end of a row with an arm on one side 4 feet long, while on the other side the arm was 30 feet long; and on the long arm the fruit was in greater quantity in proportion and better quality.

Planting Chories and Haws.

EDITOR CANADA FARMER:—Will you let me know, in your next number, the best way to plant (1), cherry seeds, and (2), hawthorns?

T.

1. Cherry seeds or pits should be planted very shortly after the fruit has ripened, that is in the fall, while the pith is still gorged with its natural moisture. It then fills the kernel, and, if the seed is planted a few inches under the surface of the ground, in the place where it is wanted to germinate, the frost, soon acting upon it, expands the pith, causing it to burst its kernel, and thus effects a natural method of egress for the little plantlet. This plan is preferable to that of cracking the kernel artificially.

2. Gather a sufficient quantity of ripe haws in the fall, and lay them in alternate layers with fine, damp sand, in a box large enough for the purpose:—first, a layer of sand about half an inch thick, and then of haws, and so on. Sink box and contents then just deep enough in the ground to be merely covered by the surface soil, and there let them remain all winter, that the frost may act upon them. In spring take up your box, mix the contents, and sow sand and all in rows about two feet apart.

THE MAPLE-TREE LOUSE IN IOWA.—The rapid increase of a species of maple-tree louse supposed to be the *Lecanium acerico*, in some portions of the Western States, bids fair to put an end to the cultivation of the silver-maple, if not other species. P. H. Hollingsworth of Muscatine, Iowa, in a private note, dated Oct. 17, says, "the trees are entirely covered with this insect, and the branches of some look as though they had been scorched by fire. As the leaves die, the lice appear to crawl away and fasten themselves upon the branches. We shall have to find some other trees for general planting, unless this maple tree pest can be destroyed." Prof. Riley's attention has been directed to this pest, and it is to be hoped he will suggest some practical method of destruction.

WINTER MULCHING:—A contributor to the *Practical Farmer* says of mulching:—Recently transplanted trees and shrubs are greatly benefited by winter mulching. The ground should be frozen so that it may hold the trees in place, and prevent the roots becoming loosened by high winds, and then the mulch should be applied, covering a somewhat larger space than that occupied by the roots. Sawdust or tan-bark form the best mulch, as they are not displaced by high winds. Where they cannot be obtained, use straw, long manure or leaves, but these will require a light covering of soil to prevent their being blown away. Such coverings over the roots of trees and shrubs keep frosts from going suddenly into the ground, and from coming out too rapidly, and the temperature about the roots more uniform. It is, also, beneficial for perennial herbaceous plants to have a winter covering—Asparagus, Rhubarb, Parsneps and other herbs in the vegetable garden; and flowering plants in pleasure gardens, such as Peona, Phlox, Larkspur, etc. The mulch should remain until frosts are out of the ground, and all danger of hard frosts is at an end in Spring, which will be earlier or later, according to the latitude. When it is removed the soil should be stirred with an iron rake, to open the surface so that light and air will warm and sweeten the soil more readily. Tan-bark and sawdust should be worked into the soil with hoe and rake, as they make excellent food for woody plants.

Live Stock.

The Influence of Each Parent on Offspring.

One class of organs is propagated by one of the parents, and the other class by the other parent; either parent does not propagate either class indiscriminately; moreover, in the propagation of organs from parents to progeny, organization is nearly indestructible, for it may often be seen that neither nourishment entirely derived from the mother, nor climate, diminishes an original likeness of the father; and without this effect it would not be possible for like to produce like. Each parent, therefore, communicates a distinct series of organs; and the only modifications which the organs communicated by either parent undergo, are chiefly, if not altogether, such as are necessary to harmony of action with those communicated by the other parent, and to difference of sex.

The one parent communicates the anterior part of the head, the upper middle part, the bony part of the face, the forms of the organs of sense (the ear, upper lip, lowest part of the nose), and the whole of the nutritive system (the contents of the trunk, or the organs of the chest and abdomen, and consequently the form of the trunk itself, in so far as it depends upon the contents). The resemblance to that parent is consequently found in the forehead and bony parts of the face, as the orbits, the cheek-bones, jaws, chin and teeth, as well as the shape of the organs of sense. These constitute the vital system.

The other parent communicates the posterior part of the head, the lower middle part, the cerebel situate within the skull immediately above its junction with the back of the neck, and the whole of the locomotive system (the bones, ligaments, and muscles, or fleshy parts). The resemblance to that parent is consequently found in the backhead, a few more moveable parts of the face, as the ear, the upper lip, eyebrows, and the external form of the body, in so far as they depend on the muscles, as well as the form of the limbs. Several circumstances indicate that with this series of organs go the skin and its appendages, which have much affinity with the bony system. Not only does the skin become horny from pressure, but hair, wool, bristles, spines, scales, nails, hooves, are its productions (the bony and skinny often uniting in horns). As regards the human race, the male or the female parent may give either series of organs—that is, either forehead and organs of sense, with the vital and nutritive organs, or the backhead, with the locomotive organs.

Observation has proved that the male animal has a stronger influence over the organization of the progeny than the female, and that he communicates the locomotive organs to the progeny, and consequently that the female communicates the nutritive organs. Keeping this distinction in view, it is evident that any changes desired in any particular organ of the domesticated animals will be more easily and certainly effected than those in the human organization. Among domesticated animals we may not discover any difference in the influence of the male or the female parent upon the forms of the heads of the offspring. The obvious reason for this is, that in cattle, horses and sheep, the form of the backhead and cerebel is hid by the great transverse ridge of the occipital bone, to which the large muscles which raise the head are attached; as also by those muscles themselves, and by the elastic ligament, which, with ut voluntary effort, assists them in maintaining the position of the neck. In man, on the contrary, owing to his upright position, the head is greatly supported by resting on the bones of the neck; large ligaments and muscles are not required, and the projection caused by the backhead and cerebel is perfectly obvious. Horses, cattle and sheep, therefore, show only the forehead and face; and their whole head seems to go, undivided, along with the vital organs in the trunk of the body. Concealed, however, though the backhead is in these animals, we have proof of its various developments in the various developments of the muscular system, with which the former must always correspond, and which at all events show what each parent communicates.

With regard to the mental organs, it is evident that in all voluntary acts in which two sexes are engaged, two thinking systems are involved; and as the first portion of the thinking system, sensation and observation, is passive or dependent on impression, and the last portion, dependent on passion and volition, is active and exciting to locomotion, it is evident that in the act of reproduction, one or the other sex will always be relatively passive, and the other relatively active. Hence the progeny will receive from the one parent the organization in which, in the thinking system, sensation and observation depends, and

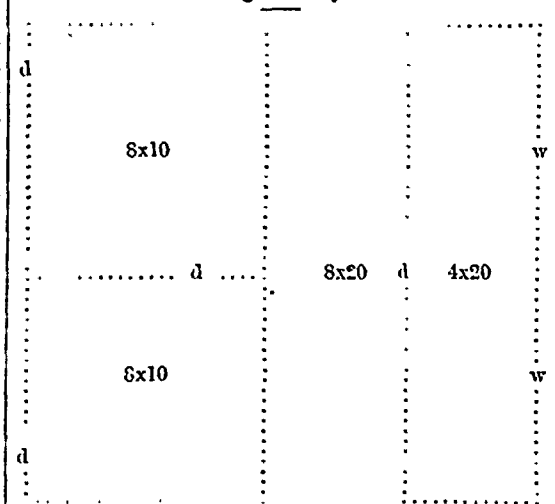
from the other that in which passion and volition spring; for the very term reproduction implies the communication of similar organs and functions, and therefore of the most energetic and characteristic ones. Thus the communication of mind, and of its most distinguishing and peculiar characteristics, to progeny, evidently depends upon mind, and the relative predominance of its two great divisions in the parents; and on each of these again depends the locomotive system and the vital respectively.

The entire law may thus be briefly stated in regard to the breeding of the domesticated animals: The thinking organs are, in equal and distinct portions, derived from both parents; while the dam gives the whole of the nutritive, and the sire the whole of the locomotive organs.

Following out this law, we at once conclude that, if we want an organization belonging to the locomotive system, we shall look in vain for it in the female; and, on the other hand, if we want an organization connected with the nutritive system, we shall not find it in the male. In every amendment desired in our stock, we must first ascertain to which system of organs it belongs, and employ a male or a female as the case may be. Thus, of diseases of the digestive or respiratory organs in the female stock, it would be more fatal to the welfare of the progeny were a male employed having the same diseases, than if the male had it, while the female stock was entirely free from it; still it is essential for good health in the progeny that both the parents should have all their functions in a good state, otherwise we run the risk of inviting the propagation of disease. We should expect that the ardor of passion in the female invigorates the progeny, and action in the male will develop itself in his progeny. Thus a draught mare will produce foals whose muscular system is well suited for labor. A racing stallion will produce foals well adapted for speed. A cow whose disposition to fatten is great, will produce calves with that tendency; and a bull of fine head and extremities will produce calves of similar quality. When the male and female parents are of the same variety, each parent has an equal influence on the offspring as to temper, sagacity, and in-stamping hereditary propensities.

In breeding horses subject to the laws enunciated, it is necessary that the organization of the animals selected should be the most perfect. A stallion should be perfectly mature before embracing the mare, and so should a mare before receiving the stallion. A stallion seasonably exercised has superior progeny than when in a state of inactivity. A horse or mare incapable of work, or that has suffered from hard and continual labor, would certainly produce a weak progeny, if any at all. Constitutional infirmity is fatal. A mare that has slunked her foal is liable to the same infirmity, and it is the same with the cow.—*Prairie Farmer.*

Ground Plan of Hog, Poultry and Tool House.



The two rooms 6x10 are for hog stables. The middle part, 8x20, is a driveway with double doors at each end. The part, 4x20, is the poultry house. It has boxes for nests, and is lined or ceiled and filled in with sawdust. The hog stable is six feet high in the clear; the poultry room is somewhat higher; d, d, d, are doors; w, w, windows.

Now for the second floor: Above the hog stable is the corn crib, holding 400 bushels of ears. The floor is laid loose, so that ventilation is afforded through the corn. It is furnished with six slat windows, two on each side; and in the middle, at the side next the driveway, is a hopper which conducts the corn down into the driveway. On the rafters of the driveway are pulleys and ropes for drawing up the hay rigging or wagon bed. They are drawn up to the roof out of the way. The driveway itself is used for storing the heavier farm implements. Over the poultry room I keep all lighter farming utensils, to which everything is returned after using, so that no time is lost hunting for mislaid tools. It is furnished with windows to admit light. From the driveway I can feed both hogs and poultry, with very little trouble.—*Ohio Farmer*

Interbreeding of Short-horns.

At the recent Toronto Short-horn Convention, Judge Jones, a gentleman of large experience and keen observation, offered a few very suggestive observations on the subject of in-and-in breeding, in the course of which he said:—While it must be admitted that mere speculative scientists had heretofore accomplished very little in aid of cattle breeding, it was nevertheless true that considerable progress had been made in establishing systematic methods founded upon the careful observation of fact and intelligently conducted experiments. All intelligent efforts for the improvement of domestic animals have been founded upon two principles: (1) The selection of the best animals to breed from; and (2) proper feeding and care for the development of the highest excellence. Those principles were acted upon in a rude way at the very beginning of the history of runs and breeds; and their observance was equally essential in the preservation of the valuable characteristics of the most perfectly developed runs of the present day. In the early history of the short-horn race there was a good deal of in-and-in breeding; a practice that seemed justifiable because of the limited number of cattle of approved excellence to breed from, and because the tendency was, within certain limits, to improve the symmetry, refine the bony and muscular structure, and increase early maturity. The great multitude of the race now disseminated throughout the world were, therefore, all descended from a very few animals.

The fact that close inter-breeding tends to refine the extremities, and to impart elegance and style to the general appearance of the animal would explain why men of taste adhere to the practice, while we of a more practical turn of mind would have detected a diminution in useful qualities. In the case of in-bred animals commanding high prices, it could not be expected that the owners would change their style of breeding and involve pecuniary loss, and so long as those line-bred animals were in demand at higher prices than others, so long would they be bred. There was now no necessity for resorting to the refining system to give style and beauty of form, for, as observed by Professor Law, the external form has already been brought to all the perfection which art seems capable of communicating; and now those other properties remain to be attended to, without which no further refinement in breeding will avail for the purpose of profit to individuals and benefit to the country.

Gentlemen in the in-and-in practice seemed to be aware of its influence in impairing useful qualities, as was shown by the fact that they were constantly seeking bulls as remotely connected as possible with their cows. What was at this day the essential matter to be attended to in their practice? Had they not carried refinement far enough, and had not the external form been brought to all the perfection which art seemed capable of communicating? The form of the model short-horn would seem to admit of very little variety in the way of types, unless they attempted something that was not essential to useful and profitable excellence. They should bring up the average to the maximum of excellence and keep it there. He urged that cattle should be judged by a scale of points, which might be subdivided to suit the fancy. He objected to incestuous breeding, especially where it was practiced merely for the purpose of continuing in the line, because it tended to impair constitutional vigor and the growing and feeding properties, although it produced high refinement of form.

POTATOES AS FEED.—A Western farmer writes to the *Country Gentleman*:—"There is possibly no animal upon earth to which feeding potatoes would be injurious if properly fed. Here in the West potatoes are so cheap, (twenty to twenty-five cents a bushel) that many of our people are feeding them, in various forms and quantities, to stock of all kinds. I feed them largely to fowl, and whenever my cows or horses can get a chance, they steal all they can. The Irish method of boiling until nearly thoroughly cooked, with a little salt, is, no doubt, (with me), the best plan for stock, having all the benefits (more phosphorous) of the thoroughly cooked, and they do not clog or cloy the animal. I am much in favour of a couple of quarts being fed to horses, properly cut, unwashed and salted a little, twice or thereabouts each week."

SHORT-HORN MANGERS.—Some of our Short-horn breeders, we observe, says a correspondent of the *Live Stock Journal*, have low manglers—low enough for cattle to get their feet into them. This is following English practice, which, where the cattle were confined in stanchions, or tied, with a large ring to slide up and down on a round pole or iron rod, may have been proper. But where a chain is used with three branches, one of which (say twenty-two inches long) is attached to the manger, there is no excuse for these low English structures for feeding. An earth floor answers for cows, with a flat piece of timber at the rear set in the earth, behind which there should be a depression for the droppings. For bulls there should be a plank floor, or stone or brick pavement.

Sheep—Their Breeds.

The Leicesters are usually placed at the head of the long wool breeds, as being the finest in form and fleece, and also because it has been largely used in crossing, for the improvement of other varieties.

The head is hornless, and rather long and narrow; thin ears, with spots of bluish tinge. The long, well cut ear of the pure Leicester, with its slightly backward inclination, is a distinguishing characteristic of the breed, as is also the full prominent eye, with quiet and lively expression. The face and forehead must be bare of wool, though covered with a fine coat of hair—white, with a little inclination to a bluish tint.

The body is straight, with ribs well sprung and barrel shaped; the poll inclined to be thin; the wool exceedingly soft, fine and lustrous, and should be uniform over the carcass.

The extremities—muzzle and legs—are exceedingly fine, but the quarters are full and wide, with back broad and level. Indeed, the carcass of the true Leicester sheep is as near perfection in form as can be conceived possible.

The Cotswold, though of late years modified by the crosses of the Leicesters of blood, and, therefore, strongly resembling that breed, is somewhat coarser and longer in carcass, with a heavy fleece, which should be as lustrous though not so fine as the Leicester. The head is larger, and must have a coat of wool on the forehead, which the Leicester never has.

The Lincoln is as large as the Cotswold, though in other respects, as now bred, very strongly resembling the Leicester. The head is long, the face narrow and bare of wool, with the eyes, and light bluish tinge as in the Leicester. They stand rather higher on the leg than the two varieties before mentioned, and the carcass is apt to be less symmetrical; but the fleece is longer and heavier, and, though not quite so fine as the Leicester, is unsurpassed in lustre, and therefore commands the best prices in the markets.

It is difficult to describe animals so as to enable a person to determine the pure bred from the mongrel; indeed the best judges are not always able to detect the presence of a slight admixture of foreign blood.

One thing the purchaser may rely upon—that long wool sheep to be had about the country at low prices are never pure bred. Indeed, blooded stock of all sorts should be purchased of parties that are known as reputable breeders—this is the only reliable security the purchaser can have that the animal purchased will turn out what it is represented to be.

The Southdown sheep has a broad, rather short, though exceedingly neat head, forehead covered with wool, and the face and legs with grey or brim hair. The fleece is rather short, of good lustrous quality, equal to half blood Merinos, but superior for mangel, etc., and should be solid and of uniform quality throughout, without projecting hairs.

The carcass should be straight, with well sprung ribs, and broad, so as to be capable of having wide quarters, deep flanks, and well packed chest. This being held in higher esteem than any other breed for the production of superior mutton, the full and perfect development of carcass is deemed of the highest importance.

The Hampshire Downs are coarser in form and fleece, with black faces and legs.

The Sarcelle Downs are a cross between the Southdowns and long-wools—a large breed, with long, coarse wool, in form resembling the Cotswold, with black faces and legs.

In regard to this matter of the color of the faces and the legs, it is remarkable that while the Southdowns, which stand at the head of all these varieties, have, as before observed, brown or gray colors in those parts, their crosses on other breeds will frequently show black faces and legs.

When the object is to keep a small flock for mutton, rams of this kind are found exceedingly profitable to cross on ewes of almost any other breed. But the nearer you go to the pure blood the better the mutton.—Live Stock Journal.

Canada Cotswolds.

A Canada correspondent, says the Country Gentleman, writes us an account of the Cotswold sheep belonging to Mr. Wm. Hodgson, Myrtle, Ontario, who has made up a flock of great value during a few years past. The prices paid by him within the past two seasons have included the following:—For an imported shearing ewe purchased of J. & J. Hope, Markham, \$80; for a pair of imported shearing ewes, from Beattie & Miller, Brougham, being the choice of their importation of the present year, \$220, for another pair of the same, \$200—the above being all the breeding of Mr. H. Cole, Cirencester, England, from Birrell & Johnston, Greenock, but a pair of imported shearing ewes, bred by Mrs. Mary Woodman, Somerset, England, winners of the second prize at the Royal Show at Launton, and the choice of their importation, for \$250—winners also of the first

prize at the Provincial, Central and County Shows in Ontario, immediately on their arrival, after a very rough passage; a pair of aged ewes now well known as "Mr. Hodgson's grey-faced ewes," for \$230, and another pair bred by Mr. Swanwick, winners at the Royal Show in England, in 1871, \$150; a pair of Mr. Cole's breeding, for \$120, an aged ram from Mr. Wm. Lane, Broadfield, for \$250—a sheep that has proved himself an excellent getter, both for Birrell & Johnston and Mr. Hodgson; ram lamb Cotswold Champion, bred by J. Toms, Shilton, England, for \$165, very successful as a winner the past season in Canada; shearing ram Heir of Northleach, bred by Jos. Walker, Gloucestershire, England, for \$225. This ram was imported by Messrs. Birrell & Johnston for their own use, although tempted to let him go by Mr. Hodgson's admiration of his merits. The flock of Mr. H., on which, as will be seen from the above, no pains or expense has been spared, are all more or less grey-faced, and are probably one of the most select flocks of Cotswolds ever owned in this country.

Cost of Cooked and Uncooked Feed Compared.

A writer to the Boston Cultivator gives his experience in feeding with uncooked food, as contrasted with that of a Mr. Stone who has for some time been using the various articles cooked or steamed, with great success. He says:

Although I have never had any experience in feeding cooked food to stock, yet for some time I have been thoroughly convinced that true economy lies in that method of feeding, especially upon a farm like this where cows are kept solely for the production of milk for market. I keep a herd of 16 cows and they are fed as usual upon dry hay and grain. I believe that by feeding steamed food to milk cows, and taking the chill from the water they drink, they can not only be fed much cheaper but such feeding would largely increase the quantity of milk produced.

A few days ago I carefully weighed the hay fed to my cows for a given time and as Mr. Stone asks some one to report, I send you the figures, hoping that others may send in like statements also. In order to make a true comparison with Stone's statement it will be necessary for that gentleman to put an equivalent number of cows in the place of his 16 yearlings and two-year-olds, which I think will increase his average cost per day a little. The following is the cost of feeding 16 cows on dry hay and grain.

Table with 2 columns: Feed Item and Cost. Items include Timothy and Clover hay, Rye, Meadow Hay, Wheat Shorts, and Corn Meal.

or a fraction more than 20c per head a day, and 12c a day in Stone's statement of the cost of feeding steamed food.

Here are Mr. Stone's method and figures.—Cut corn fodder, straw and hay, and put it into a box 10 feet long, 2 feet wide at the bottom and 3 feet wide at the top, which holds fifty pounds of cut hay. Add seven or eight pails of water, with from three to four pecks of cob meal and shorts, and mix evenly, as I should to feed it directly to stock. I then pitch it down from the scaffold where I mix the feed into a large box, 8 feet long, 4 feet wide and 3 1/2 feet high, with a false bottom made of slats four inches wide and three-quarters of an inch apart, which allows the water to settle to the bottom of the box, into which I introduce steam and boil the water. My large box holds as much as four of the small ones, or food enough to feed forty herd of cattle one day, or two feeds, and with a tubular boiler I am able to cook or soften the corn butts, so they are made palatable, and not a particle of waste. It enables me to have a regular hour for feeding, both night and morn, and with one dry feed of hay at noon. I am at the present time keeping sixteen yearlings and two year olds, and seventeen cows, for \$4.05 per day, or a fraction over 12 cents per head, a day. My cows on this mode of feeding give as much milk as on summer food, or by good pastures, and my young stock grow as rapidly as at any time during the summer season, and I believe that this mode of feeding is no more injurious to cattle than summer food.

I will give you at this time the cost of feeding 16 yearlings and 2-year-olds and 17 cows on steamed food:—

Table with 2 columns: Feed Item and Cost. Items include corn fodder and straw, cob meal and shorts, shorts fed in hay tea, dry hay, and coal to steam.

or a fraction more than 12c a head per day

How To Physic A Pig.—At a recent lecture before the Kingscote Farmers' Club, reported in a Bristol paper, Professor McBride is stated to have given the following method of dosing a pig.—To dose a pig, which you are sure to choke if you attempt to administer a drink to him whilst squalling, halter him as you would for execution, and tie the rope end to a stake. He will, as we all know well, pull back until the cable is tightly strained. When he has ceased his uproar, and begins to reflect, approach, and between the back part of his jaws insert an old shoe from which you have cut the toe leather. This he will at once begin, from whatever cause, to suck and chew. Through it you pour your medicine, and he will swallow any quantity you please.

Chester White Pigs.

EDITOR CANADA FARMER:—Will you be kind enough to inform me if there is a distinct breed of pigs called White Chester or Chester White, and where they can be purchased in Ontario?

Hamilton.

J. W. S.

There is a distinct breed of the latter name, "Chester Whites," which grow to a very large size, and fatten easily. As a sample we might mention the case of a litter of seven belonging to B. H. Estes, of Michigan. They weighed in the aggregate 3,601 lbs. The lightest weighed 413 lbs., and the others ranged from 520 lbs. to 610 lbs. Average, 543 lbs.; age, twenty-one months. The Chester White is reckoned by some to be fully equal to any other breed. The coarse strains are large enough to satisfy any reasonable man, while the finer ones are said to fatten as easily and speedily as Suffolks, with greater size and more firmness of flesh.

We are not aware at present where they can be purchased in Ontario. If any of our readers have them for sale, it would be well to advertise the fact through our columns.

GAIN IN CATTLE.—It takes eleven pounds of milk to add one pound of live weight to a calf; and an ox that weighs one thousand three hundred lbs. will consume twenty-two pounds of hay in twenty-four hours to keep from losing weight. If he is to fatten, he must have just twice that quantity, when he will gain two pounds a day. This is one lb. live weight to eleven lbs. good hay. To obtain fifty cents a hundred for his hay a farmer must sell fat steers at five dollars and fifty cents per hundred pounds.

AS AN EXAMPLE OF EARLY FRUENDITY, Mr. G. Wilken, Waterside of Forbes, writes to the North British Agriculturalist stating:—"I have a pure polled Aberdeenshire heifer (2071) calved 1st April, 1874, produced a very small heifer calf on the 7th July, 1875, being only fifteen months and six days old at the date of calving. What perhaps is most unusual in this case is the fact that the sire of the calf could not have been more than five months old when he served the heifer (i.e., if she had gone the usual time in calf, as there were only two bull calves near her, the one calved on the 24th May, and the other on the 18th June, 1874, all three were sucking their dams two months after the heifer must have been served. The heifer was observed to be in heat in September when only "five months old." The writer adds that the heifer has little milk and has "made a poor job of the calf," although she has kept in fair condition with the help of "a little extra keep."

THE "BATES" AND "BOOTH."—In its review of Live Stock for the year just past, the Live Stock Journal says:—"To commence at once with Herd matters—for we must be brief—the successful organization of the Shorthorn Society is perhaps the event of the year, and its effects are by no means yet exhausted, as the pending proposal to acquire and publish Mr. Thornton's "Circular" clearly proves. Passing by other remarkable sales, we may note that while "Bates" breeders have usually plumped for heifers, and "Booth" men for bulls, the top price ever reached for bulls was made at the Bates sale of Lord Dunmore, while the highest price ever given in England for a cow was made at Mr. Torr's, so full of Booth blood. This unexpected fact not only has interest, but has already had influence. We may note further, as one feature of the past year's operations, evident signs of an increased disposition among breeders to make experiment, and to breed on lines of their own, as apart from the slavish adherence to certain fashionable families which has been usual. The importations through Mr. Fox and others of Airdries, Red Roses, Princesses, and other families from America, make the season of 1875 very remarkable from a breeder's point of view, and may be expected to exert considerable influence upon English herds.

CROSSED CATTLE FOR BEEF.—Says a writer in the English Journal of Agriculture:—"At our annual sale of fat stock every Christmas, I find if I have a crossed ox, it invariably makes two or three pounds sterling more than pure bred ones. And the reason is that the butchers tell me, they weigh better, are more fleshy, and give their customers greater satisfaction, from the fact of the fat and lean being better mixed. I have had cross-bred steers three years old returning from 30 pounds to 40 pounds sterling each, their dams being small Ayrshires, and the sire a fine Hereford bull. "He would not go beyond a first cross between distinct breeds, all half-blooded heifers being spayed." I am in favor of cross-breeding when a farmer is unable to purchase and keep high bred stock. The breeder, by proper selection, and by joining like excellencies and properties in sire and dam can not fail to improve the quality of his stock. Therefore, to improve stock, good blood should be on both sides. A young farmer or other beginner de novo in selecting animals from which to breed, should have reference to the kind of land he is to select, always remembering that his ideal can never be fully realized. He must decide what are desirable qualities for him; and cross with the view of establishing them. His proceeding must be of the "give and take kind," the highest excellence being his aim ever and always.

The Dairy.

Deep and Shallow Setting of Milk.

This question, so much discussed by dairymen, is not yet by any means settled to their unanimous satisfaction, but experiments in both directions are being tried which must ultimately decide the case. Advocates of deep setting and low temperatures claim that the cream rises rapidly, in a few hours indeed, and that it separates more perfectly from the milk. Their opponents who favor the shallow pan process, dispute these points, and argue that deep setting rather retards the motion of the cream upwards. One of the latter, Mr. Reeder of Pennsylvania, gave the results of some very interesting experiments, by himself, at the recent American Dairymen's Association:

100 pounds of milk were set in 3 cans 16 inches deep, and 100 pounds of milk were set in 12 pans 4 inches deep. Temperature of the air in the dairy room, from 58 to 60 deg. The milk all skimmed after standing 48 hours. From the deep cans 9½ pounds of cream were taken off, and from the shallow pans, 12 pounds of cream. The percentage of butter from the deep cans was 2½ per cent; percentage of butter from the shallow pans, 4½ per cent. In this trial deep cans required 30 pounds of milk to make one pound of butter, and the shallow pans, 22 pounds of milk to make one pound of butter.

Two objections however were offered to this test; 1st that the skimming was not deep enough, something over an inch, in the deep cans; 2d that the temperature was too high. The experiment was therefore repeated, setting as before. The temperature of air in the room where shallow pans were set was 60 deg., in the other 49 deg. The milk was all skimmed after standing 48 hours. In order, this time it possible, to get all the cream from the deep cans, three inches of surface were taken from each can, weighing 6 pounds, and making from the deep cans 18 pounds of cream, and from the shallow pans 13 pounds of cream were obtained. The 18 pounds of cream from deep cans made 3 pounds 8 ounces of butter; the 13 pounds of cream from shallow pans, made 5 pounds 2 ounces of butter. The percentage of cream from deep cans was 18, and of butter 3½; the percentage of cream from shallow pans was 14, and of butter 5½. The deep cans required 28 pounds of milk to make 1 pound of butter, and the shallow pans required 20 pounds of milk to make 1 pound of butter.

From this last result, he concluded that the gain in butter from the deep pans must be due either to the deeper skimming or the lower temperature. So, determining to get at the bottom of the matter, he next tried the Swedish system.

The deep cans were set in a pool of ice water; temperature 34 deg. to 38 deg.; skimmed after standing 48 hours, taking off 4 inches of surface as cream from each can, making 25 pounds, or 25 per cent. of cream. The churning was done when the cream had slightly soured, making 12 pounds 5 ounces of butter, or 3½ per cent. of butter, and requiring 17.4 pounds of milk to make a pound of butter. The skimmed milk was reset in pans 3 inches deep, and placed in a room where the temperature was 58 deg. After standing 48 hours longer it was again skimmed, yielding 4 pounds more cream, sufficient to make another pound of butter.

He next set 100 pounds of milk in three cans 16 inches deep placing them in water (without ice) at a temperature of 49 deg. as before, skimmed after standing ninety-six hours, taking off a little over 4 inches of surface as cream, and got 27 lbs. or 27 per cent. cream, and 6 lbs. 12 oz. or 6½ per cent. butter.

A series of experiments with shallow pans, carried on simultaneously with the above, convinced Mr. Reeder that the gain of ½ per cent. noted in the various trials, was due neither to skimming deeper, standing longer, nor a lower temperature. He said:

At the same time of making the last trials of deep setting, I set 100 pounds of milk in fifteen pans, three inches deep, (not in water) but upon a table in a room without fire, where the temperature was 50 deg. Sour milk was added to each pan to facilitate the souring, but the milk was not ready to skim after standing for 48 hours, and was taken to a room where there was a fire, and the temperature 60 deg., and after standing 12 hours longer was skimmed, yielding 17 pounds of cream, making 6 pounds 10 ounces of butter; or a loss of two ounces for the shallow pans when compared with the last trial of deep setting, when the milk stood 96 hours at 49 deg., before skimming, but a gain of 14 ounces over the third trial, or the Swedish system, when the milk stood in ice water 48 hours, at a temperature of 34 to 38 degs. In December last I repeated this experiment, setting 200 pounds of milk in pans three inches deep in a room with fire, where the temperature ranged from 56 to 60 degs., skimming after standing 48

hours, and obtaining 35 pounds of cream, churning 14 pounds of butter, being 17½ per cent. of cream, and 7 per cent. butter, the highest percentages of pure cream and butter I have ever obtained. I give it unhesitatingly, as my opinion, that a depth of three or four inches and a temperature of 55 to 60 degs. is the best.

Milk Carrying Infection.

The extreme susceptibility of milk to the taint or flavor of its surroundings renders it, according to recent discoveries, more necessary than ever that it should be kept entirely separate from everything likely to contaminate it. The presence of coal oil, though at an opposite corner of the dairy, has been known to perceptibly taint all the milk and butter exposed to it, and, strange as the circumstance may seem, similar effects have repeatedly been detected when no other cause could be assigned than the occasional burning of a lamp in proximity to the delicate fluid. The absorbing qualities of milk are certainly great, but there is no good ground for believing, as some assert, that it manifests a partiality in this respect for the fouler gases. The probability is that it favors all alike, but the more noxious are the more readily detected in it, and naturally so. Be this as it may, however, there is no doubt regarding its propensity to take up and hold in solution elements, which, if not extracted or evolved before the milk is used, may prove highly detrimental to the consumer's system. Apropos of this the following remarks from the *Sanitary Journal* will be read with interest:

At Jarro, the outbreak of typhoid fever was characteristically sudden. Suddenly on August 15, it was found that within the limited district of the urban medical officer's authority, no less than thirty-four cases of typhoid fever had occurred in twenty different families, more than half the cases being among children. The houses were, with two exceptions, clean, and supplied with good water from the mains of the water company. It soon, however, appeared that in pretty well every case the milk was supplied from the same source. The farm was at once visited. It was found that six of the farmer's family were laid up with typhoid fever. The water used in the dairy was derived from a well in immediate proximity to a cesspit; the water was evidently contaminated with filth by soakage, so much so, indeed, that it became putrid on standing two days. The dairy was used as a wash house; the linen from the infected persons was washed in it; and the person who milked the cows was an immediate attendant on those who were laid up with the fever. There was here, in fact, every disgusting circumstance combined which could make the milk the vehicle for carrying the fever. The unusual horror of these arrangements, and the violence of the first outbreak, together with the extreme promptitude with which the medical officer in a few hours traced out the cause of the fever and arrested its progress, make this little history more sharply instructive, and more immediately impressive than some of the more protracted and large epidemics to which we have referred. The whole facts are in a small compass, and the cause and effects are seen side by side, and in contemporaneous action.

Troubles in Butter-Making.

TO EDITOR CANADA FARMER:—We keep one cow and churn our own butter, and try to attend to the regular rules for churning, but then we sometimes get into trouble and do not know the "reason why." Sometimes we have to churn for two or three hours before butter will come, and, if we add warm water, the butter is too soft to work. What is the "reason why?"

Sometimes it comes in small globules that will not work together easily. What is the "reason why?"

A SUBSCRIBER.

The various complaints here enumerated are such as may arise from a variety of causes, possibly a change of food, a slight or threatened derangement of the constitution, or most probably, as the writer himself anticipates, the temperature at which the cream has been kept and churned. The fact, admitted by "A Subscriber," that the difficulties are of but rare occurrence, would seem to indicate some radical, sudden change somewhere in the management, which, on looking around, he can no doubt discover and remedy. We can only throw out a few general hints on the subject, that may serve to bring matters to their normal condition again:

1st. The proper temperature for butter making ranges from 54 to 60 degrees, a very successful average being 58 degrees, as has been repeatedly verified by experiment. Possibly, in one of the cases mentioned, "A Subscriber" poured in too much hot water, thereby heightening the

temperature far beyond these figures. If so, he might certainly expect soft butter.

2nd. Let the cow be regularly supplied with a small quantity of salt; this will prove very conducive to health.

3rd. As regards the keeping and care of the cream, let everything about the dairy be scrupulously clean, skim before the milk turns sour, stirring the contents of the cream jar every time a fresh addition is made to it, and observe particularly that the temperature is kept as nearly uniform as possible, and about to the degree stated. A careful observance of these points—presuming of course that the cow is well fed and attended otherwise—will, we believe, obviate all the difficulties mentioned.

To check the globule annoyance spoken of, thro. a small lump of butter, say two or three ounces, into the churn, and the difficulty will disappear.

IN ST. LAWRENCE COUNTY, N. Y. State, where dairying is carried on extensively, there are some 86,000 cows, and estimating the amount sold from each cow to be £30 above home consumption, which is a low estimate, an income of \$2,580,000 is realized.

BUTTER.—The *Tecumsoth Record* tells us that Mr. Charles Davis, a son of Capt. E. Davis, of Clinton, a farmer in Franklin, from January 1st, 1875, to January 1st, 1876, using the milk of four cows, made 1,022 pounds of butter. After furnishing two families with butter during the year, he sold the remainder for \$152.18. Who can tell us a better record?

WATER IN WINTER.—Cows giving milk need an abundance of water. The dry hay usually given affords little material for milk, and even with abundance of roots, unless water is placed within easy reach, cows will tend to fatten rather than to milk production. A great difficulty in cold weather is in having water so far from the yard that cows will suffer long before going from comfortable quarters to reach it. Whenever possible, a cistern should be constructed under the barn or under ground to hold water for stock.

FEEDING POTATOES.—My experience in feeding potatoes to cows, says a writer to the *Country Gentleman*, has been good. I find no trouble in making as much butter in winter, by feeding one peck of potatoes a day to each cow, with plenty of good hay, as in summer. My cows look better than they do on summer pasture. Why all this nonsense about cooking hay for stock, when they will, with a few roots and plenty of good hay, do as well as at pasture with grass plenty? I mean hay, and not the straw hay that many of them feed.

HOW LONG TO MILK A COW.—There seems to be a prevalent idea that it is not profitable to milk a cow more than eight or nine months, and most dairymen dry off their cows early and let them go dry three or four months. Is this the best practice? We think not. A cow is kept for milk. She should be bred for holding out her milk as long as she can, with due regard for health. It has been proved in the case of thousands of cows that have lived to good old age, that they can be bred to give milk ten months in the year, bear a good, healthy and strong calf and be ready for as good a milking season the next year. We should seek such cows and discard those that persist in drying early, even if they do give a good mess for a short season.—*Rural New Yorker*.

KEEPING BUTTER TOO LONG.—The *American Grocer* says it is a lamentable fact that few have the proper facilities for keeping butter at any season of the year, and fewer still know how to properly make and pack it for long keeping. A very small percentage of the butter that reaches the principal markets is strictly fine; and much of it that is stale and unmarketable would have brought a fair price had it been marketed when new. This almost inevitable and rapid deterioration of butter is a strong argument against its retention by the producer, in the hope of higher figures, when remunerative ones are at once within his reach. It is better to sell any article when it is ready for the market and the market is ready to receive it at paying prices.

KINDNESS TO COWS.—Willard, in his new "Butter Book," says: Generally speaking, that cow will do her best that is loved the best and petted the most by those who have her in charge. If you wish a cow to do her best, you must cultivate her acquaintance intimately, and be unsparing in little acts of kindness. You may whip and torture a cow into submission, but she will strike the balance against you in the milk pail. One of the greatest faults among dairy farmers to-day is a lack of kindness and consideration to domestic animals. Cows should be petted daily and be made to feel that man is a friend and protector. All pain, fright, and uneasiness checks the secretion of milk, and the man who is passionate and abusive to his herd, never did and never can realize a full yield of milk from it. I think that anyone that has the charge of animals, should study their character and disposition. It is an interesting study, and, under the law of kindness, you will not unfrequently bring out wonderful traits and exhibitions of affection, which will show a forethought and design which may well be ranked with the higher intelligence of reasonable beings.

Veterinary.

Enteritis.

Enteritis or inflammation of the bowels may be said to be the most rapidly fatal disease that the horse is heir to, sometimes terminating fatally in the course of a few hours. The causes of this disease are exposure to cold, over-fatigue, intromission, volvus, intestinal concretions, superpurgations and irritating poisons.

It is said by some veterinary writers that it sometimes arises from colic, but I am led to believe, from what I have seen in my practice, that it seldom if ever originates in that disease.

SYMPTOMS.—Rigors, accelerated breathing, increased frequency of the pulse, repeated evacuations of small quantities of feces, the mucous membrane deeply congested, the mouth dry, tongue contracted and of a brownish color, the appetite of course being lost; the belly, too, is tender upon pressure. These symptoms of dulness and depression give place to those of excitement and pain; the horse stamps the ground with his feet, strikes at the belly, lies down, but much more carefully than in colic, rolls on his back, turns his eyes toward his flanks, and sometimes puts his nose under them; has a haggard expression of the face, and the body is bedewed with sweat. These symptoms may continue for some time, when he will rise to his feet and seem as though relieved of pain; cold clammy sweat covers the body, the muscles twitch, and the mouth is cold; he staggers, falls, and after a few convulsive struggles, death closes the scene.

TREATMENT.—Place him in a good, comfortable box stall, with plenty of bedding; give pulverized opium, two drachms. If the pulse is strong and full, give of Fleming's Tincture of Aconite, ten minims. If no relief is apparent in about forty minutes, repeat half the dose of opium, and follow it by repeated drachm doses every hour; if the pulse still continues strong and full, the Aconite may be continued with the opium. Purgatives should not be given on any account, as they increase the peristaltic motion and the secretions of the bowels, thereby forcing fecal matter through the inflamed part, increasing the irritation and inflammation that already exist. Enemas of warm water may be given, but, if they increase the pain or seem to do no good, they are to be discontinued. Mustard and turpentine may be well rubbed into the abdomen, our principal object being to get our patient well under the influence of the narcotic. If that can be effected and the animal lies quiet and free from pain for two or three hours, in all probability his recovery is assured. If, on the contrary, the pain continues, the pulse becomes imperceptible, cold sweat covers the body, tremors and effusion of blood have commenced, it is recommended by some to give powerful stimulants; but I think that it is useless to push our treatment any further when these symptoms present themselves.

J. G. ALEXANDER, V.S.

Monro Road, Ont.

Side Bones.

Side Bones are notoriously hereditary; some sires, otherwise excellent, leave progeny which before they are five years old or have been twelve months on the roads or stables are annoyed from side bones or ring bones. It is bad policy to use a stallion with such imperfection of his fore feet. Equally unwise is it to use for breeding purposes young mares which have developed side bones whilst employed only at farm work. There is some excuse for retaining for breeding big, heavy, handsome mares with good legs and strong open feet which have been hard at work on the stones for several years, and which hence have had their lateral cartilages converted into bone.

Side bones develop, as it does many other forms of lameness, because as it enables an enormous amount of heavier, harder work to be got out of the horse than would be possible without shoeing. But the high-heeled shoes are particularly prone to jar, strain, and ossify the lateral cartilages. High feeding, as you opine, also frequently causes side bones. May a good, sound young horse be allowed to stand on the stones for several years, and when he is discovered, when he is to the tender some weeks later, to have an annoying side bone, which prevents his sale or

considerably detracts from his value. Especially do such disappointments occur when the horse has been kept standing in a stable or box. As to treatment, you had better rub in some iodide of mercury ointment, and when the irritation of the blister is passed, after two or three weeks' rest, especially if the mare is not lame, she will be better working on the land than standing in the stable. In most side-bone cases a bar shoe gives relief and enables the animal, formerly lame, to go sound, particularly if kept at slow work and chiefly on the land. — *North British Agriculturist.*

Lymphatic or Absorbent System.

This system is formed of a great number of vessels distributed throughout the body. They begin by a network of small vessels imbedded in the various tissues, and gradually converge toward certain points, the whole entering the venous circulation.

The lymphatics have derived their name from the fluid which they contain. Those which absorb the chyle are called lacteals or chyloferous vessels. The lymphatic system also includes with the vessels a number of glands situated throughout their course, and designated lymphatic glands. In some parts of the body, these glands are collected together in large numbers, forming a lymphatic ganglion. Lymphatics are found in nearly every tissue of the body, with the exception of the eyeball, substance of the brain, spinal cord, cartilage, tendons, etc.

The lymphatic vessels are very delicate and minute, and are more plentiful than the veins, but, like the veins, they are arranged into two sets, a superficial and a deep-seated, the former being situated over the surface of the body and accompanying the superficial veins. The deep-seated are much the larger, and receive the contents of the superficial. The glands vary much in size, and are formed of an outer or cortical portion, forming cavities which contain a whitish pulp, formed of cells and nuclei.

The whole lymphatic vessels of the body pour their contents into the venous circulation by means of two large canals, the thoracic duct and the lymphatic vein. The former originates about the second lumbar vertebra by a large irregular dilatation called the *receptaculum chyli*, and is continued forward along the right side of the vertebral column. When it reaches the sixth dorsal vertebra, it is inclined to the left side, and is continued forward to the first rib, where it terminates in the left axillary vein, its termination being guarded by a valve, which prevents the blood from passing into the duct. This canal receives the whole lymphatics of the body, except those coming from the right side of the head and neck, right anterior extremity and right lung.

The lymphatic vein is situated close to the termination of the jugular veins, and receives the vessels coming from the left side of the head, neck, etc. Lymphatic glands are collected together in large numbers about the head, in the sub-maxillary space, along the neck, and towards the inner and front part of the fore extremities. In the abdominal cavity they are in considerable numbers, and a very large ganglion is situated in the region of the groin. *Lymphangitis.*

Lymphangitis, or inflammation of the lymphatic glands and vessels, is a frequent disease among horses, and is known by a variety of names. In many parts of Canada it is called a "water farcy," whilst in other parts it is designated by the name of "weed," "shot of grease," or "inflammatory oedema." In the neighboring republic it is described as "big-leg."

This disease in the horse is usually confined to the extremities, and the hind limbs are oftener affected than the fore. It is rare that both limbs are simultaneously affected. Inflammatory action is set up in the glands, which soon extends and causes a swelling of the whole limb.

CAUSES.—Some horses may be said to be predisposed to a certain extent to this disease, as the heavier breeds of horses, and especially such as have a tendency to swell in the legs, when not regularly worked or exercised. The pure-bred Canadian horse is seldom affected. A common exciting cause in hard-worked and highly-fed horses, is standing idle for a day or two and still taking their usual quantity of food. A larger quantity of nutritive material is formed than the system can properly assimilate, the mesenteric glands are stimulated, and the irritation extends and involves the dependent parts, often well marked in connection with the superficial inguinal glands. It is from this cause that the disease is so common in some stables on Monday morning.

Another cause is direct injury, as from a puncture, kick

or blow, and during the severe months of winter it frequently arises from an attack of scratches that has been improperly treated. It is also occasionally noticed in certain diseased and debilitated conditions of the system, and is due to an impaired and abnormal condition of the blood.

(Concluded next month.)

Lung Disease—Ventilation, Etc.

EDITOR CANADA FARMER.—I take a great delight in reading the monthly parts of your journal as they come out, and at the year's end they form a very interesting volume I can assure you. I have no doubt it will be very beneficial to all agriculturists in your country; therefore I wish it every success, which it well merits.

Murrain and Pleuro have been very prevalent in this country for some time back now, which has had a tendency to enhance the price of cows, and it is my opinion that this winter will be very hard on the dairyman. What with high priced stock, dear feeding stuffs, and so much disease, there will be very little made in the trade.

How do cattle thrive in your parts? Have you over any of what we term the "Goat" or "Lung disease"? Which method do you think best to adopt for the ventilation of byres? And do you think that using draff for feeding purposes in any way affects the constitution of cattle?

Yours, &c.,

Whitebank, Edinburgh, Scotland.

JAMES WHITE.

Our cattle in Canada are thriving as a rule magnificently. Epidemics amongst them are comparatively rare; at present there are none to our knowledge. Lung disease, though not unknown to our stock dealers, is not at all prevalent.

Various plans can be suggested for the ventilation of byres, but the whole question may be practically solved by placing a goodly number of moveable windows in your buildings, which may be opened or closed as occasion requires.

Draff is not at all injurious to the constitution when given in moderate quantities.

STRANGE FATALITY AMONG HORSES.—During last week, says the *Mercury*, Mr. James Wright, of Paisley Block, lost some valuable horses by a disease which seemed entirely to baffle the skill of the veterinary surgeon. The symptoms are, an extension and enlargement of the tongue, then an inclination to keep the tongue on one side of the mouth, and then a desire to lie down. It is impossible to get them up again, and so far, no remedy has been discovered for the disease, which appears to be quite new, and unknown to veterinary surgeons.

CARBOLIC ACID THE BEST DISINFECTANT.—Mr. Alex. Gaviller, of Hamilton, sends us the following:—A Scottish gentleman, Mr. Bruce, of Inverquhomery, Longside, Aberdeen, has carried on some most curious experiments, which go to show that carbolic acid may perhaps be made to do for foot-and-mouth disease what vaccination has done for small-pox. Mr. Bruce believes that the poison of the pestilence is inhaled through the lungs, and he has found that healthy cattle whose nostrils are sponged with carbolic acid in solution can be sent to and kept on a farm where other beasts are visited with foot-and-mouth disease, with impunity. Indeed, two of a flock he thus removed ran into a byre containing cattle ill with the plague. One of them actually jammed itself up against a suffering animal; yet no harm came to the rash intruder, or to any of the sound steers, whose nostrils had been sponged with the disinfecting fluid. For three weeks these cattle have been living on the plague-stricken farm. Nevertheless none of them have caught the infection, and save that the acid is very freely sprinkled about their stalls that it is given to them internally, and that they are sponged all over with the disinfectant every morning, nothing is done to keep them free from the disease.

FOOT-AND-MOUTH DISEASE.—Some of your readers may give a trial to the following sure and simple remedy for the foot-and-mouth disease. Dissolve one pound of sulphate of copper in one gallon of soft water; with this liquor wash out the animal's mouth (for this purpose a sponge tied to a stick will be most convenient). Mix powdered alum on oatmeal in equal quantities, and put three large table spoonsful of this mixture into the mouths of the animals, as near as possible to the root of the tongue; this will cause the discharge of saliva. Wash the feet carefully between the cloots with the bluestone mixture, and make the animal stand upon dry straw. Begin this treatment when the disease makes its appearance, repeat the operations three times a day, and in four days the cure will be complete. While the disease prevails, cattle cannot lay hold of food with the tongue, therefore all their food ought to be chopped, and they should have plenty of water given them. The man who attends to and dresses these affected animals should change his clothes before he attends sound animals. Do not let your herds get near to any other cattle. Attention to these simple rules may save many a beefsteak, and prevent those who whistle at the plow from whistling on the wrong side o' their moo.

The Poultry Yard.

The Bald Head Tumbler.

Mr. W. Atlee Burpee, a noted fancier, sends the following to the *National Live Stock Journal*:-

This variety of Tumblers are favorites wherever known; they are universally popular. None of the numerous varieties of Tumblers present a greater contrast or beauty of plumage, and none have attracted more attention. The most striking combination of color—the line of separation being so sharply defined—cannot fail to draw forth the admiration of all beholders.

The Bald Head Tumbler, Bald Head, or simply Bald, as it is often called, is so named from having its head feathers of a pure snowy-white plumage, while its body feathers are of some other color, such as blue, silver, red or black. The line of separation between the feathers of the head and the colored feathers of the neck must be "clean cut"—that is, the division line as even and distinct as if cut by the sharpest scissors. No artist could draw a straighter line than that nature so beautifully delineates in this attractive bird. The tail and rump, together with under part of body and flight feathers of each wing, must also be of a spotless white plumage. Any dark feathers in these parts is a great blemish, although some easily bred out than indistinctness in separation of colors. The colored feathers on breast should extend not up to the legs, and should be terminated by a well defined line—none of the colored and white feathers intermingling. Balds are of various colors, of which the following is a complete summary: Blue, white, black, blue, silver black bars, silver with red bars, and silver with yellow bars. There are also chevrons, but these are little esteemed. Our remarks in previous articles on colors are here applicable.

The Bald Head for P.M.P. is so called in England, to be of value, must be a bird of symmetry and style. A long-bodied, long-necked bird is of little or no value, no matter how splendidly colored. Perfect little known (never heard of before) is a variety of common plumage variety of P.M.P. Tumblers in markings, and of perfect nature, of which blue and yellows (the rare color) can be bought for one or two dollars a pair. To come with this variety of plumage, unprincipled dealers have not hesitated to sell many cases, ugly birds have been sold for as much as \$100.

Fresh Eggs in Winter.

Advising as to the best and surest method of having a supply of fresh eggs on hand in winter either for use or for sale, or both, "Amateur" writes the *Natural Home*:-

First, get a breed of fowls—Get rid of the black, white, buff, gray, red, speckled, and banded, young, muddled, old and decrepit, the worthless lot of common barn-yard stock you have, and get something uniform. I can't say which breed is the best, but I prefer the so-called non-sitting-kinds. I prefer eggs to chickens. I like the Leghorns, though they are naturally quite wild, and their large combs will freeze if exposed. But give them just what they need, and they will give you eggs. Then their eggs are large and rich, and the meat of the fowls themselves is prime, and they mature early, and grow to fair size.

But you want a place for them in winter, where they can be strictly comfortable. That means where they are not crowded, where they may have variety of food, plenty of light and warmth. I might give plans of poultry houses and more minute directions generally, but these long winter evenings ought to be devoted to study, and these are fair subjects for a farmer's thoughts.

In answer to the question what kind of hens is best for farmers, another writer adds:—Where eggs are the leading object, White Leghorns are considered, by many, our best breed, as they are free layers of good-sized eggs, and are not much inclined to sit. When both eggs and chicks are desired, the Brahmas are a good breed, as they are good layers of large eggs, and persistent sitters.

Physiology of Eggs.

Every fowl has two small organs near the extremity of the body called the ovaria. It is filled with elastic tissue, and feels under the finger like sponge. The eggs are started here, and those which will mature a year or two or three years hence, are in embryo. One is forced up, is seized by the stroma, which is seventeen inches long, and passed rapidly through. When the egg leaves the ovary, it consists of yolk only, but in its passage through that short

canal the yolk is surrounded by enough albumen to perfect the chick. The white of the egg has in it all that nature requires for making bones, muscles, blood-vessels, connecting tissue, skin and feathers. Just before the egg leaves the body, this canal has the power of secreting lime for the shell. This shows how valuable the egg is as a nutriment, and also what demands are made for rich food by a hen that lays an egg daily. Besides what she requires for her sustenance, she is called upon to secrete the material for the body of an entire chick, and also retains for the little creature sufficient to last many hours after it leaves the shell. It shows also that a hen cannot make albumen so rapidly except out of albuminous food, such as wheat, meat and small animals. It is not true that there is a certain number of eggs, and that this number exhausted, no more can be expected; but it is true that the secretions lessen as old age comes on, and latterly the hen fails to have sufficient force to carry forward the process. The practical bearing of this is that we must see that the fowl is always well kept. The way to have good laying pullets is to quicken the circulation and strengthen the system by liberal nutriment. The yolk is food for the first three or four days. Careful housewives make a mistake by attempting to feed them before the expiration of this time. Let the mother bird have charge and success will be certain, for she knows better than any man can what the chick requires.

The Effect of Light on Breeding Stock.

The *Poultry Bulletin* has the following account of some experiments made by the writer, M. Eyre, Jr., which we have no doubt will prove interesting to our readers:

When Mr. Wright went so far as to assert, in his last great work, that the mere presence of a black hen among white ones might cause spotted chicks, I believed him; but when some fanciers wrote articles claiming that all breeds might be allowed to run together indiscriminately, and a separation of a few weeks be depended on to insure purity of offspring, I remembered the first maxim in logic, *Contra facta non licet argumentare*, and resolved to test the matter by facts. I took a White Leghorn hen, mated with a White Leghorn cock, and preserved her eggs. After she had stopped laying four days, I mated her with a Light Brahma cock. Another white Leghorn hen I treated similarly, using a hawk-colored or Dominique rooster instead of a large Asiatic. I allowed the hens to remain one week with these cocks, when they were returned to their former mate. Every chick hatched from eggs laid before this mating was a pure White Leghorn. Chicks hatched from eggs laid by the hen which had been mated with the Brahma were feathered on the legs. Unfortunately, this hen died soon after; but the other one I kept for a year, and then sold, explaining to the purchaser the facts. She remained all this time, except the one week, with the cock of her own breed; and still, from eggs laid by her eleven months after this week of mating, I hatched speckled chicks in the proportion of five out of every twelve.

The theories of those who combat the natural deductions from these facts, at least as far as White Leghorns are concerned, are, to my mind, on a par with the ratiocinations of the academy, explaining the reason why water will not overflow from a completely full bowl if a fish be gently placed in it, which were indulged in until a member, to illustrate his logic, trying the experiment, found the assertion false. I received, on the 17th of this month, a letter stating that the legs of young from White Leghorns known to be pure were feathered, and asking if it could possibly be occasioned by their having run with Light Brahmas last fall. I unhesitatingly answered, Yes.

One other test I have made. Complaints of colored chicks from eggs, White Leghorns, sold by me, reached me several times before the issue of that number of Mr. Wright's work to which I have referred. After its perusal, I attributed the colored chicks to the presence of Houdans in the next corral, my hens being at that time separated by lattice-work to within a foot of the ground. The experiment I now mention has led me to board them up to the height of three feet. I doubted if the mere sight of a colored fowl would be sufficient to produce such effect unless under peculiar circumstances; hence, I placed a pair of White Leghorns in one pen and a vigorous Houdan cock in the next pen, in full sight of each other. Every time the White Leghorn cock performed his marital functions, the Houdan rushed with much noise against the partition, and immediately thereafter the two would fight. The chicks produced from eggs laid while this situation remained were colored, and one actually had the crest of the Houdan. The same hen, placed in another corral, produced chicks showing no trace of anything but pure Leghorn; so the effects did not remain as in the case where one was mated with a colored cock. Call it, with Mr. Wright, acting on the imagination of the hen, or explain it in any other way, the fact remains, at least as far as this individual hen is concerned; and I am led to believe that many so-called "sports" may be produced by like causes.

FOWLS IN WINTER.—One of the most essential things in winter is to have a warm house for chickens to roost in. The best way to have a house constructed for winter use is to have it partially under ground, facing the south, with a slanting roof reaching within three feet of the ground on the north side, and the front or south side covered with windows, so that the fowls may enjoy the warm rays of the sun without being exposed to the piercing winds and freezing cold. For a summer house the building should be above ground, with ventilators, so that the fowls can be kept comfortable during the hot nights of summer. In the fall, as the weather becomes cool, shut up your summer roost, and your fowls will soon take to their winter quarters again. In winter I give my fowls a warm pudding for breakfast, then keep corn by them during the day. I also keep scrap cake by them from early fall till spring.

The Apiary.

Food of Bees.

At a recent bee-keepers' Association meeting held in Tennessee, U.S., Mr. S. D. McLean, a gentleman of large experience, said there were various methods of feeding and two kinds of food, viz.: liquid and pollen food. Bees when rearing young require a great deal of pollen and honey. Some feed them sweet liquids by suspending it in the hive, or placing it out in the open air. The best plan, he thought, was to feed in the hive, and he regarded unbolted rye meal the best food for pollen. The object of feeding is to stimulate the queens, and make strong colonies, thereby securing plenty of combs and honey. His mode of feeding was by inverting a vessel on a plate, and setting it on top of the frames, allowing it to run out in just sufficient quantity for the bees to get around, and take it up. The result of feeding he found to be very beneficial. When bees were gathering honey the queen would be found to be laying. It should be kept up when commenced, for if the supply was cut off the brood would die. Had noticed in the last few days that his bees entered his kitchen for meal.

In response to many enquiries the Secretary gave a detailed account of his method of securing box honey, which we epitomize as follows:

"I can see but one way to make bee-culture at all profitable, and that is to raise our surplus honey for market, in small glass boxes. It then not only commands a ready sale, but a fair price also, which cannot be said of honey in any other shape. The boxes should have, at least, two glass sides, comb-guides and abundance of room at bottom for ingress and egress of the bees. Get your bees strong in numbers by the time of the hives harvest, and then put on three boxes over centre of brood nest. When these are nearly full put on three more and keep adding until the set is complete. When the first three boxes are capped over, remove them, putting on empty boxes in the place of the full ones removed. Keep this up as long as the honey season lasts, and if the flow of nectar has been at all good, you will have no cause of complaint that bees will not store honey in glass boxes."

Referring to the annoyance so frequently caused by the Italians clogging up the brood chamber with honey, Mr. Burch, another experienced apiarist, said: "I do consider that extracting the brood combs during a honey harvest is a most useful operation. As well might we call such an apiarian skillful as the general who had made no preparations for an attack until the enemy was upon him. To obviate all trouble in this respect, I want a queen of the capacity and disposition to lay 3,000 eggs per day during the entire working season in a hive of 1,400 cubic inches, so that she can deposit only 1,500 eggs as a daily average. The only time I would ever use the extractor would be to remove all over twenty pounds of honey that such hives might contain on the first day of May, then get your hive full of brood before the honey harvest comes and your queen will keep it so. In such hives thus manipulated, the bees will have abundance of brood below and will store the honey above in the little boxes."

MILK WOOD AS A HONEY PLANT.—Considerable has been written in reference to the destruction of bees, by the plant called milk wood, and some aver that it destroys every bee that works upon it; this is contrary to my observation. When this plant is in blossom, I have noticed bees gathering honey from it in considerable quantities, although some bees are caught while at work upon the blossoms, and a goodly number get their feet clogged with the oblong particles, interfering with their locomotion in a wonderful degree. I have seen on the bottom boards of hives, a teaspoonful of those particles, that adhere to their feet, which undoubtedly were removed by the bees after returning home in the condition mentioned above. That bees are destroyed by this plant, is a matter beyond dispute, but the honey they gather from it will more than balance the loss of a few bees. In my estimation it is merely a drop in the bucket, when we bring the moth or foul brood into consideration.—*Cor. American Bee Journal.*

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

AD CANVASSING AGENTS WANTED—First class men, of good address, steady, and pushing, to canvass for the CANADA FARMER. Address, stating employment, previous engagements, age and references. Publishers of the CANADA FARMER, Toronto.

The Canada Farmer

TORONTO, CANADA, FEBRUARY 15, 1876.

A New Move in Agricultural Education.

It is imagined, in some quarters on this side of the water, that the British farmers know pretty well everything that is worth knowing about their business. This impression might fade away on closer inspection, and it is not impossible that some British farmers, were they not restricted by their leases and agreements, might "skin" their land as greedily or farm it as ignorantly as do the worst of our own farmers. However, the need of more enlightenment is felt there just as it is here, and we are glad to notice a move in the direction of getting it.

England has no Government institutions for the promotion of agriculture similar to those of France and Germany. The one agricultural college at Cirencester is a private institution, and that was quite recently the only place where an agricultural education could be obtained. The farmers of Cuesate, according to the London Farmer, have been lately deliberating on the subject, and have hit upon what seems to be a good plan, namely, utilizing an existing grammar school for the purpose. The trustees of the Sandbach Grammar School have been treated with, and have entered into arrangements, to engage a properly qualified teacher to teach the elements of chemistry, botany, land surveying, and such other studies as are necessary to the farmer, provide twenty boys are guaranteed for four years at the sum of £10 a year as boarders, or that 10 guineas per annum be paid the master by the Chamber for each vacancy below twenty. Ten pupils have already been promised, and there appears every likelihood that the scheme will be successful. If looked at simply as an experiment, says our contemporary, it will be most valuable, and will help to solve the problem of the better education of farmers' sons—a subject of pressing importance in the present age, and one that cannot be postponed or evaded much longer.

Canadian Farmers and the Centennial.

The principal work connected with the representation of Canada at the approaching Centennial exhibition at Philadelphia is nearly done. The design is laid out, and the framework, so to speak, is complete. There remains but to fill in the details in the best manner possible; and it is in this work that the success or non-success of Canada's representation will consist.

Are farmers fully alive to the importance of exhibiting their productions? There is every reason why they should go heart and hand into this friendly competitive display, for we have little fear that they will come out of it with credit to themselves and great benefit, commercially and otherwise, to the country. What have we in Canada to fear as regards the comparative quantity and quality of our agricultural productions? In the matter of grain, wheat for example, we know that American new varieties grown in Canada have improved to such a degree as to quite eclipse the original importation. We know too that it was long (and, in some cases, is yet) the ordinary custom amongst American flour dealers, to exchange the contents of Canadian and American barrels ere shipping them to England, thus surreptitiously securing our better article under their brand, and claiming credit abroad for that which did not belong to them. We can raise peas, too, superior to those of any other portion of this continent, and there is little doubt but we can hold our own, and perhaps more in all other articles constituting our common productions. Our cattle, whether animals of fancy pedi-

gree, or those that are bought for every day use—our sheep and horses, are in request all over the continent.

Our manufacturers are going heartily into the movement, a large space of ground having been already secured for their various departments, and they are going into it hopefully too. Why not? On the only occasion on which Canadian implements were sent over to compete with those of America on American grounds, they secured premiums and medals in every case. For our own part we have not the slightest misgiving as to a similar success crowning the efforts of our farmers, if they only exert themselves and make a good turn out, and this they can do if they like. In this connection we would commend to their perusal an interesting letter on "Pomology and Emigration," which appears in another column.

The full details of the Exhibition, that is days, &c., set apart for the exhibition of different departments, have not yet been made public, but will be ere long. From our American exchanges, however, we gather the following dates for fruit and vegetable displays. Probably flower shows will also be held in connection with these—June 10th, Strawberries; June 15th, Raspberries and Cherries; July 1st, Southern Pomological; August 15th, Peaches and Melons; September 12th, Grand Pomological; Oct. 10th, Vegetables generally; October 25th, Roots and Cereals.

Horse Racing at County Fairs.

Happily amongst us Canadians this species of gambling at our agricultural fairs, is the exception rather than the rule. It is, however, occasionally a concomitant of them, and to be deprecated accordingly. With our American neighbors the custom is much more prevalent, but public opinion, even over there, is beginning to discourage and frown it down. The practice is in itself a cruelty in every sense of the term, nor has it a single redeeming trait to recommend it to any one except the usually questionable characters who make it their business, as they do cards and dice, solely to fleece others and fill their own pockets. A writer to the Ohio Farmer offers some very pertinent remarks on the point when he says:—Use your influence at all times against gambling at our county fairs, and especially denounce horse-racing for larger premiums than you would be willing to award to a good breeding mare or stallion. By so doing, you bring wealth into your county. As many fairs are conducted now, the money is given to some old worthless nag outside of your county, probably not worth fifty dollars for any purpose except gambling. Such an animal does no one any good but the owner. I have yet to see a very high degree of refinement and morality in men that make this a business. The abuse given to dumb animals at our fairs is inhuman in every sense of the word, cruel in its very nature, and should be stopped by law. Why not allow card tables on our fair grounds? It is no more gambling to play a game of cards for one hundred dollars than to drive a horse for the same; besides, it is not injuring a dumb brute. They say it draws a crowd. If our societies cannot live and keep their heads above water without gambling, let them sink. If the horse race is all that saves our agricultural societies, better let them go down. If they have no higher object than this, better have no organization. They have, in every county in Ohio and in every State in the Union destroyed, in a measure, the object which these fairs were intended to promote. Could the money spent on racing horses be applied to breeding fine draft horses and roadsters, a very different result would soon follow. Besides this, every fast horse raised, costs thousands of dollars to make him so. Nine out of every ten that are fast, get just fast enough to lose money in every race, and are finally sold into a team or to a city driver, or get on to a farm; and the owner is always disappointed. Now I repeat again, use your influence against horse-racing, and do it boldly. A firm, persevering, consolidated effort will, in time, make our county fairs what they should be—agricultural fairs.

The Man Who Borrows.

Who has not been driven to the verge of profanity, on going some morning to the accustomed place for a tool and not finding it? A search high and low all over the building takes place with no success, and then a cross-examination of the household brings out the fact that "neighbor

A, borrowed it a month ago, and I don't think he ever brought it back. Let me see. No it wasn't A. It was B, that had it," and so on. No doubt borrowers are permitted to exist for a good purpose, but as with mosquitoes and other minor plagues, the reason for their existence is to the sufferer an inscrutable mystery.

A borrowing neighbor is one of the calamities that only the "grin and bear it" policy will suit. One cannot be churlish or unneighborly. A man may resolve, every time he loses a tool, never to lend another thing, but when the borrower comes round again, penitent, smiling, and full of good promises, he gets what he came for, and brings it back—perhaps. About the best plan is to burn your name on every tool that has any wood in it, so deeply that it cannot be effaced by time or design, and in such a conspicuous place and such large letters that it will jog the leathery conscience of the borrower every time he picks up the implement.

A correspondent of the N. Y. Tribune has apparently suffered from the thinly-disguised kind of stealing which some folks call "borrowing," till he breaks out thus:—There is a miserable habit prevalent among farmers which ought to be treated and cured as a disease. Just what remedy might be prescribed, would perhaps be difficult to tell. In some farming districts a dozen or so of the inhabitants are always down sick with this terrible complaint. If they could be cured it would be a blessing to their respective localities. Land would rise in value, and property would be more desirable from the moment it could be said that that class of individuals had been cured or "moved away." To be compelled to borrow a farm tool is embarrassing enough, but to never return it, or, after months have elapsed, return it in a damaged condition, is so aggravating that even a Christian cannot avoid saying something that slightly transcends his sense of Christian ethics. There is no class of people in the world more generous and accommodating than tillers of the soil. They would like to do as they would be done by—that is, the better portion of them. But even the golden rule and its prompting spirit wear out when practised by a certain class of men at their continual expense. I heard an old farmer say once: "I have learned to do as I am done by, and not as I would be done by. Self-protection first, and the golden rule afterward." The old farmer was right, as the world goes, if wrong in any higher sense. Now, cannot this great evil be cured, and society in this respect be reformed? What I ask is, that all borrowed tools be taken home at once, and be returned in as good condition as when they left their owners' hands. If they are cracked or broken, take them to the shop and have them repaired, or buy new ones to return in their stead. If my advice is heeded and a new era ushered in, a grander step will be taken toward the world's regeneration than anything the Suffragists can do by their votes or their conventions. When farmers in their upward progress get so that they return borrowed tools immediately after they have used them, the signs of a better time will have come. Conventions and resolutions are not necessary to bring about this reform. A simple, spontaneous movement is all that is necessary. In a day's time every borrowed tool can be returned to its owner, and the new era ushered in. Farmers of the Empire State, for I speak to you, let us try the new plan.

The Grange as an Educator.

EDITOR CANADA FARMER:—It is a notorious fact that farmers as a rule devote very little time to mental improvement. They generally spend their time at their daily toil day by day, and when night comes are tired and weary, and anxious to seek repose. The cultivation and improvement of themselves mentally and pecuniarily is something that rarely occupies their attention. To remove this unfortunate state of things is a matter well worthy the attention of those who seek to elevate and ennoble this, one of the most important pursuits in life. Educate the farmers of to-day up to a proper appreciation of the rights and privileges they ought to enjoy, and you are laying broad and deep a foundation of future greatness that will challenge the admiration of the human race in every clime. Just here the Grange steps in and supplies a want long felt. It is a training school where farmers, their sons, their wives and daughters meet for mental culture and moral improvement, as well as to promote their inter-

in a pecuniary point of view. In the Grange room neighbors meet upon perfect equality; all those class distinctions incident to the outside world have no place here; a free and friendly interchange of thought and sentiment is exchanged, not only of a practical character relating to their profession, but also to the higher and nobler aims of life.

Education is encouraged, the home made more attractive by adorning it with choice trees, shrubs and plants; and the minds of its members cultivated and graced with those noble and higher ideas which tend to make life both useful and happy.

The occupation of farming as at present practised by a large majority is simply mere drudgery, with little or no relaxation for mind or body, and the farmer of to-day is made the prey of a numberless army of schemers and swindlers to siphon from him while he is in a state of ignorance, a large portion of his hard earnings. But there is a time coming when farmers will wake up, and these gentry act upon the principle that it is best to make hay while the sun shines—men who live not upon anything they themselves produce, but upon the hard labor of others.

Now, the Grangers propose to do away with a large number of these non-producers, by doing their business through the Grange. This is both simple and practicable. I will give an illustration: Suppose a subordinate Grange exists in your neighborhood. Upon a night set apart for business the secretary will call for orders for implements. All who want them will hand in a list of their requirements. These are then collected from all subordinate Granges and sent into the Division Grange, when terms are arranged with manufacturers for the purchase of implements in large numbers, and the articles are consigned to the address of each member in every subordinate Grange who has given his order. The terms being cash, upon approval, no agents' fees are due, no loss to manufacturers from bad debts, and no paying on the part of the farmer for those who never pay. Business done by farmers in this way effects a saving of from 20 to 40 per cent., enough saved in the purchase of a single implement to pay all dues and fees to the Grange for a man's lifetime. In the composition of either branch of the Legislative how few farmers, comparatively speaking, find a place there. These positions of honor and trust are generally filled with lawyers, doctors, merchants, speculators, &c., but farmers, who are proverbially honest, seldom find a place so exalted as this—the reason being that they are not educated up to the privileges they ought from their wealth and numbers, and the importance of their calling to enjoy. Can we, as a class, while we occupy so menial a position, expect such legislation as will promote and protect our interests, while we are content to entrust the affairs of state to those who have no feelings and interests in common with us? Only let a farmer be nominated for a position in the Legislature, and let his opponent be a lawyer or doctor, and in how many instances have farmers been known to denounce the tiller of the soil as utterly incompetent to fill so important a position, and they are ready to do all in their power to compass his defeat, and to fall down and worship his opponent, simply because he is possessed of an education, and has the faculty of telling all he knows and sometimes more too. The Grange is a training school where farmers and their sons acquire the art of public speaking. In their Grange room they are not in the presence of enemies, but with their neighbors and friends, and any defects are entirely overlooked. They thus gain confidence in themselves and in some instances make rapid progress in this, a very necessary branch of their education. There is no reason why farmers should not possess brighter intellects with the same advantages as lawyers, merchants and others have. Because their vocation is a healthier one, their bodies are more healthy and vigorous, and their minds ought to be so too. There is much yet to be done to make this movement what it ought to be, but perfection is not attained in a day; it is the work of patient toil, and will take considerable time. Grange libraries should be established, containing a choice selection of reading matter of the most modern kind, to which every member should have free access. Lecturers should be employed, men of talent and education, to impart information not only in regard to rural economy, but also to direct attention to the higher pursuits of farm life. In the Grange politics have no place,

and cannot be discussed. But it is the duty of every member to do all that he can to influence in a legitimate way for good the acts of any political party to which he may belong.

When we take into consideration the fact that no organized effort has been put forth to effect the spread of the order, its growth is unprecedented as compared with other organizations. It has long been to me a matter of surprise that the leaders of this movement, while recognizing the value of organization, have not as yet put in motion some systematic effort to spread the order. Notwithstanding this, to me, seeming defect, there are now 324 subordinate Granges, with a probable membership of 20,000. All this has been almost wholly accomplished by the order being allowed to spread itself, and in the face of the most determined opposition of a large and most influential part of the community, who think it to their interest to strangle the movement in its infant stages, by circulating the most unfounded statements in regard to the objects and aims of its members. It has taken a firm hold of the public mind, and has passed its most critical period, and there is every indication that in future its progress will be even more rapid than in the past.

JOHN T. GOULD,
Secretary of Durham Division Grange.

Indifference at Farmers' Clubs.

Occasionally, and not infrequently, the complaint is heard that interest in Farmers' Clubs appears to be flagging amongst members themselves, and that there is a danger in some cases of the institution collapsing altogether. Now this is certainly not as it ought to be. If, on such an important range of subjects and with such a wide field for discussion as these conventions afford, any member is found cool, disinterested or indifferent, he is doing his duty neither to himself, his club, nor his calling. Possibly the meetings are held too frequently in some instances to permit of the actual testing of experiments in the soil during the intervals. If so, that can easily be remedied. Possibly too, the clubs are too rigidly and exclusively masculine. Have farmers' wives and daughters a voice in any of the discussions either personally or by proxy, or are they invited on any occasion to grace the convention by their presence? A writer to the *New York World* speaks upon the latter point with the air of one who has encountered all manner of obstacles but triumphed over them. He says:—If your "Farmers' Club" is sick unto death, about the only thing that will revive it, is a strong infusion of women. Bring them in, particularly the young, unmarried ones. Have two recesses of ten minutes each. After the second one, hold "a matrons' hour." Put in an inquiry-box. Get well acquainted. Then send for a deputy and get organized as a Grange.

Pomology and Emigration.

EDITOR CANADA FARMER:—1876 will hereafter be known as the Centennial year. It will doubtless leave its record in the history of our world, and will be remembered far and wide by the benefits conferred on almost every nation. Canadians, as a rule, expect to reap a rich reward; their agriculturists, mechanics, artists, and labourers in every department of industry, are putting forth effort and skill to secure the looked for awards. It would ill become horticulturists to take a second, or even an inferior place. We are depending on you, Mr. Editor, to give no uncertain sound in this matter of the Centennial celebration. The fruit growers of the Province are alive to the importance of putting in a good, nay, the best appearance. Many reasons weigh with us in drawing the conclusion that, if the best be done, we will come out inferior in fruit interests to no State in the Union. Of late years wonderful strides have been made by our own fruit culturists. Advantage has been taken of our position, surrounding as we do, the waters of our Lakes; and localities are coming to the front in fruit-growing that were scarcely heard of a decade ago. The modes of cultivation have been greatly improved, and new varieties added to a long and not uninteresting fruit list.

Let us go in to win. Emigration rings from every side, with its advantages, retrospective, and prospective. We are bold to affirm that no effort of emigration agents could in any way compare with a grand seasonal display of

Canadian fruits at Philadelphia. We mean not to underestimate the doings of our emigration agents; they have accomplished wonders, but greater wonders would be accomplished for the best material interests of the country, by a first rate display of our fruits at Philadelphia in September. We must shake to its foundation the foolish idea so prevalent in continental Countries in Europe, that our winters are so severe, and so long that there is no room left for the summer production of luscious fruits. Let our magnificent peaches take their place side by side with those of Delaware, our apricots from Goderich, and our plums from Owen Sound and Guelph, our hardy grapes from St. Catharines and Hamilton, our apples and pears from every part of the country, be put on tables loaded with the best products of all varieties from the States, and we need not fear the comparison. The ordeal may prove a trying one, but we will emerge from it with flying colours. Our wheat may be the grand test of our country's capabilities, but our fruits will make a more lasting impression on the assembled multitudes. Canada must step to the front. Our successes must be made to ring throughout Europe. Nowhere do they require to attract greater attention than in England itself. How best shall the result be accomplished? A systematic effort, a united effort, a hearty effort must characterize our plans. Every one must lend a helping hand. Boston in 1873 must be outdone, by a long way,—by just as far as the latter occasion will transcend the former. Commercially no limit can be placed on our success as fruit producers and exhibitors at Philadelphia—at present thousands of barrels of fruit find their way to the States to supply foreign markets, how much more will this prove to be the case, when we stand confessedly in the fore rank of fruit producers? In every way in which we can view this Centennial Exhibition, a good Canadian display will be of infinite service to the country. Emigration will be bettered, commerce will be advanced, and the economy of the country raised in the estimation of all right thinking men.

Mr. Editor, be pleased to give us a reminder in your columns. Every effort that can be thought of must be called into requisition if the desired ends are to be fraught with success. Our fruit growers must be alert, and every fruit interest in the country called into active effort. Should this in any way be brought about by your present correspondent, he shall be amply rewarded. B.

Mortgaged Farms.

I will give some of the causes why some of our young men have mortgages on their farms which were given them free of incumbrance by their parents. Of course a young man, with a farm, calculates to marry a lady, and she, to keep pace with the fashions, must have a hired girl, and if there is any of the "royal family" in him, he must have a hired man. And if he is too proud or lazy to go ahead with the work, but tells his hired man to go instead of come, in five years you will find their help has eaten up the profits, and unless he has better economy and management than such men have in general, he will be looking around to find some one who will lend him money enough to meet his present obligations, and think the next crop will straighten things again. But, when the year comes around it's the old story—behind again—and he must borrow more money, but now his credit is not so good as it was and he is forced to mortgage his farm, thinking to redeem it in a few years. But things turn out different to his expectations, he gets discouraged, and finally the land goes to satisfy the principal and interest of the mortgage; whilst if he and his helpmeet had worked themselves, got up at five in the morning, and used economy, he could now have been adding another fifty or more acres to what he inherited. But to do so he would require to know and attend to his business. At this time of year he would have his fields ploughed to enhance his spring's work, and would in consequence be almost certain to have larger crops than if ploughed in the Spring, unless done early enough to be pulverized by the frost.

On the 27th ult., I passed a large field as a Scotchman of fifty-five or sixty years had just finished ploughing it. He came to Canada poor, and rented a farm and worked it with but little help except in harvest, and his helpmeet had done her part nobly, and to-day he has a splendid farm of one hundred acres, with a good orchard and all the build-

mgs required, and a few dollars out at interest. But he was never to be seen at horse races, nor in a gambling saloon. His apples and mangolds or turnips are all housed at this date, and he is about getting in his winter's wood. He does not thresh his oats until he has room in the barn to mow the straw, and then he takes the old style of threshing and does it at his leisure. He says the cattle eat the straw much better than if threshed with the machine. He belongs to the Agricultural Association, and you will find some of the best samples of grain and stock at the Township Fair are his. And, to put on the cap sheaf, you find his family well educated, and in church every Sabbath when possible. *Peter Shaker, in the Richard Tribune.*

Preparing Produce for Market.

When A and B go to market with precisely the same quality of produce, and A gets two or three cents per pound or per bushel more for his than does B, the two will naturally enough begin to compare notes and attempt to account for the difference. And, when, after remarking every avenue of speculation, the difference that said difference is exactly parallel to the different degree of neatness and cleanliness with which their several articles were put up and presented for sale, they will both have been taught a beneficial lesson; the one to proceed in his good work, already begun, the other, to begin it, and improve. A connoisseur's eye is on the high road to his taste. Present to him two samples of the same butter, for example, one in a tray, fresh rolled, and lying in spotless linen, the other carelessly thrown in a haphazard iron flat platter, and he will not only select the former but pay more for it. The advantage of presenting an article in good neat, tidy style upon the market cannot be over-estimated. Farmers, moreover, no longer find it hard to try in which the fruit of their "peaches" is most valuable. Our Fruit Growers' Association says the *Boone Royal Peaches*, is a case of this kind, and one of its ardent objects is to place the fruit of the market in uniform and attractive packages. It is true some small benefit to the association would have resulted to be sure of with its work. We notice, also, that the honey producers of San Diego county have formed a similar union to place their honey upon the market in more attractive form. They will find their sale greatly increased by it. Honey is a luxury, and it must win consumers where a staple food supply would command them. I must please and attract its patrons.

And the increased profit from tasteful presentation will be found of advantage in other produce, as well as fruit and honey. Dairy produce, in fact, is of most artistic a charm as well as palatable, and its neatness and cleanliness, and so are nearly all food articles, come from the farm. This is not a trifling consideration, it is a tangible business question which can be determined in gold and silver. Every producer should bear it in mind, and contrive ways in which to, in his special line, engage its rewards.

Seasonable Hints.

Various opinions are entertained with reference to the effects of the present winter on the wheat crop. We apprehend that little or no injury has as yet been sustained. The crops have been long exposed, but then we have had no very searching frosts. One of the principal dangers to be feared was that of a sudden frost setting in during the mild season, seizing upon, and upheaving the surface soil, and thereby dislodging the young rootlets. This danger however is over, we trust. The *New York Times*, in the course of a sensible article on the question, says:—A succession of frosts and thaws in place of a steady moderate cold may result in the destruction of our most important crop, and one which cannot be replaced or replanted as a Spring crop can. While the farmer is powerless to avert this evil, he may at least moderate its effects to some extent. The greatest injury may be feared upon undrained and wet lands. Standing water is utterly fatal to the wheat crop, while upon dry soil it will resist much unfavorable weather with impunity. The farmer should therefore see to it that surface drains are kept open, and the soil relieved of any accumulation of water. A top dressing of coarse manure, or even coarse litter, marsh hay or straw, will afford a safe protection to the plants.

But there are other ways in which any damage that may happen to the wheat crop may be lessened or balanced. This could be no more favorable season than this for the good management of the manure heap and its preservation from waste. The perfect decomposition of the manure will double its value, and in the absence of

severely cold weather the manure now thrown out from the stables may be stored over and kept in a condition of active fermentation. The cold weather will cause many barn-yards to become filled with water, and the overflow into lanes, roads, and ditches will carry off the best portions of the heap. These should be looked to with great care and the waste should be prevented. By these means an increase of Spring crops may be gained which will help to restore losses in the wheat crop.

But the most serious danger lies in the unhealthfulness of an unusually high water table with its dampness and sudden changes of temperature. This will undoubtedly be felt both by man and beast. The health of the farmer and his family should be guarded by the utmost care and the most scrupulous cleanliness. No foul surface water should be permitted to ooze unnoticed into the well or the spring. Foul drinking water, emanations from decomposing manure, and the collections of vegetable or animal matter about stagnant water in the pathways or around the drainage leakage into the cellar beneath the house, and other unwholesome influences, affect the health of man more than any other evils. Where pure mineral water are supposed to be the rule they are an exception. There could be no better season than the present for the exercise of care in this respect. It was one for the discovery of abundant mineral water. The majority of those farmers who rely upon the drainage of their fields, and spend money liberally to keep their crops in good health, will have their manure and urine undrained and endanger the health of their most precious harvest—their children.

It is not unusual to find the stables and sheds better provided in this respect than the dwelling-house. But we may undoubtedly find a much loss among live stock during the present winter. Wet yards, steaming manure piles, fetid stables, and foul smelling sheds will have their effect upon the condition of stock. In nothing is there more danger than in drinking water rendered filthy by washings from manure-covered yards or depressed feet of the animals conveyed directly to the blood, and the eyes, milk-tevers, "black-leg," "foot lock," and other ailments may be looked for, and a timely precaution will avert them. It will be too late to call for a remedy when these occur. The work is the more difficult, and the result unavoidable in most cases. It is a sad warning, if heeded, may prevent some of our most valuable, and many regrets when spring opens without a loss; when weakened animals will succumb without notice, and in spite of tardy help.

The Thermometer Experiment.

A writer in the *Michigan Farmer* relates the following incident. While working in my garden the last day of June, 1872, I found it so uncomfortably hot that I concluded to suspend work during the day, but on repairing to a locality of some twelve feet lower ground, I found I could work in it comfortably; and to test by the thermometer the difference of heat, I placed it in several localities in my garden, embracing less than an acre of ground, and found that it varied six degrees within a distance of ten rods. My garden being composed of a clayey loam soil, I had been unable to procure early vegetables and fruit as soon by a week or more, as my neighbors, whose gardens were of a light sandy soil, and supposed the difference in the time of maturing vegetables was owing to the different soils. Since that time I have planted my vegetables which I wished to mature early, in the locality where the thermometer indicated the highest temperature and I have succeeded in obtaining early vegetables and fruit as soon as my neighbors. I find that they will ripen ten days earlier than the same varieties planted ten rods distant in a cooler locality, and on equally dry ground.

Previous to experimenting with a thermometer, I was not aware that there was so much difference in temperature in so short a distance. Probably many of our readers who find it difficult to raise early vegetables, by a little experiment with the thermometer, might meet with similar success on their own premises.

President Parmelee, of Michigan, gives his experience of the different localities as follows:—"I have long held and preached that hollows, from greater cold, are utterly impracticable as sites for orcharding. People will have it that the different temperatures at different points are owing to the difference in thermometers, and a council of instruments was called at the Farmers' Club, at which were present ten thermometers, and the trial showed an almost perfect agreement. Mr. Brinkman brought his up to my residence one still cold evening, and with mine it was hung on a twig at the house. After ample time to settle we hung them in my cherry orchard, lower ground, and they went down nine degrees. We then carried them about a stone's throw west, to the top of a ridge, and they came up eight degrees, and the difference of altitude was only three feet. We then took them down on the little lake, between my house and the dock, and they sank twenty-three degrees. On my return home, my thermometer came back to the starting point.

Concrete Walls.

A Michigan correspondent of the *Chicago Tribune* who, apparently, has had much experience with concrete walls, gives some intelligible directions for their construction. He says:—I have experimented on such walls for the last ten years, having the ingredients—lime, sand, and gravel—in abundance contiguous to each other. Such walls are a success in this section of the country. There are a great number of such buildings, both in this State and the immediate adjoining States of Indiana and Ohio that have stood fifteen to twenty years. Both dwellings and mercantile dwellings are very permanent, and give perfect satisfaction. Yet I do not apprehend that any and everybody can construct one as it ought to be without some previous experience, any more than brick or stone. They sometimes fail through deficient construction. I shall throw aside all theories, and only state what I have demonstrated by actual experiment.

THE FOUNDATIONS.

I will give five different ways of constructing concrete walls. The first and most important thing to be looked after is the foundations. Any builder knows this to be all-important in the construction of any building where permanence is desired. For a concrete wall the foundation must be of stone, or of hard-burned brick, sunk below the frost and raised above the snow line. The concrete must not be commenced until the foundations are far enough above the surface of the earth, that it will not absorb moisture therefrom by capillary attraction. If it obtains moisture from the earth below, the frost will throw the ingredients apart, and it will crumble into a loose sand.

THE CONCRETE.

I shall use the term mortar, instead of concrete, for it is more familiar, and the mixture does not differ from the common lime mortar used in the construction of stone buildings. The lime, sand, and gravel may be mixed together just as mortar is prepared to lay stone-wall with. What will make good work in one case will in the other. Four bushels of gravel, one bushel of fine sand, and one bushel of lime, are very good proportions. It is very essential that the sand and gravel should be free from clay or any other earth. I have used fine sand alone, and do not see but that it does as well as when mixed with gravel. I have made good walls with one bushel of lime to ten of sand. Have some that have stood the weather without any cover for fifteen years. But one bushel of lime to five or six of sand and gravel is safest.

GRAVEL BRICK.

Some prefer to mould it into what is called gravel brick, and dry it before laying up. Some press it in moulds made for the purpose. But it does not add to the hardness a y. They are moulded 6 by 8 inches square and 4 inches thick. It need not be limited to any size. I have moulded these gravel brick a foot square by 15 inches in length, large as a man can lift. The process is very simple. Take an inch board 1 foot in width, of any length; lay it on the ground previously leveled for the purpose. Drive down stakes along each edge of it, the whole length, 4 feet apart. Take two more boards of same length, and 1 foot wide, nail a slat across them 1 inch square and 18 inches from each other, the whole length. Place these two boards on the inside of the stakes. Now take pieces of boards, cut 1 foot square and place them upright against the cleats, and we have a mould. Fill each apartment with mortar. After standing a half-day, the boards at the sides may be removed, and the brick left to dry on the bottom board. Have as many of such molds as suits convenience. When dry, lay the brick in mortar made of lime and fine sand, as any other brick. When preparing the mortar, take marsh or prairie hay, chopped a few inches in length, and mix it with the mortar, and it gives the concrete great tenacity. This is nothing new to any one who reads the Bible, which states that the King of Egypt inflicted severe task on the children of Israel, by compelling them to gather stubble for the same purpose. Thus, we see that we have an illustrious example in this matter.

ANOTHER WAY.

Another way is to place the mortar in the wall where it is designed to remain, while in a soft state. This may be done without failure if the process is well understood by the operator. A mould is formed, as wide as the wall is designed to be in thickness, by placing two boards in an upright position, one on each side the wall, horizontally, with slats nailed across the upper edges sufficient to hold them firm. The lower edges are secured by braces on each side. The mould is now filled with mortar and left to stand until it obtains firmness to hold its own weight; it is moved along and the process repeated. The wall must not be carried up any faster than it obtains firmness to hold its own weight.

THE BETTER WAY.

But the better way is, when it is desirable to form the wall in a soft state, to take common scantling, or any other sticks of timber that have one straight edge, and place them in two lines, one each side the wall, as far apart as the wall is designed to be in thickness. Fasten them firmly at the top and bottom. They may be four or five feet apart on the same side, which will be near enough together to support the boards or plank, which are placed

on the inside of each row of posts, thus forming a mould for the wall. The mortar may be placed in the bottom, and additional boards added as the vacuum is filled. It may be carried up any number of feet in this way. It should stand in these supports a week, if it is drying weather, then commence at the top to remove the boards, and if the wall has acquired sufficient firmness to sustain its own weight, remove the whole. If not, let stand until it has. There is no trouble about the wall standing after it is thoroughly dry; and provided always it must be constructed early enough in the season, that it has time enough to dry before freezing weather. It takes several weeks for a wall of this kind, of a foot or 20 inches in thickness, to dry through. And if not thoroughly dry before severe freezing weather, the frost intervenes, the water held between the sand and gravel is congealed into ice, and thus it is crumbled by each particle having a partition of ice between them.

BRICK AND CONCRETE.

To those who distrust the ability of concrete walls to sustain their own weight, I give a plan that will place the matter beyond doubt. Take hard brick, thoroughly burned in a kiln, so that there is no mistake about their being hard brick, and be sure the foundations are built as they ought to be. Lay up the corners with brick as high as it is designed for the plates to rest upon. Lay them widest at the base (the corners), and let them rise in the shape of a pyramid. Also build abutments round each door and window. Timbers may be placed on these abutments, inside the wall, on which may rest the cross-beams and joists. Now fill the intervals between the corners and abutments with concrete, or clay for that matter. Concrete may be rendered impervious to water by adding one-fourth of calcined plaster to the other ingredients.

FINISHING THE OUTSIDE.

We come now to the process of finishing the outside. This may be done so as to give it the appearance of marble, by what is termed stucco. It should be plastered over with a coat of common lime mortar, to make the surface even. After which add a coat of stucco, composed of equal parts of sand, lime, and calcined plaster. In a small portion of lampblack be added, it will give the appearance of dark waves as in marble. If a few ounces of red lead, it will have the appearance of a pine color.

I have constructed a very cheap and substantial build of concrete walls, by erecting a substantial frame of 8-inch sills and posts. Put on the cornice and roof. Lath and plaster the inside the same as if it was clapboarded. Now take an inch board, nail it firmly to the posts and studding down next to the sill. Fill the hollow space between the board and lath with mortar, and when filled to the upper edge of the board, add another above it. The wall may be carried up 2 or 3 feet at a time in this way. If carried any farther there is danger of pressing off the lath by the weight. Put the mortar in carefully. After the wall becomes firm enough to support itself, remove the boards. Then plaster over the outside with lime mortar. Take what masons call a float and float it down when partially dry. Then take a common whitewash brush, and some lime prepared as it is done for whitewashing, and give it a thick coat of whitewash. Go over it two or three times. Then take a mason's trowel and smooth it down. Finish it nice and smooth. It will have a beautiful appearance, like the inside wall of a parlor finished with what is called a "putty-coat." The whole expense of such a wall is about what it would cost to paint clapboards, and it will last much longer. I have a house built in this manner that has stood for ten years, and will last for an indefinite period longer. Such a building may be set on blocks or posts in the absence of materials for foundations.

SEMI-CONCRETE WALLS.

There is another kind of wall, which we will term semi- (or half) concrete. Any one can build it that can lay up a cord of stove-wood. Take wood sawed about 15 to 18 inches long, split it to 2 to 3 inches in diameter; lay it in lime mortar as stone. Let the mortar press out on each side in laying, so as to form fastening to plaster to, inside and out. The corners should be laid up by the sticks crossing each other at each layer. Also there should be sticks, occasionally, extended through the whole length of the wall, to build it together. Finish it off as any other concrete wall. This makes a very cheap, warm, substantial, and beautiful building. There are a number of such in this section of country. It should be placed on stone foundations. This article has extended to such length, I cannot go into every particular, leaving something to the ingenuity of those who contemplate building. Where there is plenty of lumber, any poor man with a small portion of mechanical ingenuity may have a place by his own labor.

THE SEMI-CONCRETE WALL THAT WILL RESIST TORNADOES.

I come now to a wall of my own invention that is cheap, simple, possesses immense strength, and is capable of resisting the most furious tornadoes. The more weight placed on it the stronger it is. Any one can construct it, and it can be made as nice as a marble palace. I have constructed a specimen wall ten feet high; and what is most remarkable, there has not been a dissenting voice.

The foundation is prepared as for any other wall. Now, take saplings or young trees, of any description, while oak is preferable, the rougher the bark the better, but, in pieces as long as the wall is designed to be in thickness. Lay them across the foundation, at right angles, on a layer of mortar evenly spread. Now, take saplings of the

same size, and place them on this layer lengthways, of the wall, and at right angles with, or on the top of the previous course, the ends of each course crossing each other at right angles in the corner. Thus extending from the corner through the whole length of the wall, it binds the whole together so that there can be no break nor give. Fill each crevice with a layer of mortar, repeating each course of timber and mortar till it reaches a desirable height. If it be wished to make it so firm that nothing can possibly wrench it, take an iron plate and put under each corner. Pass through this plate an iron rod 2 inches in diameter; let it extend upward and pass through the plate on the top of the wall, with a screw and nut on the end. After the plates are on, on which the roof rests, screw it down. Place as many through different portions of the building as desired. Make the wall as thick, to secure any amount of left and strength, as may be desired; there will be no giving out to this. Finish off outside and in with stucco, as previously described. Any building for sheltering stock may be constructed very cheaply in this manner, and will give a farm a neat appearance in out-buildings, much more so than weather-beaten clapboards. But the great object I had in view in making these experiments was to demonstrate that the poor man, with a little ingenuity, could obtain a neat and comfortable building by his own labor.

Purification of Water.

The following methods for the purification of water, in well or stream, that may have become foul, are suggested by Dr. Voelcker, of England.—Spring, river, well, or lake waters, as it has been shown, are rendered impure to a greater or less extent, 1. By suspended animal and organic substances, such as finely-divided clay, marl, slaty, organic matters, decaying vegetable matter, and similar mechanical impurities. 2. By soluble organic impurities, which generally color the water yellow or brownish; and 3. By certain saline matters and soluble earthy compounds, which, in the shape of a more or less considerable and generally slightly coloured residue, are left behind when a measured quantity of any kind of natural water is evaporated to dryness. In other words, suspended or mechanical, organic and mineral, and soluble vegetable and animal matters, are the ordinary impurities of natural waters, to which have to be added, in exceptional cases, sulphuretted hydrogen, traces of copper, arsenic, or, more frequently, lead.

The means available for the purification of water are: 1. Distillation. When river, or spring, or sea water, is kept boiling in a glass retort or metal still, it is converted into steam which carries with it all the gaseous or volatile impurities that may have been in the natural water, and leaves the whole of the solid saline and earthy matter behind. By suitable cooling apparatus the steam is readily condensed, and if the first part of the distillate containing most of the volatile impurities is rejected, nearly pure distilled water is obtained. Except at sea, or for chemical use, this method of purification is seldom resorted to for effecting the purification of water.

2. Filtration. On a large scale, turbid river water is effectually clarified by passing it through gravel and sand filter-beds. By this means the mechanical impurities, such as fine clay or marl, dead leaves, and similar accidental impurities, are arrested in the filter-beds and the water is rendered bright. Filtration through sand also removes, to some extent, soluble organic matters, which sometimes give a yellowish tint to river waters, for by passing through gravel or sand a portion of such organic matters is oxidized, and the filtered water, in a measure, deprived of the original yellow tint. The saline and earthy matters dissolved in water, however, are not diminished by sand filtration, or only in a very slight degree. The necessity for this process may be greatly diminished by the use of subsiding reservoirs, which, moreover, have the advantage of exposing the remaining water for a length of time to the oxidizing influence of atmospheric oxygen, whereby it is deprived of some objectionable coloring matter. But filtration cannot be entirely superseded, being indispensable as the concluding operation of purification, to remove accidental impurities which may find access to the water, as well as fine particles of clay after remaining for a long time in suspension.

For household purposes, turbid and slightly colored water may be made bright and almost colorless by the use of tank or hand filters. In most of these advantage is taken of the well-known property of animal charcoal to remove coloring matter. Vegetable or animal charcoal, moreover, retains effectually every trace of lead which a water may contain, either in solution or in a suspended state, and thus tank or hand filters, in which charcoal is employed as a purifying agent, afford the greatest security against danger arising from the presence of lead poison. The most recent invention in water filters has been made by Prof. Bischoff, who employs spongy iron as a purifying agent. Bischoff's filter has a decided advantage over ordinary water filters, which soon lose their purifying properties unless the filtering agent is renewed from time to time, whereas Bischoff's filter remains in good working order for years, without requiring the renewal of the spongy iron. Lastly, water may be purified by precipitation-processes, of which that patented by the late Dr. Clark, of Aberdeen, is among the most elegant and useful.

Lady Pigot as a Short-horn Breeder.

The *Agricultural Gazette* has, in a late number, an excellent portrait of Lady Pigot, accompanied by an interesting autobiographical sketch of her career as an agriculturist and breeder of Short-horns, from which we make the following extract—"Mine has been a curious life, from my spoilt and petted childhood, followed by my married life, with its various social and political interests, its wanderings and journeyings—now for months in all the rough simplicity of a Norwegian hut, cooking for myself from sheer necessity; now riding over trackless parts of North Morocco, or painting the fierce camels of Algiers, surrounded by chattering and curious Arab women; again, in Venetian gondolas, where I have idled away the glorious summer nights; or, yet again, exploring wild caves in Corsica, Sardinia, and Hungary—on battle-fields, in hospitals—ever restless, ever working; always endeavoring to crowd into the twelve working hours of life's day more than could by most be done in eighteen. Thus have I gone on, with a heart very alive to suffering in man or beast; especially sensitive to the woes of little children, and to the neglect in which so many are reared. Keenly appreciating the beauties of nature, passionately fond of music and the fine arts, rejoicing over all that is good and pure and holy, with a soul full of gratitude to the One above, I have lived, as I believe few do, a life of real enjoyment, because of work, and because I find interest and amusement in almost everything, also because I have never forgotten my own maxims, namely—"To succeed in life two things are absolutely necessary—to be in earnest about what you are doing, and to persevere in that doing."

"I had been the owner of two or three West Highland kyloes, bought during a summer's residence in Argyleshire; but one day, I think in 1856, some one suggested that I should look at Mr. Jonas Webb's cattle. Accordingly Sir Robert and myself went there, and I was so struck with the massive character of the Short-horn, that I said, 'Here are the sires for me,' and after much consultation, hesitation and debate, I finally bought a heifer called Happiness for 280 gs. She had only what I should now call a very mixed pedigree, but she was a grand animal. I sent her in 1858 to Dublin, where she won the first prize and the £20 gold medal as best female in the yard; but she died from inflammation, caught on her journey home.

"Mr. Wetherell's sale in 1859 was the first I was ever at, and Stanley Rose the first Shorthorn I had in person for. Stanley Rose I also sent to Dublin, and again took the same honors; but she too died on her return, through an accident to her truck. And I soon began to realize the fact that Short-horn breeding is not all *couleur de rose*, for I am certain that I lost £2,000 by deaths and inexperience during my first three years. In 1860 I undertook what, for a woman, was a large farm—530 acres of heavy land—and being aware that, to be able to approve or find fault in a work, you must know how it should be done yourself, I went through all the operations of the farm under the supervision of my friend, Mr. John B. Booth, of Killerby, where I learnt to plough and to drain. I had a great desire that all on my farm should be of the very best, and I bought cart-mares at over 100 gs. I bought Southdowns from Jonas Webb, but my land was so cold and wet, they soon had foot-rot, and I was compelled to sell them all off. I then went in for Lincolns, and bought rams of the late W. Torr; but their heavy fleeces got clogged with our clay, and they did not thrive. I accordingly sold them off, a great many going to Germany. Mr. Preece and his favorite Shropshires were then brought into sight, and for a time these heavy carcasses and thick-wooled sheep did well. I found, however, that it was ruinous to keep a Shorthorn herd where there was so much timber, consequently sour grass, and on such a cold, unproductive clay, and so far from a railway station, and so heavily rented as I was. So, in 1870, I gave up my farms, and sent the herd to Wytham-on-the-Hill, and for the first three years my cattle made wonderful improvement; but last summer and winter, owing to the drought and consequent scarcity of fodder, they were starved, and they arrived here in May in a very woe-begone state; and all this summer we have been struggling against want of food, and that pest of Shorthorns—the flies—which are ten times more numerous here than even in the densely wooded park at Branches. My land is poor, and soil light, but we have some good water meadows, and I have just taken an additional farm of 250 acres from the Earl of Lovelace, which has some fair pastures." The herd numbers between 90 and 100 animals, including representatives of the famous Mantalini, Bliss, and Farewell tribes. There are fourteen Mantalini females, and four Bliss females. "Except at Aylesby, no such succession of fine Booth sires have ever been in use in any herd."

THUS TALKS an old farmer about his boys: From sixteen to twenty, they knew more than I did; at twenty-five they knew as much; at thirty, they were willing to hear what I had to say; at thirty-five they asked my advice; and I think when they get to forty they will acknowledge that the old man does know something.

Ice Houses.

A writer to the *Chicago Tribune* has been submitting to that journal various plans for the construction of efficient ice houses, but as the carrying of these into practical effect would involve a larger expenditure than ordinary needs would justify, he gives the following instances of simpler and cheaper methods. — A gentleman, moving to a new farm, found no ice-house, and fitted up an old smoke-house to answer the purpose. He made an inner wall as high as he desired to pick his ice, and filled in the space between the two walls with sawdust. To secure drainage he put a layer of rails at the bottom, and on these a thick layer of clean rye-straw. On this he packed his ice, having cut it into cakes of uniform size with a cross-cut saw. He was careful that this packing should be well done, leaving no spaces. He left on each side the space of three feet, which permitted free work, and then, when his mass of ice was perfect, he filled this space with sawdust, and put saw-dust to a great depth on top. His ice kept well, and the expense of changing a smoke-house to an ice-house was trifling. He expressed the opinion then that he could well have dispensed with the double walls.

Another gentleman, having filled his ice-house last winter, concluded to pack more ice. He built a shed on the north side of his wood-house, using no double walls and packing on rails covered with straw and using plenty of saw-dust around and above, and this ice kept as well as that in the ice-house.

In another case, a gentleman chose a place on the north side of his barn and packed his ice in solid mass. Some days afterward he built a shed over this and used sawdust as in the first case mentioned, and this ice kept well.

This recalls another case in which a farmer of the old regime kept ice year after year in a rail pen. He built first a pen much in style of those in which wheat was kept in the primitive days, and which were as common as we see stack-yards on the farm. The space between the rails was chinked with straw. In this pen he packed his ice on a floor of rails covered with straw, leaving space all round which was filled with saw-dust. Outside of the pen he built another, and the space between the two he filled with saw-dust. Over all was a covering of straw. This double pen, which cost little in the first place, was used year after year, with the addition of a little fresh saw-dust for packing.

All these cases, however, were in a heavily-timbered country, where sawdust was easily procured. In many districts in the West this is not the case, and the practical question is, What is a good substitute for saw-dust? In many cases straw has been used, but this requires more care and more skill.

In all cases, the strong points are careful packing of the ice and good drainage without admission of air to the ice. Ventilation above the ice is easily secured.

The Skin.

We desire to present a few brief and practical remarks upon this subject, without indulging in abstruse technicalities.

If as much, there is no structure of the physical body more widely distributed than the skin. It not only covers the external superficies of the form, but reflects inwardly at every orifice, and creeping into every cavity, lines the whole internal physique. What are commonly known as membranes may with equal scientific propriety be recognized as forms and modifications of skin.

The skin is best known as endowed with secretory functions; therefore we shall confine our present brief statement to matters illustrating the natural laws of secretion. Everywhere the skin sustains an adaptation to pouring forth some form of products for a wise and specific end. On the outer surface of the body it exudes perspiration, and oil for lubricating, and various effete matters from the armpits, toe-angles, etc.; in the nasal passages, throat and lungs, mucus; in the stomach, gastric juice; in the liver, bile; in the kidneys, urine; in various other localities, carotid fluid, synovial fluid, etc.

Whoever regards his body wisely will consider the importance of maintaining a proper activity of all the dermal functions. Especially is this true in view of the reciprocal relations certain of these functions bear to each other. To illustrate, if the functions of the external skin are unduly suspended, the internal skin will try to make up the deficiency by overwork. The same is true in a reverse contemplation. This explains why "closing the pores of the skin" will be frequently followed by an increased discharge of mucus from the bowels, or diarrhoea, as well as the same from the cavities of the head and fauces, or catarrh, and a great many similar compensating effects are accounted for in like manner. Last summer we came in contact with a stranger, whose every outward aspect was indicative of the most scrupulous cleanliness and tidiness. Yet the very presence of the individual revealed a most intolerable stench. We doubt if the person most interested in it was aware of it. It proceeded from an undue secretion of the glands of the armpits. We have not a particle of doubt that the circumstance was owing to some other defective secretion in this way sought to be compensated.

Cases like the one we have related are very frequent and often exhibit more extended effects. The outer skin often secretes or perspires too much, because the inner skin secretes too little. In such a case, bathing and washing will accomplish but little in the way of relief. One may thus remove a quantity of waste matter, only to have more supplied in its place. However, persons afflicted in this way will be less liable to direct injury from bathing than those in whom the predominance of force is exerted inwardly upon the mucous membranes, inciting most likely some form of chronic catarrh. Such are shivering and cold, and look with horror upon the face of water. If they persist in bathing, they are liable to serious injury, unless they use only water of an agreeable temperature, avoiding draughts of air both during and after the process. When experience shows weakness inclined to follow bathing, it should be practised with great care, followed by a season of ease and repose.

As a rule, bathing is good for everybody. Excepting persons engaged in dirty employments, once a week is sufficient for those sustaining a healthy balance of secretory functions. Nor need it then be so thoroughly detergent as many imagine. A towel or sponge saturated with soapy or slightly alkaline water will soon do all that is required, unless one bathes for pleasure. Friction of the dry towel or hand, the air and the attendant muscular exercise are highly beneficial; weakly or catarrhal subjects, however, should be handled tenderly.

Simply bathing is hardly a remedy for deep-seated ills demanding more general means of correction. We have not told all we have even thought upon the subject of the skin. We would like to say more, but have a vision of Mr. Freas' waste basket. — *Cor. Germantown Telegraph.*

Window Gardening.

The great, or at least one of the great, desiderata of window gardening is to produce flowers in winter as well as in summer, and, to effect this, those varieties of plants should be selected which are most likely to repay the care and labor bestowed upon them. As the taste for floriculture increases, this particular point receives more and more attention, and every avenue of information upon the subject is zealously explored. A correspondent of the *N. Y. Times* takes up the subject in a recent paper and says:—

Monthly carnations seem to be especially suited for window decoration, because they will bear neglect in watering, and are also so delicately fragrant and beautiful in form and coloring. A good-sized plant, filled with buds, can be purchased from any florist at the small price of twenty-five or thirty cents, and it will continue to flower for months. When all signs of buds are passed, it can then be cut back one half of its growth, and it will soon throw up fresh shoots and bloom for months. Among the most desirable varieties of carnations are *Pres de Gran*, *La Purité*, *General Grant*, white; *Astoria*, yellow-marginated, with scarlet, *Defiance*, deep crimson; *Smith's Seedling*, scarlet; *Ma Gloire*, yellow edged, with crimson. Winter-blooming fuchsias are the most graceful and ornamental of window plants, while nothing can be more simple than their culture. They grow rapidly from cuttings, which should be taken from well ripened stems, and cut from three to five inches in length. Stick them in wet sand to the depth of an inch, and keep the sand moist and moderately warm. It is best to invert a tumbler over them, and in three weeks they will have become well rooted, and can be potted. Fuchsias when growing rapidly, require a good supply of water, and it should always be given quite warm to the hand, or if turned into the saucer, it can be taken directly from the tea-kettle, thus supplying for a short time a good amount of bottom heat. The pots must be well drained to make the plants bloom freely, and care must be taken to prevent the soil from becoming chilled. If the night is cold, give the plant the benefit of a newspaper wrap, pinning it closely about the branches. Newspapers inserted between the plants and the window panes are also a great protection from cold winds.

Chinese primroses will often flower for ten months in the year, and if they are not kept too wet, they will grow in spite of furnace heat or gas light. They like a sandy, fibrous loam, and free drainage.

Geraniums are always desirable for house plants, in all their many varieties, and no stand of plants is complete without the rose-scented and oak-leaved geraniums. Tonal and tri-colored geraniums are also indispensable, and if the plants of the Tonal are not too old, they will flower all winter. Dwarf geraniums are much grown now, and when well pruned they will make exceedingly pretty plants, and will often flower almost continually. Ornamental-foiled geraniums, however, require much care to prevent their leaves from growing yellow and dropping off; but if they are sponged every week with a lot of wet flannel this may be avoided. The myrtle is a favorite with me, on account of its fresh, pretty foliage, which, if kept clean from dust, will grow readily, and the plant will last for years if it is repotted every autumn. Its odor is very pleasant and its flowers lovely.

Camellias are much handsomer than any other flower, but as they lack perfume they cannot take first rank in my esteem. Yet I would not deny their claims to the best place in the window garden. Their proneness to drop

their buds is, however, a great drawback to their culture by amateurs. But some remedy thus by wrapping wet cotton wool about the base of the bud and keeping it well moistened. In a dry temperature this is desirable. Cuttings can be easily rooted by putting one into a small phial, nearly filled with water, and letting the stalk just touch the water. Then hang the bottle in a warm, sunny window, removing to the fire-place at sunset if the nights are cool; and in a few weeks you will have a finely rooted plant. Pot it in a rich but rather sandy loam. Monthly roses must not be omitted from the list of desirable window plants, although their liability to the mroads of the *aphis* makes them sometimes obnoxious; but tobacco soap will banish these pests, and also act as a fertilizer to the soil. *Bon Silene*, *Bella*, *Safrano*, and the pink *Hermosa* are all adapted to the house. Purchase young, thrifty plants, filled with buds, and give them a weekly washing in a solution of soap, made by dissolving one tablespoonful of it scraped fine, in three or four quarts of water; wet the soil thoroughly with it, and you will kill the minute white worms which injure their roots as much as the *aphis* do the branches, and you may have a continual feast of roses. This wash is also excellent for all kinds of house plants, and sweet scented geraniums can be kept free from insects by its use.

Facts and Fancies on Cruelty.

A writer, whose repose has been disturbed by the sayings and doings of societies for the prevention of cruelty to animals, sends a lengthy communication on the subject to the *English Live Stock Journal*, in which he deprecates as shortsighted and childish a policy which looks after the note, whilst the beam is allowed to escape. After noticing what he terms the inconsistency of weeping over ringed bulls, pegged bears, and banded badgers, whilst the case of the noble horse fettered, overloaded, and underfed in the coal seams of the earth is overlooked; the unqualified condemnation of hunting, shooting, and fishing as sources of great cruelty and pain, while the facts go to show that all these are carried on in the wilderness whether man be present to witness them or not, and not only so, but in following out the Scriptural injunction, "Kill and eat," the gun, wand, and hounds, as alleviators of actual pain, are a decided improvement on the natural method. The writer then proceeds:—A third type, differing from the former in being neither strictly intentional nor unintentional, may be classed as necessary, since without it it would be difficult, if not impossible, to keep our domestic animals under the conditions that we find them in their wild state. Such are the ringing of swine and bovine males, shoeing horses, castration and many other operations, including the dubbing of game cocks and rounding the ears of foxhounds. Who, after seeing the high mettle foxhound dash into and draw the tangled brake of thorn and brier, and emerge, with his long ears pierced, torn, and bleeding, a pitiable sight, to be repeated, with an accumulation of pain, on each succeeding hunting day of his life, would deny that his master would be mercifully kind in performing an operation, once for all, occupying but a few seconds and causing but little pain? And who, too, that has seen the undubbed game cock after fighting (as fight they will, notwithstanding all our care to prevent it), blind, moping, with drooping head and swollen throat, unable to crow or feed, yet starving, with wattles and lobes swelled to bursting, will deny that he suffers a hundred times more pain every hour than his brother during the few seconds he was being dubbed, and who now struts in all the pride of life, showing not the least sign of the recent conflict in which he had dealt out such fearful punishment to his undubbed brother? Besides, the comb and wattle greatly tend to create those conflicts, for, as the red rag makes the bull furious, so the comb and wattles enrage chanticler. Many a precocious Spanish pullet's coral-like comb has caused her death from the game-cock's fatal spur; and not one cock in a thousand would notice the three-cornered lure-bag formerly used for catching up game-cocks from their walks, and for exercise, were it not for the bit of red morocco leather, *shaped like comb and wattles*, and sewn on to the bag, which causes him to dash at it like a demon.

Cure the first class of suffering by every means of prevention, ameliorate the second by teaching men to think, but let the third alone. They are as much a matter of a man's private opinion as his religion, on which even Mrs. Anti-Cruelty is not entitled to think for him.

Experiments at the Model Farm.

We learn from the *Guelph Mercury* that the following experiments in fattening stock are now, or will shortly be, in course of testing at the Guelph Model Farm. The results will be watched with much interest.

The leading idea is to use only such materials as have been produced on the Farm, or what are easily within the reach of every ordinary farmer; and, as will be observed, oil cake is the only exception in this.

The second consideration is, that as animals must be fed, and otherwise attended upon, no unusual expense need be anticipated.

Thirdly—Though rather late in the season, some lessons in this direction should be begun for the sake of the pupils, and that the results may either suggest, or prove, points which may lead to an improvement on future experiments, both by the experience gained, and the elucidation of public discussion.

The details of each case will be published as they mature themselves. Professor Brown and Mr. Sturton, the Stock Director, have the advantage of the scientific advice of Dr. Baprie, Professor of Chemistry.

Cattle.

1. Whether turnips in the whole or pulped state are quickest and cheapest for fattening. Two four year old cows are the subjects of this experiment, and besides turnips, will be fed with cut straw and pease meal.

2. Oil cake versus pease-meal: Subjects, two steers, rising four years old; the one to get oil cake, pulped turnips and cut straw, the other pease meal with similar additions.

3. An animal of like kind and age, to be fed on a mixture of oil-cake and pease-meal, as also turnips and straw.

Sheep.

Shearling Cotswold wethers; one to have cut turnips, pease straw, oats and bran.

Another the same, but pease in place of oats.

A third will receive oil cake as a distinctive, while a fourth will be allowed a mixture of oats, pease and oil-cake.

The subject of the next experiment has in view to test the values of Hay and Turnips as against grain feeding: Two half-bred Cotswold wether lambs will be fed on clover hay and turnips alone; other two on pease straw, turnips and oats, and a third couple on pease and oats.

Pigs.

Here the arrangements are simple; two animals will be served with raw pease, two on boiled pease, and two on house swillings with wheat refuse. Of course, the previous treatment of the animals, their ages, weights, dispositions, equal conditions of comfort, as well as the quantities, times, and forms in which the food is supplied, will stand for regular record, and altogether it will be a matter for surprise if something useful does not result from those fifteen distinct experiments in the feeding properties of different materials, with different animals.

Chilblains and Frostbites.

These are two of perhaps the commonest ills incident to farming humanity, and, next to toothache, probably the most troublesome. They are thus diagnosed and treated by Dr Hall in a recent interesting contribution to the *Christain Weekly*.—The chief symptom of the chilblain is a troublesome itching; it sometimes disappears of itself, but, if neglected, often returns for years on the approach of very cold weather. This affection would never manifest itself if the feet were kept always comfortably warm; or, if getting very cold, they were brought back to their natural condition by drawing off the stockings a yard or two from the fire or stove and patiently rubbed with the hands first, and then with a rough woollen flannel, more or less warmed, so as to gradually invite back the heat. A young lady returning from the Central Park, where she had been skating, found one of her feet stiffened with cold. She was advised to put it in warm water, which resulted in inflammation, mortification, and amputation.

If the skin of the blain is unbroken, melt an ounce each of rosin and beeswax in three ounces of sweet oil, and when thoroughly melted and stirred up, stir in half an ounce of calomine, a preparation of lead found at the drug-stores; this forms a kind of ointment which should be gently and patiently rubbed into the part night and morning with the warm finger, until all unnatural appearance of the skin is removed.

Another method is to paint it over with collodion, which is gun cotton dissolved. This soon dries into an impervious covering, perfectly excluding the external air, and, if not disturbed, recovery soon takes place.

If broken, wash the parts night and morning with half an ounce of blue vitriol dissolved in half a pint of water, kept in a glass bottle for use, rub in a teaspoonful of this night and morning, and when dry, rub in patiently with the finger, some ointment, pain-killer, glycerine, or hog's lard. In old persons and others of a feeble circulation, this ailment, simple as it appears to be, is liable to cause ulceration, mortification and death.

Frost-Bite.

The blood first becomes stagnant by cold, which, if continued, causes the part to freeze, known by its becoming very white, the person not being aware of it until informed by some one whom he chances to meet. The remedy is to rub it gently with snow, for it is as brittle as glass and more easily broken off; in two or three minutes, or just as soon as some feeling in it is noticed, use a little warm water, rubbing it in gently, a little warmer every three minutes, until the circulation is fully

restored and the part has regained its natural feeling. If snow cannot be had, use ice-water, as it is slightly warmer than the frozen part, and proceed as before.

If a person is found frozen and nearly dead, remove the clothing instantly on the spot, envelope the whole body in snow or ice-water, except the nostrils and mouth; as soon as any sensibility is observed, take the body out, rub it gently with cloths dipped in ice-water until the muscles begin to relax; remove the body to a cold bed, cover it over, and with warm hands under the cover diligently rub the whole skin, two or three persons at once, for hours at a time if necessary. As soon as signs of life appear, give an injection of camphor-water, a teaspoonful, and put several drops of spirits of camphor on the tongue, as soon as the patient begins to notice anything, give him a teaspoonful of strong warm coffee, in five minutes another, and in ten minutes more half a teaspoonful, hot. It would be a humanity to impress these things on the minds of the young, as it might put them in the way of saving some valuable life in the course of years.

The New Manager at the Model Farm.

The *Orillia Packet*, in referring to the appointment of Mr. Brown as Mr. Laidlaw's successor at the Model Farm, says:—The staff of the Ontario School of Agriculture has been reorganized. The office of Principal has been abolished, and the duties divided. Mr. Wm. Brown, late of Orillia, has taken the position of Professor of Agriculture and Farm Manager. He has the charge of the farm, together with the practical instruction of the pupils thereon, and delivers lectures on practical agriculture. We regard the appointment as an excellent one. That Mr. Brown is well qualified for the duties he has undertaken none who know him will doubt. To a natural taste and aptitude for agriculture, he adds practical experience both in the old country and this. Mr. Brown studied under Mr. McCorquodale, manager to the Earl of Mansfield, and James Brown, LL.D., author of the 'Forester,' and took a diploma in agriculture. He is gold medallist of the R. A. Society of Scotland, for an essay on Agricultural Fences. In concert with Professor Balfour, of Edinburgh, he read papers before the British Association, in the advancement of science, and obtained a grant for experiments of the effect of trees on climate. He is gold and silver medallist of the Scotch Arboricultural Society for essays on 'Trees and Climate' and 'Woods and Forests.' He is author of 'British Sheep Farming,' a small work twice quoted in the House of Commons in regard to the value of landed property. On the estate of Arncliffe, in Midlothian, he studied practical farming, and with his father was joint Inspector of Government draining there. He delivered a number of lectures on practical and scientific agriculture before the Banffshire Agricultural Societies. He has valued property and reported on farm management in Surrey, Gloucester, and Yorkshire, as well as the most of Scotland. He was manager of the estate of Auchlunhart, Banffshire, where a home farm was kept under his charge; and ten years Factor on the estate of Invercauld, near Balmoral (135,000 acres and about 400 tenants), managed the home farm, was a Railway Director, Magistrate, and Commissioner of Supply. He has bought and sold stock with Mr. McCombie, of Tiffour, M.P., Patterson and others. Mr. Brown has also farmed five years in Canada, so that in addition to his knowledge of British agriculture he has acquired an insight of the system suited to our climate."

Ferns in the Parlor.

Mr. Milton writes to the *Germantown Telegraph*:—Ferns are plants the culture of which is very interesting, either in the greenhouse or parlor. Nothing adorns a sitting-room more than a case or ferns in luxuriant health in the midst of winter, when vegetation is at rest outdoors, and nothing meets the eye but bare trees and showers of snow. A case for this purpose may be made of any size, and almost any shape. In their construction, however, several particular points have to be borne in mind, for the benefit of the plants which are to grow in them, the first of which is a means of obtaining a thorough drainage. More failures occur in the cultivation of plants in Wardian cases, from imperfect drainage, than from any other cause, nothing being more injurious to the plants than sour, stagnant soil; and however porous the soil itself may be, without perfect drainage it cannot be long in a condition suitable for supplying a healthy food for plants; the water retained in the soil having no means of escape, soon sours it. To secure good drainage, also dryness and tidiness in that part of the room where the case stands, two bottoms are necessary; one, the true bottom, which should be thoroughly perforated to allow the free escape of the water; below this one, another should be placed to receive the water as it passes from the soil, and

therefore requires to be water tight, and so adjusted that it can be emptied and cleansed without disturbing any other part of the case. On the upper bottom place a good thick layer of pot-sherds and charcoal for drainage. Upon this put a small mound of suitable soil for ferns—peat, loam and a good mixture of sand—secure to this mound small stones and shells, so as to imitate a small rock-work, allowing sufficient cavities for planting ferns and mosses.

Proper means of ventilation is also necessary, which is best acquired by having part of the roof moveable. When so constructed that the moveable part can slide over the fixed part, it gives the least trouble, and is the most convenient when cleaning, watering or planting the ferns. Top ventilation is better for the welfare of the plants than when side ventilation is adopted, as then there is no ill effects arising from cold draughts passing through them.

When planting the ferns put some erect growing kinds at the top, and the more dwarf and bushy ones on the sides of the mound, using mosses for carpeting the whole.—mosses of the denticulata type; those of the caulescent kinds which succeed in these cases look best mixed through the ferns. Upon removing the plants from the pots do not break up the balls any before planting; the roots will soon make a start into the fresh soil, which should be pressed rather firmly around the roots. After the plants are in, give a good watering, and shut close for a few days.

In selecting plants for such purposes, dwarf-grown plants, in small pots, are the best.

COAL OIL AS A REMEDY.—There is no doubt, says a correspondent to the *Country Gentleman*, of the efficacy of coal oil for hog cholera, quinsy and chicken cholera. Mr. Basil Lisle, a well-to-do farmer of this county, had about sixty hogs down with quinsy and cholera, and had abandoned the hope of saving them, especially those attacked with quinsy. His fat hogs, ready for market, were mostly helpless, when a friend proposed to drench them with coal oil, which relieved and cured without loss of a hog. The remedy is given in this way: The hog is gagged, pulled up on the fence and about half a teacupful of coal oil poured down for the quinsy; the throat is rubbed externally. For the cholera or kidney disease, pour the oil along the back after drenching. Mr. Lisle also relieved his chickens and those of his neighbours by the same remedy. Your correspondent remained over night with Mr. Lisle and vouches for these facts, with similar cures in that and other sections by this application.

CURE FOR COCKROACHES.—The disagreeable odor which the cockroach emits, and which soon permeates all places that it inhabits, proceeds from a dark colored fluid which it discharges from the mouth. The cockroach loves warmth and moisture, hence its populousness in kitchens where fire and water are almost ever present. It is a night prowler, and swarms out from its secret lairs on the departure of daylight. For the destruction of the cockroach we recommend a mixture containing a table-spoonful of red lead, the same amount of Indian meal, with molasses enough to make a thick batter. Set this on a plate at night in places frequented by the insects, and all that eat of it will be poisoned. Another preparation is composed of one teacupful of powdered arsenic, with a table-spoonful of mashed potato. Crumble this every night at bed time where the insects will find it, and it is said to be an effectual poison. Great care should be exercised in the use of such dangerous agents. An innocent method of destroying cockroaches is to place a bowl or basin containing a little molasses on the floor at night. A block of wood, resting one end on the floor, and the other on the edge of the vessel, serves as a bridge to conduct the insects to the sweet deposit. Once in the trap its slippery sides prevent retreat, and thus cockroaches may be caught by the thousands.—*The Household*.

CONDIMENTS.—Certain condiments, says a recent work on health, as salt, are necessary to health, whilst others, as pepper, vinegar and pickles, are agreeable and useful when the appetite fails. About half an ounce of salt is daily required, but as there is salt in bread and other cooked foods, we do not need to eat half that quantity by itself. Although the quantity required may vary, it is absolutely essential that some should be eaten, and particularly with vegetables. Pepper and mustard are useful to give flavor to tasteless foods, and to stimulate the sense of taste and the flow of saliva and gastric juice. They should, however, be taken in moderation, for they may excite indigestion, and after much use, simple foods are not enjoyed. So long as ordinary food is eaten, and the appetite is good, the use of these things is unnecessary, and becomes simply a matter of habit. Vinegar is often used as a food, and particularly in hot weather, when we crave for acids, whether in fruits or otherwise; and as meat is less relished in hot than in cold weather, and does not contain acids, we find vinegar and pickles very agreeable and even useful additions to it. Too much vinegar, however, is very injurious, and by causing indigestion and loss of appetite, makes people thin. Neither vinegar nor pickles are necessary to those who are well and can obtain various foods according to the season, but on ship-board they are often of the greatest use. Pickles made very strong with pepper are much more used in India and other hot countries where the appetite fails.

Liability of Seedsmen.

The recent seed case decision in the New York Court of Common Pleas, an account of which appeared in the December number of the CANADA FARMER, has set American seedsmen on their dignity. At a meeting convened by them, and held at the Astor House, on the 6th of January, the following resolution was adopted and signed by all present, many of them being leading dealers:

"While we exercise the greatest care to have all seeds pure and reliable, it is hereby mutually agreed between ourselves and the purchaser of this package, that we do not warrant the same, and are not in any sense liable or responsible for the seeds sold by us, or for any loss or damage arising from any failure thereof in any respect."

It was agreed that this should be printed on their bill-heads and circulars, or a notice similar to it. This may be all very well for the seedsmen, but what about the farmers who suffer? How are they to be protected? Every qualified seedsmen must admit that mistakes, like that occurring in the case cited, are the result either of fraud or gross carelessness on the part of some one. If of fraud, surely no punishment can be too severe for it; and indeed it is difficult to see why that punishment should be greatly modified in the case of the other, or any, alternative, which may wrench from the farmer the fruits of a whole year's labor and anxiety; and which may throw his farm so completely out of its rotation of cropping, that years may elapse before it can be restored to its wonted equilibrium. While saying this much, however, we must not forget that there is also another side to the question, and that is that farmers should take all care to give their seeds a fair chance and ample justice, as we doubt not but many fail to germinate through inattention to these points; and, in such cases, it would be most unjust to seek reparation from the vendor.

The Seed Trade—Some Wild Statements.

EDITOR CANADA FARMER:—We often hear of the ignorance displayed by people in Britain about this country and climate, and having at one time of my life had occasion to visit "the old sod" a great number of times, I have been astonished that so little is known of a country separated only by a few days' travel. I had hoped under the enlightened sway of our present Governor General, who has tried to bring us more into notice than heretofore, that we were becoming better understood, and that, as an agricultural country, we were recognized as not far behind the Baltic and Black seas as a wheat producing region. Any intelligent man would argue from this fact that other cereals, fruits and flowers could also be cultivated with success where the staple commodity for bread flourishes. Such, however, is not the case. I send you an abstract of a letter received from Carters, High Holborn, London, E. C., who style themselves "royal seedsmen."

"Two-thirds of the seeds required in Canada and the United States are supplied by us, and it is a well-known fact (as the customs returns will show) that we are the largest exporters of seeds from England for the United States and Canada—and we have no doubt you are aware that very nearly the whole of the seeds used in that country are imported from this country every year—as they are unable to save seeds, with the exception of a few peas."

(Signed)

JAMES CARTER & CO

Comment on such ignorance is unnecessary.

Ottawa, 4th February, 1876.

P. E. BUCKE.

Horse Corn Planter.

EDITOR CANADA FARMER:—In looking over some of the back numbers of my CANADA FARMER, I see in the April number of 1875 you reply to some enquiring correspondent that there is no corn planter by horse power manufactured in the Dominion, that you know of.

Some years ago, I made the same enquiry among my neighboring farmers, and received a similar answer. But now I have planted two crops with one of my own construction, which I consider a great improvement on the common method of marking out, and planting by hand, and covering with the hoe.

It is drawn by two horses. It marks, plants, and covers three rows at a time. It drops from three to six grains (according to size) every three and a half feet; it marks the place where to drive in returning, so that the rows are all a regular distance apart.

I, with a boy to drive, can plant, with ease, one acre an hour. Last season I planted, before 11 o'clock, with

it, what used to cost ten dollars with hired help by the common method. I am this winter making some improvements on it which, if satisfactory, will effect quite a saving of time, labor and money.

Louth, St. Catharines.

Shorthorn Sales.

The following sales in the "Burnside Herd" of Shorthorns, the property of Mr. John M. Bell, of Atha, came off since our last issue. Thirty-five head were disposed of, realizing an average price of \$240 each—as follows:—

Melody, Mr. Hodge, York Mills	\$130
Daisy, J. Cannon, Markham	115
Violet, E. Sanderson, Buttonville	100
Amabella, H. Hodge, York Mills	125
Mattie, Wm. Shears, Bloomington	145
Mollie, T. Chubb, Pickering	105
Duchess, S. Beattie, Toronto	210
Princess Royal, J. Hope, Markham	500
Rosedale of Atha, S. Hestock, Kettleby	310
Miss Booth, F. J. Smith, Newtonbrook	225
Red Rose, F. J. Hope, Markham	650
Louisa Jean, T. Holliday, Dumbarton	225
Wallflower, T. Holliday, Dumbarton	160
Queen of Atha, J. Hope	155
Necklace 6th, and calf, G. Miller, Markham	800
Kate Miller, W. Miller, Jr., Atha	650
Miss Bell, S. Beattie, Toronto	500
Princess Louise, J. Lourie, Scarborough	250
Lady Fragrant, S. Beattie, Toronto	170
Rosebud, and calf, B. Gibson, Whitby	300
Countess of Burnside, and calf, E. Sanderson, Buttonville	270
Victoria, J. Heron	130
Crimson, J. Carr, Whitby	200
Truancy Sally, B. Gibson, Wauchope	180
Vivella B 6th, W. Whitby	200
Rose Queen, W. Miller, Jr., Atha	125
Rosy Morn, Wm. Shears, Brock	95
May Bell 2nd, G. Miller, Markham	170
Mary Prim, W. Miller, Jr.	155
One grade heifer, G. Pearson	150

Bulls.

Welcome Duke, J. Anderson, St. Mary's	200
Prince of Atha, T. Stephenson, Brougham	75
Violet Duke, W. Cuttery, Markham	110
Queen's Own, W. Carr, Whitby	150
Novelty, S. Beattie, Toronto	100

Stock Notes.

MR. A. WHITMAN, North Leominster, Mass., has sold from his Short-horn herd, thirty-three cows and heifers, with the imputed bull Beau of Oxford 2nd, to Ayles & McClintock, Millersburg, Ky., for \$26,000.

A NEW FOOD.—Dr. Voelker says.—A new description of cake is now made from the starchy and glutinous refuse of the Indian corn flour, but it cannot be recommended for young growing animals.

MR. C. M. LANSING, Niagara, Canada, has sold to Geo. W. Miller, Grantham, Ontario, the Gwynne Short-horn bull Consul, 2155, by Baron of Geneva, 7535, dam Governess.

5TH DUKE OF HILLHURST.—The *Live Stock Journal* learns that the Tennessee Company who purchased and own the 5th Duke of Hillhurst, have refused an offer of \$15,000 for him. Mr. Mark S. Cockrill, writing us, says the 5th Duke is growing finely, and is a grand calf.

SALE OF ENDOR.—Col. Wm. T. Withers, Fairlawn Stock Farm, Lexington, Ky., has sold to a gentleman of Canada, the thoroughbred ch. m. Endor, foaled 1869, by Samuels' Bonnie Laddie, out of Mary C', for \$350. Endor is in foal to Almont.—*Live-Stock Record*.

MR. D. RYFSON Silver Spring Farm, Markham, Canada, has sold the Short-horn bull Duke of Brocton to Dr. Wm. Kenney, Paris, Ky. He was got by 4th Duke of Geneva, 7931, out of Duchess of Richmond, and bred by Messrs. Wolcott & Campbell.

PRECOCIOUS BREEDERS.—Mr. Wm. Brown, of Monroe, Wisconsin, writing to Bailey's *Shorthorn Reporter*, gives a remarkable instance of precocious breeding. His Butterfly 3rd was served when four months of age and produced a white bull when one year and five days old.

THE CALVES, from improved Short-horns (says an English exchange) generally are small when born. The following is, therefore, a remarkable occurrence. A very fine 3 year-old heifer of a pure tribe, has just been lost from the force necessary to take away her bull-calf. It weighed, when born, 123 lbs.

THE BREEDING OF SHETLAND PONIES.—"Only yesterday," writes a correspondent, "I met a Shetland friend who told me that an Irish nobleman to whom he had let the Island of Ness, for the purpose of breeding ponies, had begun well. He cleared the island of a good half-bred flock of sheep, and stocked it with ponies, and has just sold his 'crop' for £20."

MR. J. D. W. FRENCH, North Andover, Mass., on the part of the Ayrshire Breeders' Association, sends to the *Country Gentleman* the following transfers of Ayrshire stock;

McMartin's Lassie 2nd, 2863, McMartin's Lassie 3rd, 2869, White Face, 3295, Jennet 4th, 2552, Julia 3rd, 1301, Machine Lass 4th, 2010, Duchy 2nd, 2282, Olive 7th, 2443, and Set Head 2nd, 3189, A. P. Ball, Government of New Brunswick.

DUTCH HERD-BOOK.—It is reported that a herd-book of cattle will appear shortly at Utrecht or Amsterdam.

FINE HERD OF CATTLE.—Says the *St. John Telegraph*: A fine lot of 30 head of beef cattle arrived by the Western freight train from the upper Provinces last week. Among them was a bull of extraordinary size. The cattle were consigned to Mr. M. O'Keefe and Mr. P. O'Neil, and were brought over from Carleton.

THE TROTTER HORSE St. Julien, said to be the fastest trotter of his age on the turf, has been sold to Mr. Humphrey, Judge Fullarton's owner, for parties in California, for \$20,000. St. Julien is by Volunteer, dam Claymore. He went on the turf last season, green, and trotted five races, winning all of them, making a record of 2-22½. He was sold two years ago for \$300.

SHORT-HORN HERD BOOK.—The Herd Book for 1876 will show a goodly increase in the number of animals registered. The bulls number 3,490, against 3,000 in last volume, and probably 300 will be added in the supplement to bulls. Supposing the cows to retain their old proportion, the increase in number of registrations will be 15 per cent. at least. This with the ten per cent. increase in price per head, during 1875, makes an encouraging showing for this stock.

SALE OF SHORT-HORNS AT SPRINGFIELD, ILL.—A number of the most noted breeders of Short-horned cattle met at the Leland recently to arrange for a grand union sale of fine cattle at Springfield in May. There were among others Messrs. Kissinger, Spears, Pickrell and Nicholls, all well-known in the business. The exact day is not definitely agreed upon, but if the arrangements are perfected as now proposed the united display of fine cattle will be magnificent, and the sale will be an event of national importance.—*St. Louis Republican*.

SHORT-HORN SALES IN 1875.—While the 65 sales of high-bred Short-horns held in Great Britain in 1875 yielded a total of £228,08 16s. 6d, the 57 sales in America amounted to £204,790 6s. 10d. Each of the American sales amounted, upon an average, to £3593 as against £3509 for each of the English sales; but the advantage does not in reality remain with American breeders, for though eight fewer sales were held there, the number of animals disposed of was within ten of those sold at home. The 2589 Short-horns sold in America averaged £79 each, and the 2599 sold in Great Britain £87 each.—*N. B. Agriculturist*.

SALE OF MR. WOODWARD'S SHORT-HORNS.—The sale of Mr. William Woodward's Short-horns last month was attended by a company which numbered about 200. Mr. Thornton was auctioneer. The catalogue contained the names of seventy animals—fifty-nine cows and heifers and eleven bulls. Considering that the cattle were in poor condition owing to foot-and-mouth disease, and that wretched weather prevailed, fair prices were realized. The highest figure, 100 guineas, was given for Seraphim 2nd, sire, Mr. Woodward's Drummer, the dam descended from the Seraphinas. The Earl of Coventry was one of the principal buyers, eight lots falling to his bids. The average for fifty-nine cows and heifers was £34 15s.; and for eleven bulls £25 15s. 5d.; the total proceeds being £,2336 5s.

IMPORTATION OF BOOTH SHORT-HORNS FROM AMERICA.

—Five promising heifers of Booth blood have been purchased from the breeder, the Hon. M. H. Cochrane, Compton, Canada, by Mr. A. H. Browne, of Doxford Hall, Northumberland. The animals arrived safely at their English home the other week, and cost, it is reported, 3,500 guineas. They consist of a roan heifer rising three years old, by Booth's *Lieutenant-General* (31600), from Mr. Torr's *Flower* tribe; roan heifer, nearly two years old, by *Royal Commander* (29857), from Mr. Torr's *Bright* royal family, which brought such prices at the late Aylesby sale; roan heifer, one year old, by *Royal Commander*, from the *Cilleby Hecuba* tribe; red heifer, one year old, by *Royal Commander*, from Mr. Booth's celebrated *Vesper* family; white heifer, one year old, by *Royal Commander*, from the *Killerby Georgie* tribe.—*North British Agriculturist*.

THE LATE GREAT SALE of Short-horns in Australia, the Mount Derrimat herd, 47 head for £27,000, the largest average on record for a herd sold privately, is thus summed up. The herd just sold consisted of five distinct lines, related, of course, in the nearer generations, through the sires, but differing in origin. They may be classed as *Roses*, *Rosas*, *Matildas*, *April Flowers* and *Summertons*. Exclusive of the ten newly dropped calves, which belong to some or all of these lines, the 36 females are to be divided in the following numbers:—

- 21 Summertons or Roan Summertons,
- 7 Matildas,
- 3 Roses or Rosas,
- 4 April Flowers,
- 1 Rosa or Rose of Australia.

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The thirty-seventh animal is Oxford Cherry Duke (32016), whose lineage traces down from Col. Cradock's Old Cherry by Pirate and her great grand-daughter, Brandy Cherry, the foundation dam of the Cherry Duchesses.

Ontario Dairymen's Association.

The ninth annual meeting of this association was held at Ingersoll, beginning on Wednesday the 9th inst. Owing to the inclemency of the weather the attendance was not quite so large as on previous occasions; still, most of the dairy districts of the Province were fairly represented. Among the American gentlemen present were Hon. Harris Lewis, of Frankfort, Herkimer Co., N.Y.; Mr. L. B. Arnold, of Rochester; Prof. Wetherall, of Boston, and Mr. J. M. Peters, of New York city.

Prof. Bell, of Belleville, delivered the first address on "Conventions, their objects and effects." He dwelt at some length on the desirability and importance of these meetings, as witnessed by the marked improvement in Canadian dairying, both materially and financially, since their establishment in 1867. He advocated the holding of two annual conventions, instead of one as at present; one at Ingersoll and the other at Belleville, with a sufficient interval between the two to admit of travelling from the one place to the other. Thus the same addresses could be heard at both, and a larger number of people would be benefitted without incurring great expense. He eulogized scientific investigation in the dairy art; ascribed the recent decline in the cheese market to a general depression of trade; deprecated the manufacture of oleomargarine, observing that no matter how carefully manipulated, that article soon became sour and rancid. He also opposed strongly the manufacture of skim-milk cheese, warning all that the honest plan was not only the best, but the only one that would succeed in maintaining for Canadian cheese the high reputation it now held at home and abroad. Referring to a falling off in the taint and flavor of cheese during the season just past, he advanced the theory that it was due to some peculiar electric condition of the atmosphere, and urged scientific men to devote themselves zealously to an investigation of the subject. The Provincial cheese production for 1875, he stated as 744,299 boxes, or 48,580,368 pounds representing a cash value of \$4,858,038; this was an advance of 187 per cent. on the operations of 1874, and two and three-fourths times the production of 1872. Alluding next to the butter interest, he thought it a more profitable manufacture than cheese, the process being shorter and simpler, and the requisite utensils less expensive. He concluded by expressing his pleasure at the increased Government grant to the Association, and hoped a portion of the increase would be devoted to the establishment of an annual exhibition at each end of the Province.

The President stated that the Association was making arrangements to secure competent lectures on butter-making during the coming season; also, that while in Rome, N.Y., recently, samples of cheese shown him as first-class, were certainly not ahead of our Canadian manufacture.

Mr. W. H. Fraser, Secretary of the Ontario Advisory Board, Centennial Exhibition, urged the Association to make a suitable display of their manufactures at Philadelphia.

Mr. Lambert delivered an address on floating curds and other dairy matters, taking occasion to advocate strongly the study of chemistry in connection with the dairy interest. Floating curds he regarded as the result of chemical action, by which carbonic acid gas and ammonia gas are formed in the curd; and he believed charcoal would prove an effective preventive, through its property of absorbing these gases. The charcoal should be placed in the cans with the milk.

Mr. Arnold concurred in the use of charcoal as a filter, but thought that milk is generally tainted before it leaves the cow. Tainted milk produced more curds, or rather more albumen, than sound milk, but albumen would not coagulate until it was sour. An increase of rennet, added to tainted milk, only increased the whey. He attributed tainted milk to a feverish condition of the cow, and thought its surest preventive was to treat her well.

Continuing his address in the evening, Mr. Arnold took up the subject of "Gilt-edged Butter." Referring to the various animal and vegetable fats of milk, he observed that the former were enclosed in sacs, while the latter floated freely; that each of these sacs or pellicles contained from ten to eighteen per cent. of water, and that the per centage increased or decreased, in proportion to the quality of the food, the best butter coming from the fatter or larger globules, and vice versa. The effect of frightening

a cow, he said, would be a sudden stoppage of the milk supply, the better portion being always retained first, and many such stoppages, through fright, irregular milking, or otherwise, would eventuate in the globules being absorbed and ceasing to form. To make a fine quality of butter the milk should stand in pure vessels and pure air, and should not be agitated. The cream should be churned while sweet, unless quantity alone was wanted, when it should be allowed to sour. The great object of churning was to collect the globules as speedily as possible. Slow churning broke them and produced greasy butter. He approved of the dash churn, with a dasher about three-fourths the diameter of the churn and without perforations. Butter too should not be too much salted; half an ounce to the pound he regarded as quite sufficient. He would also add a small quantity of nitre; it was a good antiseptic, and did no harm. That feed which contained most fat and was most easily digested was the most favorable to the production of the best butter in the largest quantities. A mixture of linseed meal, oatmeal, and the refuse of flouring mills was probably the best butter producing food. June grass was very good, so was timothy, red grass, and orchard grass. Of the clovers, white was much the best, and red the worst. But no clover, white or red, made the best quality of either butter or cheese; many of the objections, however, were removed by drying.

Mr. Lewis expressed cordial concurrence in the opposition to oleomargarine in skim milk cheese.

Mr. Arnold, next morning, addressed the Convention on fancy cheese-making, summarizing the necessary conditions as follows: (1.) None but the milk of healthy and well-fed cows should be used. (2.) It should be free from all taints and impurities, either inherited or acquired. (3.) None but clean and healthy rennet should be used. (4.) The action of the rennet should take precedence of acidity by the early removal of the curd from the whey and the warm curd well before salting. (5.) The curd should be cured in an even atmosphere, not too dry.

Prof. Wetherall followed with a paper on stock, in which he compared in an interesting manner the relative merits of Short-horns, Alderneys, Holstein, Ayrshires, Guernseys and other breeds of cattle. He advocated the interbreeding of Short-horns, and recommended bulls of that breed as preferable to those of any other for crossing.

Hon. Harris Lewis delivered an address on dairy cows, their care and food. He said that it had been estimated that a cow required two per cent. of her weight in good hay or its equivalent per day to keep her in existence without increasing or falling off in weight, and as the amount of her food increased so did her productiveness. Grass was the natural food of the dairy cow, the perfection of cattle food. Sudden changes from dry to succulent food were dangerous to the cow. The best roots to feed the cow upon were the largest kinds of beets and mangold wurtzels.

Mr. Hartford Ashley opened a discussion upon Dairy Apparatus. The first thing to be considered was the factory itself. It should be built on level ground, where a free circulation of air could be obtained. He believed in making the floor perfectly close with Portland cement. He had given up the self-heater and adopted steam. He found that the difficulty of having the curd burned in the vats was obviated by placing boards across the steam jet so as to distribute it to a greater extent. He believed all cheese-makers would soon have to come down to 15 or 14 inch hoops. He strongly approved of the gang press, and found that they were continually increasing in favor among dairymen. They effected a great saving of labor.

The report of the Centennial Committee was then read by Mr. Fraser and adopted, recommending the appointment of Messrs. Nixon, Casswell, Ballantyne, Daley and Prof. Bell, as a Special Committee to determine what articles of butter and cheese should be forwarded to the Philadelphia Exhibition.

Mr. Farrington gave a verbal report of the Committee on Dairy Apparatus, saying that they cordially recommended the gang-press as the most valuable to manufacturers. They also strongly recommended to the attention of Canadian dairymen Mr. L. S. Hardin's method of making butter, as it seemed to them to be one which would prove of great value to butter-makers.

Mr. Chadwick addressed the Convention upon the importance of having effective means of collecting reliable statistics to show the material progress of the country, and moved a resolution to that effect, which was carried.

Prof. Bell briefly reviewed the proceedings of the Convention, saying that he considered its proceedings as more interesting, practical and valuable than those of any preceding Convention, paying high compliments to the addresses delivered by the American gentlemen present.

Prof. Bell supported the idea of having a cheese and butter factory in connection with the Model Farm, and a resolution moved by him to that effect was carried.

After the passage of a few more resolutions recommending the establishment of dairy clubs, and providing for the exchange of a number of copies of the proceedings of this Convention with those of the American Association, the proceedings terminated.

Correspondence.

THE AMERICAN *Bee Journal* is now published by T. G. Newman, at Chicago, instead of Des Moines, Iowa.

HYDE'S METHOD OF PLANTING POTATOES.—W. R. writes us regarding Mr. Hyde's new method of planting potatoes, as described in Mr. W. H. Yeoman's letter, page 1, of our present vol., that the method is not new. "It is," says the writer, "really a very old one, and used to be followed in Scotland when they first began to grow potatoes to any extent in the fields."

CIRENCESTER STUDENTS.—Do you know of any students of Cirencester College living in Canada? I should like to hear of them. I have not heard of one since I crossed the "swill pond." I like your paper very much, and only regret that it does not come semi-monthly. Your notice of Bow Park is splendid. I have been there.—READER.

If any of our readers can answer the query referring to Cirencester students, we shall be happy to hear from them.

RAT PROOF GRAIN BIN.—Can you give me any suggestions as to some kind of paint, or other method of keeping rats and mice out of my grain bin? M. N.

An illustrated plan of a rat-proof grain bin will be found on another page of our present number. If M. N.'s is already built, however, it may not pay to change it. In that case, coat it over with a mixture of finely powdered glass and tar or resin.

FROZEN PUMPS.—A correspondent from Norwich, complains mournfully of his iron pump, "a splendid article" he says, "in spring, summer and fall, but it will freeze in winter, no matter what I do." Our correspondent does not state his case clearly enough. Is any portion of the piping exposed, between the pump and well? If so, box or barrel that portion around, and stuff thoroughly with sawdust, observing to sink the box or barrel to a depth of ten or twelve inches into the soil, if the pipe leads through the soil into the well. Or, if this plan should prove too troublesome, let him wrap any quantity of old woollen rags, worn out horse blankets, &c., around the exposed part, after the pump has been thoroughly thawed out. If the rags are damped after wrapping, and frozen stiff, so much the better.

"JULIAN," OF WATERLOO, says he has read somewhere of very successful results from the application of mercury to fruit trees, to kill caterpillars. The plan recommended was to bore a hole in the stem of the tree, as far in as the heart, in a direction sloping downwards, and about a foot from the surface of the ground. Into this the mercury was poured, and the hole then closed with a nicely fitting peg, which in turn, was brushed over with a coat of tar. He says that, for some seasons back, the caterpillar pests have nearly ruined his orchard, and asks our opinion of the above. Well, we can answer him by a case in point which came under our own observation a few years ago. The experimenter was something of an enthusiast, and dosed all his trees. The result was a clean sweep of the caterpillars, sure enough; but to this day it is an unsolved problem to that man whether the grubs died from the direct effect of mercury on their system, or of starvation, from a lack of tree food; for the trees too, all died in the course of three months. We would therefore advise him not to try the experiment.

Seed Catalogues.

Vick's *Floral Guide* for 1876 is to hand, and fully up to the usual standard. Its lists and information are very complete.

Briggs & Bros.' catalogue is also before us. It is very full, nicely illustrated, neatly got up, and will well repay perusal.

Long Bros.' *Floricultural Stock Book*, in addition to the usual matter and illustrations, contains a supplement on the management of flowers, designed expressly for amateurs.

Root's *Garden Manual* and seed catalogue is also an excellent number, and cannot but prove of advantage to the horticulturist.

W. Rennie's *Descriptive Seed Catalogue* is fully up to any that have preceded it, and will prove an excellent and reliable compend to the agriculturist and gardener.

New Granges of Patrons of Husbandry.

The following new Granges have been constituted since our last issue:—

- 319. KIPPEN.—R. McMindie, Master, Kippen; T. Smille, Secretary, Kippen.
320. UNION.—Hugh Clark, Master, Janet's Corners; D. McLean, Secretary, Janet's Corners.
321. ERIE.—John Caldwell, Master, Erie; James Fleming, Secretary, Erie.
322. INNISFIL.—Joseph Goodfellow, Master, Bramley; Robert Leonard, Secretary, Craigvale.
323. MIDDLETON.—John Ogilvie, Master, Longwood Station; W. Harrison, Secretary, Longwood Station.
324. PERRYTOWN.—James Dunbar, Master, Perrytown; Joseph S. Wilson, Secretary, Perrytown.
325. RAINHAM.—Leonard Za, or, Master, Rainham Centre; J. Foster, Secretary, Rainham Centre.
326. ORANGE VALLEY.—John Ford, Master, Markdale; Henry D. Irwin, Secretary.
327. MAPLE LEAF.—Wm. Glover, Master, Mono Centre; James Kenn, Secretary, Mono Centre.
328. PEARL.—Nelson Haney, Master, Shelburne; Thos. Doyle, Secretary, Shelburne.
329. ROSEMONT.—Samuel Ervin, Master, Rosemont; Wm. Irwin, Secretary, Rosemont.
330. FARMERS' HOME.—Joseph Crane, Master, Arkona; Robert McFarlin, Secretary, Forest.
331. MALAHIDE.—Nicholas C. Brown, Master, Aylmer P.O.; Clinton Van Patter, Secretary, Aylmer P.O.
332. VICTORIA SQUARE.—Francis Walker, Master, Cashel; Milton Fierheller, Secretary, Victoria Square.
Division Granges.
25. ONTARIO.—Andrew Orvis, Master, Whithy P.O.; W. V. Richardson, Secretary, Pickering.
26. WENTWORTH.—Moses J. Olinstead, Master, Ancaster; F. M. Carpenter, Secretary, Stoney Creek.

The Grange in England.

The London (Eng.) Farmer, after commenting on the success of the Patrons of Husbandry on this side of the ocean, adds:—

"We will not at present stop to discuss the merits of Granges, or whether, as adverse critics say, they may not grow some day into a great monopolizing dictatorial power, representing class interests only to the danger of the rest of the community. But the power of combination among the Patrons of Husbandry or Grangers as they are otherwise called, we greatly admire. It would appear impossible to persuade English farmers to combine their interests so effectively for any purpose under the sun. They are divided among themselves, or they might return a large number of their class as representatives to the House of Commons. Then, again, our Farmers' Clubs and Chambers of Agriculture are badly attended; several have of recent years become extinct, and others are in a moribund state for want of hearty support. What is the solution of the question? Is it peculiar to young countries to maintain a heartier brotherhood than those which are old? Whatever we may think of the Granges, English farmers have certainly a few lessons to learn in the power of combination for the advancement of their mutual interests."

PRESENTATION TO W. PEMBERTON PAGE.—At a recent meeting of Pelham Grange, the members presented Mr W. Pemberton Page, on his retirement from office, with a handsome secretary worth \$18, accompanied by a highly complimentary address, in which, while congratulating themselves on the prosperity of their Grange during the past two years, they attributed much of their success to the efficient manner in which he had discharged his arduous duties. Mr. Page thanked them in a very appropriate reply, expressing the hope that the recollections of the past and the associations of the present might serve to strengthen and render secure and lasting the bonds of friendship which united them so closely together.

News Notes.

AT A RECENT SHOW of fungi in Scotland, there were no less than 5,000 specimens, among them some "rare ones."

THE SOUTHERN ONTARIO POULTRY ASSOCIATION was lately organized at Brantford.

IT IS ESTIMATED that fifty million dollars worth of property is destroyed by moths every year on this continent.

A LARGE SNOW OWL was recently killed in Walnut township, Fairfield county, O. This bird is as white as snow, and rarely seen as far south as this.

SQUIRRELS HAVE APPEARED by thousands in the vicinity of the Koch House, Fairfield county. A party of two hunters killed 275 in one day recently.

OVER ONE HUNDRED horses are reported to have been drowned in the Temiscaming and Kippewa Rivers, north of Ottawa, this winter.

OVER 197,000 trees were planted in Minnesota during the tree planting season of 1875, by contestants for certain premiums which had been offered to those planting the largest number.

THE YIELD of potatoes in Portage County, Ohio, this year is estimated at 253,000 bushels; Ashtabula, 263,000, and Lako, 253,000; an aggregate of 769,000 bushels in three counties.

SEVEN FAMILIES at Waterloo, near Wishaw, England, numbering about 30 persons, have been made seriously ill by drinking buttermilk supplied by a dairyman whose cows were subsequently found to be affected with foot-and-mouth disease.

THE DEATH of Sir John Le Coutour, Viscount, High Sheriff of Jersey, England, is announced. He was one of the founders of the Royal Jersey Agricultural Society, and contributed some valuable essays on agricultural topics to its journal.

THE ENGLISH HOP GROWERS' ASSOCIATION have published in various scientific papers an advertisement offering a reward of £100 for the discovery of the best practical method of detecting the presence of bitter substances, other than the hop, in malt liquors.

IT IS CONTEMPLATED, after the Philadelphia Exhibition is closed, to remove the specimens of Canadian mineral and other products not of a perishable nature to Ottawa, and form a museum thereof in connection with the Department of Agriculture.

SIX HUNDRED AND TEN POUNDS of peppermint oil were raised at Florence, Mich., this season. Five hundred and sixty pounds were raised from twenty-eight acres of new mint, an average of twenty pounds to the acre. The balance was raised from a field of old mint, which had been considerably winter-killed, and the yield was not so large.

A SINGULAR INSTANCE of root growing is reported from France. An elm tree standing over Fontainebleau sandstone, forced its rootlets down so that they perforated the rock, leaving in it a perfect impression of their form. It is supposed that the cement which holds the grains of the rock together was dissolved by carbonic acid given off by the roots of the tree.

DEAD DOGS.—In San Francisco, dead dogs are purchased at forty cents a carcass—their hides tanned into gloves, the hair sold to plasterers, and their bones sold to sugar refineries, where they are ground to a powder to clarify sugar. The oil that rises to the surface in boiling the carcass is manufactured into cod liver oil, while the residuum is used for fattening hogs.

CAPE BRETON is known to be a very rich mineral and mining country. Besides her enormous deposits in coal, oil wells have been sunk at Lake Ainslie, a lead mine has been opened near Sidney, iron and manganese is also known to exist in large quantities, and a large mountain of marble of the finest quality is being worked. Capital alone is needed to develop the mining resources of this rich island.

HOUSE OR FENCE WHITEWASH.—The W. S. Treasury Department has sent out a recipe for white-washing which is said to answer on wood or brick almost as well as oil paint, and to be much cheaper:—Slake a half bushel of unslaked lime with boiling water, keeping it covered during the process. Strain it, and add a peck of salt, dissolved in warm water, three pounds of ground rice, put in boiling water and boiled to a thin paste; one-half pound powdered Spanish whiting, and a pound of clear glue dissolved in warm water; mix these well together, and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable furnace, and when used put it on as hot as possible with either painters' or white-wash brushes.

AT NO PERIOD in life is watchful care over the functions of the brain more requisite than during the acquisition of knowledge by the youth.

Plodding, persevering study requires a store of vigorous nervous force, or the child may sink under the mental toil.

Stern necessity may compel the student to strain his powers beyond what is prudent, and early promise of excellence be blighted thereby.

To such we can recommend Fellows' Compound Syrup of Hypophosphites. It will not only restore the sinking patient, but its use will enable the toiling subject to preserve his mental and nervous standard without detriment.

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 a heavy doctor's bill. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack, wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—Civil Service Gazette. Made simply with boiling water or milk.—Each packet is labelled—"JAMES EPPS & Co., Homoeopathic Chemists, 48, Threadneedle Street, and 170 Piccadilly; Works, Euston Road and Camden Town, London."

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

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