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THE CANADA FARMER.

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The Field.

Salt and Ashes for Wheat—Red Clover—Canada Thistles etc.

EDITOR CANADA FARMER.—Would you be so kind as to give your advice on the application of salt and wood ashes on wheat. Also your idea of winter-fallowing for red clover, the best way to smother Canada thistles, and the best kind of artificial manure for use on heavy clay loam in good state of cultivation?

Fenwick.

P. B.

Salt is beneficial to nearly all soils, especially those that have been cropped for many years. Its effect on wheat is to increase the weight of the grain, prevent rust and to stiffen the straw. The best way to apply it to winter wheat would be to compost it with the manure that is applied. The quantity that would be most beneficial can only be told by experience or after a chemical analysis of the soil. The best way is to experiment with a small quantity, and increase it as is found to be most profitable.

The effect of salt mixed with manure is to render the manure more quickly available for plant food. About one and one-half tons of salt to thirty tons of manure is about the usual proportion. Applied alone, salt should be scattered broadcast before the crop is sown—immediately before, if for winter wheat; late in the fall on newly-ploughed land, if for spring crops. Anywhere from two and a half or three bushels to the acre up to four times times that quantity may turn out to be the right amount.

Wood ashes also vary in value according to the condition of the land to which they are applied. We should not sow them on winter wheat, but compost them with the manure. Unleached ashes which contain a great quantity of potash, a principal constituent in all plants, are of more value than leached ashes.

We do not quite understand the expression "winter-fallowing for red clover." The right way to go about it is to harrow the land as soon as the crop is off, and allow all seeds in the land to germinate. Then plough lightly. When the weeds have got a good start, manure the land, plough and harrow. Sow timothy seed about the middle of September, and the clover quite early in the spring.

The best way to "smother" Canada thistles is to cut them down persistently. This is actual smothering, for a plant breathes through its leaf surface. If a plant be not permitted to form leaves, then it dies perforce.

The best kind of artificial manures for use on heavy clay loam would be fine bones, or superphosphate.

Effects of Electricity on Vegetation.

EDITOR CANADA FARMER:—I have thought that some extracts from an article contributed by me to the *Sugar Cane* may be of some interest as well as afford some useful hints to readers of the CANADA FARMER, of which valuable periodical I am a constant reader. If, by the wonderful stimulus of electricity, double crops can be obtained, it requires, one would think, but little pressure to induce a series of experiments. Still, it will be found that the land will undergo a corresponding exhaustion, and must be renewed by the application of suitable fertilizers. But half the quantity of land and labor will be required and as much produce raised in one year as now is raised in two. I am, respectfully, a well-wisher to Canada.

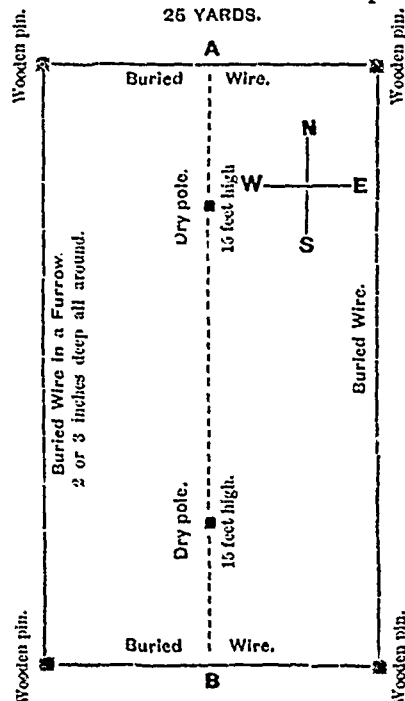
Exeter, England.

J. F. WILKEY.

The extracts alluded to are as follows:—

"The collection of facts and opinions goes far to establish the theory as a rule. I am inclined to think that the silent collection of electricity by the trees from the atmosphere, and thus conveying it to the ground, has much to

do with the growth of vegetation independently of moisture. We may water the plants in our gardens in very dry weather, and keep them alive, but a humid air with a sultry, electrical state of the atmosphere, even without rain, seems to produce more fertilising effects. I remember reading many years ago of an experiment made, I think, by a Scotchman, which illustrates this principle. A parallelogram of ground was bounded by a furrow, ploughed two or three inches in depth, and in it a stout iron wire was laid, two dry poles, fourteen or fifteen feet in height, were planted along the axis of this parallelogram, and another iron wire was stretched over the two poles, and its ends were led down to the ground and secured respectively to the centres of the wires occupying the furrows at the ends of the parallelogram. The wire in the furrows was secured by stout wooden crooks, and covered by the soil. This was tried in a field prepared for the growth of barley, and the result was said to be that the crop within the



A B, Strong hooked pins to fasten the connecting wires that pass over the tops of the poles.

RESULTS.—104 bushels barley per acre, of 54½ lbs. per bushel. Weight of straw 9,300 lbs. per acre. Cost of electric apparatus, twenty shillings per acre, which will last for twenty years. As the area increases the cost diminishes.

Cost of the Experiment,

6 lbs. of iron wire, at 4d. per lb. for buried wire,	2 0
4 lbs. ditto for suspended wire.	1 0
2 poles of dry wood at 6s. each.	1 0
Labour, &c.	1 0
	5 0

enclosure was about double the quantity per acre of the rest of the field. I can suppose that this plan may be improved by having pointed wire forks at the tops of the poles, and pointed wires suspended on the connecting wire, for the purpose of more fully collecting the electric fluid from the adjacent atmosphere.

"I have frequently noticed that, when some portions of the brushwood, from clippings of hedges, are suffered to remain in the field, the grass beneath these thorny branches appears to grow faster than that which does not come under its influence. This is also perceptible under the wire fences, now so common in the division of paddocks, &c., as though a current of electricity collected by the railings, played from one support to another, and stimulated the growth of the herbage.

"Perhaps sufficient attention has not been paid to the vitalising effects of electricity in plant culture, and that

the systematic application of some mode, on the principle I have alluded to, may be found productive of advantage even where the rainfall is not supposed to be adequate to the requirements of the plant.

"Probably an affinity or coincidence of electricity and vapor exists, so that these conductors of electricity, whether in the form of trees or of iron wires, may be found to bring the one with the other. I would further add that I believe it is admitted that all bodies which evaporate become electrified, generally negatively, but sometimes positively; and that the vapor is in the first case positively, and the last negatively.

"The operations of nature appear to take the form of endless circles, and thus whilst during the day the heat of the sun abstracts from the perspiring leaves of the trees the positively electrified vapors; at night they are returned, yielding to the comparatively negated trees, through their pointed and serrated leaves that amount of moisture and electricity which is necessary to maintain the equilibrium of health.

Leaves from Farm Experience—No. 2.

Stock Medicines.—Hints on Management,

I can not press too much on the necessity of properly feeding, watering and housing all cattle. Look every day if any are sick, and supply a remedy. The diseases of cattle ought to be studied, and the common medicines kept in store, such as turpentine, crude antimony, aloe, sulphur, saltpetre, bluestone, beeswax, alum and resin. The farmer should also possess an instrument for giving medicine by the mouth, and an injection gag; also a good book on the treatment of the diseases of cattle, horses and pigs, also of sheep and poultry. He should have a place for everything, and everything should be in its place. By doing this he will escape untold trouble. Every tool should be in good working order and in its place, to prevent the need of hunting for it.

Horse Collars.

See that the collars fit the horses tight and that no dirt is sticking to the inside of them. Some men are so lazy that they leave the harness on the horses in the middle of the day. The harness should be taken off and the collars cleaned and dried. The horses' necks ought to be often washed with soap and water, or alum and water, or urine. Have no broken skin on your horse's shoulders. Nothing grieved me more than to see a horse of mine with a sore shoulder.

Ploughing and Seeding.

Use a subsoil plough every rotation, and steel mould-boards on your ploughs. An implement called a "land-presser" was much used in Scotland at sowing time. Many preferred it to the sowing machine. No doubt it is of great service in sowing dry land. Less seed will do, and all is covered about two inches deep on a firm bottom. It will be described again.

Manure.

After stumping and draining, the difficulty is to get manure enough the cheapest way. Sixteen to eighteen tons of yard manure is wanted on an acre, every four years, supposing the cattle are fed with hay, grain and roots, and bedded with cut straw. But when milch cows are kept, and young cattle raised, there must be restored all the inorganic substances carried off the field in the milk of the cows, and bones of her calves and something more, and also in the animals sold. If you sell the hay and grain, and do not buy an equivalent for them, you will have no manure, then no crop and no cattle. In a few years an acre that gave four tons of hay, or eighty bushels of oats, would barely feed a sheep. Competence is in every farmer's power. Try to be the best for cattle, butter, cheese and wheat and other crops. Every crop needs about the same kind of manure, but in very different quantities, and that makes a rotation of crops necessary. My experience

makes me advise a mixed system of grain, feeding and dairying, butter and cheese.

Rotation.

The farm we live on consists of about 200 acres now arable and in good working order. Set apart 20 acres for various purposes around the house. This will leave 180 acres for cropping, in fields of about 20 acres each. Have a good growth of grass. When you break up a field you may need three horses to the plough. Do it early and, if possible, subsoil as deep as you can. Spread 36 bushels of lime on the acre; harrow it in. When spring comes, sow three bushels of good, well-cleaned oats; harrow well, roll, top-dress with 75 lbs. superphosphate ammoniated, or 75 lbs. ground bones, 100 lbs. salt to supply soda, and 100 lbs. plaster to attract nitrogen. Second crop, peas. Sow 3 bushels. They should be ploughed in, or use a land presser to secure a crop. Top-dress with 150 lbs. plaster, 150 lbs. salt, 50 lbs. superphosphate ammoniated, or 60 lbs. bone meal. Third crop, barley or wheat. The ground to be wrought fine, seed drilled in, or use the land presser. Top-dress with 150 lbs. plaster to attract nitrogen, 30 lbs. ammonia, 100 lbs. superphosphate ammoniated, and 112 lbs. salt for soda, &c. Fourth crop, oats. The ground should be well prepared by ploughing early in the fall, and grubbing in spring. Sow 2½ to 3 bushels clean heavy oats. Top-dress as for the barley or wheat.

I have found that the best time to roll is when the seeds are well rooted but not braided above the ground. If the leaf is much above ground the roller will cover it with earth, and it will be suffocated. The fifth crop will be rye for soiling, the treatment of which I will defer to my next.

JOHN ROBERTSON.

Wintering Osage Hedge-Plants.

A correspondent gives the *Lulama Farmer* some particulars in regard to keeping through the winter, the young Osage hedge plants that will be taken up this fall for next year's setting. As we have lately been informed that the Osage is found to be less liable to winter-killing in Ontario than in Western States of much more southerly latitude, we reproduce the gist of the correspondent's remarks.

Farmers should always get them before any hard freezing sets in and put them away for winter, then when spring comes, they will have them at hand, so that as soon as the frost is out and the ground will do to work, set out the hedge plants,—the first thing to be done on the farm.

My mode of keeping is this:—Take a box,—say a boot box,—set it on end; place about one inch of fine moist earth on the bottom, as it stands open; the bundle of plants place about one inch in depth with roots in on the dirt, then dirt and plants about one inch each alternately until the box is full; then fall the box back, which will bring the plants on end; then fill up with dirt until the plants are about all covered over; then place the box in the cellar or bury it in the garden, where the plants will not freeze. The cellar is the best place; then they can be guarded through the winter.

When I put away plants of my own growing, I never lose more than the ordinary loss we meet with in all nursery stock. I have been in the business for 20 years, and have made it my study, not only wintering the plants, but raising and cultivating them into a fence. The plants should be taken from the cellar or put as early as possible in the spring, and placed in the sun. Care should be taken not to let them get too dry in winter. If by chance they should, soak them 48 hours in water before setting.

Exterminating Red Root or Pigeon Weed.

This pest of wheat fields is known by different names in different sections of country. By some farmers it is denominated stone weed, by others growwell, stink weed, stem kraut or pigeon weed. (*Lathospermum arvense*.) The red root is a biennial plant that will not germinate to any great extent in the spring, it being its nature to come up in autumn, and cannot therefore be eradicated without fall ploughing, or by cultivating such crops as grow from seed put in during the vernal months. This plant, like many others—like winter wheat and winter rye—must have the advantage of a part of two seasons or the seed will not mature. Wherever this seed has gained a root-hold, the ground should be ploughed in the fall, just as deep as it was for the wheat, and well harrowed. In the spring the ground may be ploughed again. In some instances it is better to use the large cultivator with steel teeth, as not one spear can escape if it is thoroughly cultivated, and the ground will be in better order for the crop, which may be barley, oats or spring wheat.

The destruction of the seeds carried to the barn with the wheat is the most difficult part of the subject; and in

order to effect it, no pigeon weed must go into the barn; for, if it be carried there, it will be taken back again. It should be borne in mind that the presence of pigeon weed is a positive tax upon the farmer, and that every dollar successfully expended in its removal is to him an absolute gain. The most of our land is seeded down after wheat, and, of course, receives its red root seeding at the same time; consequently a large proportion of the seed lies near the surface. If this be turned under to the depth of eight inches, but a small portion will germinate, and the wheat will be to a certain extent free from its pernicious presence. If ploughed twice, the seeds are mostly thrown back to the surface, which is admirably adapted to the increase of the pigeon weed, while once ploughing is found to be at least as good. If it be possible, the red root should be pulled out of the wheat; but if the quantity be too great for this purpose, a more protracted effort must be made to destroy it.

A farmer of Genesee county, New York, writes.—“I should be well paid for my trouble if all farmers would either pull their red root at the time of blowing or burn all they pull up instead of placing it in the wagon track of the road. When muddy, the seed and mud cling to the wheels, shake off in the barn yard, get with the manure and then into the wheat fields. It requires more labor to rid a farm of this weed than of Canada thistles.”—*New York Herald*.

Pruning Evergreen Trees and Hedges.

A visitor the other day asked us, “when is the best time to prune evergreens, both specimen trees and hedges?” As it is a subject not generally understood by many farmers, it may not be out of place to give some hints on the subject.

If you have specimen trees and the object is to check exuberant growth, or if the growth be uneven, throwing the specimens out of balance, the pruning should be such as to bring the tree as nearly into the desired shape as possible. For this prune in June, or before the new wood begins to harden, cutting near buds and from the bottom of the twig or branch up slant wise to the bud, and with a sharp knife that will make a clean cut. This is to be done after the pruning has been done to bring the tree as much as possible into shape. Summer pruning checks growth, and autumn pruning strengthens. So if you wish to check exuberant growth, prune in June, but if to strengthen, prune in the autumn or after the season's growth has been made.

Evergreen hedges should not be pruned until they have made several seasons' growth and the plants are well established, except just sufficient to keep them in balance. In proportion to the tops will be the roots; and in weakening the tops you prevent the proper formation of roots. This is true in all plants, for the larger the leaf surface, the greater the capacity of the plants to elaborate sap. So to encourage the growth of the hedge, prune as little as possible, removing rampant growth, and this in the autumn.

As the hedge gets older, and when it has attained the height and breadth needed, the object will be to weaken the growth. Then prune in June, giving a second cutting in the fall, if necessary.

However much one may be told of practical agriculture and horticulture, deftness comes only by practice and observation. Examine at every opportunity not only your own trees, but those of your neighbors, and consider if they may be bettered, and how. Note carefully also in your travels those trees of the best contour and symmetry. Examine them closely if possible, to determine how the effect has been brought about, and then a little practice will enable you to operate rapidly. Thus you will be surprised to find how easy an operation becomes when you have learned how.

We know many intelligent men who have been deterred from planting ornamental trees, and especially shrubs and flowers, from the idea that they required special care and culture, that must be entrusted to a class who make it a business. Such, however, is not the fact, as the many grounds and gardens over the West will show, cultivated entirely by the female portion of the household, with such help as the men folks could give at odd times. It is true, ladies as a rule have a more acute appreciation of the beautiful, and the arrangement may be safely left to them, if the details are conscientiously carried out by the husband and brothers of the family.

As to varieties of ornamental evergreens, there are none better for ornamental hedges or wind-breaks than Norway Spruce and Arbor Vitæ; except, indeed, in situations favorable to it, that prettiest of evergreens, the Hemlock. What a pity it is not generally hardy in open situations in the west.—*Western Farm Journal*.

THE SOIL IS ONLY A MEDIUM in which plant food is prepared and given out on demand. The more thoroughly soil is pulverized, the stronger is the capillary attraction within its pores. As a fine sponge will hold water longer than one of larger tubular structure; so fine soil holds water longer than coarse.

THIS SOWING.—A friend of Mr. Meeh, who farms nearly 1,000 acres in Suffolk, writes to him as follows:—“It may gratify you to know that the best piece of barley I know hereabouts is on my — farm, from less than 2 pecks of seed per acre. It is so stout that I fear it will go down.” “What will our 12 and 16 peck men say to this? I do not sow thin enough says Mr. Meeh.”

IMPORTANT EXPERIMENT ON TOP-DRESSING GRAIN.—AN Eastern Ross farmer writes us says the *North British Agriculturist*, that he experimented on two acres of last oat crop with the view of testing the value of dressing with artificial forcing manures. “I applied,” he writes, “about 3 cwt. of superphosphate and nitrate of soda, fully more than half being nitrate to an acre of oat crop in spring. I cut, threshed, and dressed the produce of that acre and the yield of an acre not top-dressed quite separately, and the result has been unsatisfactory. On the undressed acre I had 138 lbs. more weight of grain, though the bulk from the manured acre was 2 bushels above that on the other plot. There was 5½ lbs. per bushel difference in favor of the unmanured acre. I had fully a third more straw from the top-dressed portion, but the quality of it is inferior. The experiment was tried on second-class land, some of it being strong clay and part of it light loam, and the result will induce me to use little nitrate for the time to come.”

THE MANURE SUPPLY.—The majority of farmers do not put forth that decided effort to make the most of the manure supply within their precincts as they might. One needs to keep his eyes open for these things, as well as for the main chances in a good trade. How many farmers have made particular arrangements for saving all the liquid manure from their stable, by providing an ample supply of bedding for their stock? Dried muck is probably best for this purpose, but if you can't get muck, get the next best. Leaves make good bedding for stock, but their absorptive properties are not so good as other materials of less manurial value. Sawdust is a great deal better than nothing, for its absorptive properties are good, while for some heavy lands it will be found beneficial as an ameliorator in the division of particles, rendering the soil less compact when applied. Sawdust from resinous woods is less valuable than that from hard wood, though Boussingault says that 260 pounds of pine sawdust contains as much nitrogea as 100 pounds of stable manure, which may be a fact, but we should choose the manure every time.—*German Town Telegraph*.

GYPSUM.—One of the cheapest and most efficient of the mineral manures is gypsum, (common plaster). Under favorable circumstances this works “like a charm.” Plaster as it is dug from the quarries contains forty-six per cent. sulphuric acid, thirty-three per cent. lime, and twenty-one per cent. water. The latter is held in the mineral in a mechanical state, and can be driven off by heat; but for agricultural purposes it is better to let it remain. Both sulphuric acid and lime are the direct food of plants, and both act as powerful absorbents of ammonia and other nutritious gases. It is only on the latter supposition that we can account for the wonderful effects which plaster sometimes produces. Sown at the rate of two or three bushels per acre, on a piece of newly stacked land, it often doubles the crop of clover, as into this crop both lime and sulphur enter largely, and the ammonia is furnished from the air by the absorption of the plaster. Such a result has led farmers in some instances to rely upon plaster alone as a fertilizer—a mistake of which a few years' experience is sure to convince them. Their farms become “plaster sick,” as the expression is.

THE EFFECTS OF DRAINING.—By draining we remove the water from the soil to a depth equal to that at which the drains are laid, or in general from three to four feet. This seems to be a simple matter, and the removal of this water from the soil is recognized as a beneficial operation, so far as it goes, by every farmer. But there are some indirect effects resulting which are not less valuable than the removal of the water. In effect draining has, to a great extent, every advantage that can accrue to the soil from deep subsoil ploughing. As the water escapes into the drains, the air descends into the soil and fills the vacancies left. The air is warmer than the soil, and raises its temperature several degrees. As the rain descends time after time, every shower displaces the air in the soil, and as the water again finds its way to the drains, air again takes its place. A circulation of air thus occurs in the soil, which is incessant during the growing season, and by which the warmth of the soil is increased. Another indirect effect which results is, that the roots of plants penetrate into the subsoil as far and as fast as it is freed from stagnant water. Every root exerts a powerful effect both in opening and loosening the subsoil during its life, and after its death in furnishing certain acids which help to dissolve portions of the soil with which they come in contact. In this way draining is a valuable aid to the plough in helping to maintain the original fertility of the soil, and add to it in a measure proportionate to its thoroughness.—*New York Times*.

Grasses and Forage Plants.

Perennial Rye Grass.—*Lolium Perenne*.

The Perennial Rye Grass, illustrated on this page (from Flint) is a species of grass that is little, but deserves to be better, known in Canada. In England it is the most important of the cultivated grasses. It is there called Rye-grass, Ray-grass and Darnel. It is a perennial grass, flowering in June; culm growing to eighteen inches in height, erect, and bearing five or six leaves. The leaves are dark green, smooth and glossy on upper, and roughish on the under surface. The root is fibrous.

Perennial Rye-grass has some bad as well as some good qualities. It is a very exhaustive crop, more so than any other grass. It runs out in five or six years. It does not stand drouth well, is less nutritious than other kinds, and when the seeds are ripe, is injurious. In its favor it is urged that it is very early; is adapted to a variety of soils; is less liable to attacks of insects; that it yields an immense quantity of seed. It is from this latter quality that it is so exhaustive a crop. One reason for the diverse opinions entertained of Rye-grass is, that there are several varieties differing only slightly in appearance, but widely in vigor, permanency and abundance of yield.

Seeding Land to Grass.

After many years' trial, I have adopted Herds Grass and Michigan Red Clover for my grass seeds; and I generally sow about six pounds of each per acre. I prefer sowing in the Spring, when about seven-eighths of the snow has wasted away, and when sown thus early, the freezing and thawing of the earth covers it enough. When I seed with grain, I bush my ground before I sow the grass seed, and roll it afterwards; the roller and the first rain that falls on it, covers it enough, on my land, it being a clayey loam. My opinion is somewhat experimental. On light soils, I think it is a better way to bush and roll after the seed is sown.

The greatest motive in rolling is to make the top of the ground more compact, so the root of the seed, when first started, will have more substance to feed on; and it will stand the hot, dry weather better than it would if the top of the ground was light and porous. The great trouble in seeding to grass as late in the spring as I sow my grain is, the seed will readily sprout if the soil or weather is moist, and if hot, dry weather follows, it dries up the plant before it gets sufficient length of root to sustain life through the drouth. The poorer the soil, the smaller the chance the plants stand to survive the drouth.

I succeed best when my land is prepared in the fall—ploughed, harrowed and bushed, ready to receive the seed in the spring, just as the snow is leaving the ground. In the fall of 1873, I prepared 14 acres ready to receive the seed. The following spring I sowed it when about seven-eighths of the ground was bare from snow. The result was, I got an excellent catch and harvested a good crop of hay from it within four months of the time the seed was sown. I also re-seeded four acres that was seeded the year before when sown to oats. I do not lay the failure of its not catching the first time of seeding, to poor seed or insufficient seeding; but to the seed drying up soon after it sprouted. If I had sown one bushel per acre, I think the result would have been about the same. I got equally as good a catch where I re-seeded on the grain stubble as I did on the other. The seed that I sowed on the eighteen acres was ninety pounds of Herds grass, and one hundred pounds of Michigan clover. In my opinion and the opinion of my neighbors (who passed over the field last fall) there was a sufficient quantity of seed sown on the ground.—*Cor. Maine Farmer.*

BROME GRASS.—The *Boston Cultivator* says:—The Brome-grass (*Bromus mollis*) about the beginning of the present century, was grown in the district of Kilkenny and other parts of Ireland, and it was reported, that the English dragoon regiments quartered there were ready to give 10 shillings a ton more for hay made of Brome-grass than for hay made of Ray or Rye-grass. In Withering's time Brome-grass was sown often with Clover. Curtis and Martin both recommended it in their botanical writings because of its early growth and the largeness of its seeds, which, in their opinion, made the hay more nutritious. This was when grass was cut late, when nearly ripe. It was also to be extensively cultivated in Scotland, and Lawson notes the practise which he condemned. He says 'to that practice of sowing Brome-grass may be traced its appearance in Rye-grass fields, where now regarded as an intrusive weed, indicative of impurity in Rye-grass seed, though like the Wild Oat (*Avena sativa*) and other indigenous annuals, its presence may, at least occasionally,

be traced to the seeds of former crops retaining their vitality when buried to a certain depth in the soil.' This is a somewhat analogous case to the attempt to cultivate Chess or Cheat in Massachusetts, or the recommendation of Twitch grass (*Tritica repens*) in the New Hampshire Agricultural Transactions. Such frauds and impositions upon the credulous farmer, show the want of accurate knowledge on the part of those who set up as teachers in, and of, what relates to, and concerns the prosperity of farmers in their varied rural pursuits. This is our apology, if any be deemed necessary for answering more at length the questions of our correspondent, concerning grasses sent for names and uses, etc. The number of grasses and clovers to be profitably cultivated as forage plants, is really very small out of the gramineal or grass family and *Trifoliums*.

A New Clover.

Mr. Patrick Sherriff, long a prominent Scotch farmer, and who made an agricultural tour in this country upwards of forty years ago, is still as deeply interested as ever, it seems, in his favorite pursuits, notwithstanding his advanced years. The *Haddingtonshire Courier* says:

In the spring of 1872 a plant of clover was picked up by Mr. Sherriff growing in a passage leading from the Haddington Corn Exchange to a garden behind. Few situations could be imagined more unfavorable to the growth of a plant of this kind, the passage being little



Perennial Rye Grass—(*Lolium Perenne*.)

more than ten or twelve feet wide, bounded on three sides by a very high wall, open to the south, and admitting the sun to shine on the plant for fifteen minutes each day, but in a great measure shutting out rain and dews. The plant appeared remarkable for the strength, height and number of sets, and having been noticed in flower the year before, it cannot now be less than five years old, and has borne five crops of seed. The crop of 1872 was lost without having been gathered; that of the following year was sown by Mr. Sherriff in a garden in Haddington, and about 160 plants have been transferred from the seed bed. The original plant continues strong and healthy. Its height on the 4th of September last, by actual measurement, was 3 feet 8 inches. The new clover has every indication of being perennial. Should such be the case, and the plant retains its gigantic habit, it is needless to add that Mr. Sherriff's latest discovery will prove an important addition to British agriculture, both with respect to saving of seeds and increase of fodder.

Grass for Lawns.

The *Gardeners' Monthly* is inclined to believe that the best grass for American lawns has not yet been discovered. "In this part of the world we have had great faith in the Rye grass, *Lolium perenne*, and we have frequently recommended it for this purpose in our pages. It is a beautiful grass for lawns. It is the first to get green in spring, and its shining leaves, shaken by the spring breezes, make a very attractive green sward. But this season, in these parts, it is all dead, killed by the severity of the past winter.

"It is a new lesson for us to learn, as we were under the impression that this grass would endure any amount of cold. It seems not,—and although this is the first time it was ever killed in Philadelphia, it is evident it will not be safe for any northern region. The so-called lawn mixtures of English grasses are worse than this, and should never be used.

"Up to the present time *Poa pratensis* (June grass) has proved the best, and for the present we should advise lawns to be made wholly of this; we believe, however, that some of our native grasses might prove far superior, and should like to see experiments made. A couple of years ago we received a small package of some kind of grass seed from the dry regions of Utah. It has been now two winters and one summer green in the driest time, and perfectly hardy,—but, showing no flowers so far, it cannot of course be named. We merely mention the incident to show that in all probability there are native grasses which we could well employ for lawn purposes."

Cow Grass.—This grass, after which a subscriber enquires, is botanically *Trifolium pratense perenne*, Perennial Red Clover. It differs from the common Red Clover (which is biennial) in being perennial, in coming later into flower, and in having rather more woolly leaves. It succeeds well in dry pastures, and in grounds shaded by trees. It is not much cultivated on this Continent that we are aware of, but it is in good repute in England. Can any of our American exchanges give us any information about Cow-grass and its properties?

SEED LIBERALLY.—In seeding it is always most economical to seed liberally, for unless the grass occupies the soil, weeds will come in, and oftentimes overshadow the grass. If we could be sure that every seed would grow, a smaller quantity would fill the soil, but experience proves that only a portion of the best seed matures plants. The grasses may be seeded at any season when the soil is in a fit state for germination and growth—spring, autumn, or late summer, as most convenient. Clover is one of those plants which, if not pretty well rooted when winter sets in, is apt to winter kill; hence we sow this in spring usually.

SOWING GRASS SEEDS.—The farmer, to seed well, should know his soil, its adaptation to certain grasses, and he should be influenced by the system of husbandry he wishes to adopt. A farmer would be unwise to sow red clover seed on moist soils to be heaved out by frosts, when the Alsike clover would probably do much better. If the farmer wishes to act wisely by so seeding as to improve his soil, if adapted to red clover, he would sow it because in its growth it draws largely from the atmosphere, and the roots are of great value in enriching the soil for future crops. It is important that farmers sow grass seeds that ripen nearly at the same time, and are adapted to our climate. Early or June clover and orchard grass should be sown together, especially on meadow lands foul with white daisies, so that he may cut them when fit for his stock and before the seed has sufficiently matured to grow. The large or late red clover, timothy, red-top Italian, rye grass, meadow fescue, ripen about the same time and are acclimated.

PASTURES, MEADOWS AND LAWNS.—A Southern Indiana correspondent writes—Orchard grass, Kentucky blue grass and white clover, and, if the ground is low or moist, add red-top, and you have the finest and most productive pasture known among extensive stock-growers, as it requires no re-seeding, but improves in quantity and quality, carrying more stock each succeeding year—invaluable for woods and pastures, and should be extensively sown in the burnt forests. Leaving out the orchard grass (as it is too rank and rapid a grower), you have the best mixture that can be formed for lawns, yards, &c. Orchard grass alone makes the most profitable meadow, as it is immensely productive, makes excellent hay, and twice as much of it as timothy, for a term of years. With us timothy and red clover cut only about two good crops, and frequently but one. The farmer needs reliable meadows. To sow corn, millet, Hungarian grass or some other substitute every year or two, to make up for his lost clover or timothy crop, is very discouraging, it being expensive as well as annoying. Orchard grass is the remedy, and is destined at no distant day to stand at the head of all grasses for pasture or hay.

Implements.

Potato-Planters and Diggers on Both Continents.

The old country farmers and implement makers are setting themselves to work with a will to perfect machinery for the planting and gathering of potatoes. On this side also, busy brains are at work in the same direction. The knowledge that these problems are being attacked on both sides of the Atlantic may spur up inventors of each continent. We have already given some particulars about the performances of the planters and diggers on this side. We now supplement them with the London *Agricultural Gazette's* account of the doings at the Highland and Agricultural Society's Show, this year, where many implements were brought into competition:

In a country where so much land is planted with potatoes it is not surprising that strenuous efforts should have been made to perfect machines, both for sowing sets and taking up the tubers. Both kinds of instruments abound, some being of rough workmanship, evidently designed by farmers rather than skilled mechanics, but, for all that, containing principles worthy of attention. We must confess to having been especially pleased with the potato-planting machine patented by Mr. William Dewar, Kellas, Dumfries. It is no easy task to construct a potato-drill, and one of the difficulties is the curious sizes and shapes of round and cut sets. In Dewar's planter, the potato is seized between a fixed shoulder and a spring gripper, and is carried round until, at a certain point, the gripper releases its hold and allows the set to fall to the ground. This automatic motion is done with perfect precision and ease, and, to our judgment, places Mr. Dewar's invention before his rivals', and considering that the whole idea is new, this instrument approaches pretty near to what is wanted. It will plant two drills at a time, and the distance both between the sets and rows may be regulated. Among other inventors who have the same objects in view, we must also mention Mr. Thomas Ferguson, who, in association with Mr. Robert Kid, of Compar Angus, has elaborated a working potato drill, which has this spring planted its twenty-one acres in three days. Mr. Alexander Guthrie has founded his implement upon the Scotch two row turnip drill, and his potatoes are delivered similarly to turnip seed, by means of large cups, each of which holds one; and lastly, Mr. Charles Hay exhibited a potato planter on a new and ingenious principle, in the form of a model.

The most effective potato diggers were exhibited by Messrs. J. D. Allen & Son, Cuthill, Dunkeld, and Mr. John Doe, of Errol. Both are constructed after Hanson's principle, with modifications. A strong cast-iron bent coulter turns out the potatoes, and Hanson's revolving forks scatter the earth, sending it through a "hake," or rack, while the potatoes fall on the inside of the same. The revolving forks are propelled by a spur and pinion from the travelling wheel. We also noticed a machine similar in many points made by G. M. Mollison, and exhibited on the stand of Doe, of Errol. A wheel on either side of the anterior portion of the drill causes it to advance mainly along the row, and prevents the machine from being thrown out of work by the revolutions of the distributing forks; the wheels are of wrought iron, and the arrangement of levers for raising and lowering in and out of work are very excellent.

To this we append the *Rural Home's* description of a potato-digger competition at the New York State Fair.

On Thursday, the various potato diggers on exhibition, with a few exceptions, repaired to a potato field north of the fair grounds, to show how their machines work in practice. The field was well calculated to test their qualifications for their work, ranging as it did, from light to heavy loam, quite stony, and in spots full of barren grass and tangles. The machines commenced on Early Rose, and the judges decided that each one should dig one row across the field, about thirty rods, and back again.

A wheeled machine, invented by H. Gilliam, with an endless-chain separator, led the way. It digs the potatoes clean, with a kind of scoop, passes them rapidly over the separator and drops them on top of the ground, leaving the surface raked smooth. It clogged several times, going across with stones stopping the carrier, and scatters the tubers so that it cannot return on the adjoining row without covering many of them. If it could be improved so as not to clog, should think it would do pretty good work. Price \$100.

Mr. Innis, of Newbergh, N. Y., next went the bout with his machine, entered by Marcellus, Bros., Rochester, which is a large shovel-plough set more nearly horizontal than for ordinary use, with hooked rods dragging behind to work the tubers to the surface. It seems to move along easily, ploughing out the potatoes, and leaving them uncovered on the surface, except in passing through very thick bunches of grass, when it clogged, and shoved grass and tubers along in a bunch. It scattered too much to dig adjoining rows, unless the rows were three feet apart. We think it would soon save a large potato grower its cost—\$28.

The Knox Digger, entered by Wm. Woodham, of Rochester, a wheel digger with wide scoop for digging, and a shaking screen for separating the dirt from the tubers, and tadders for unclogging, next went through. It went its bout without clogging, and left the tubers bare on the surface, less scattered than by either the preceding. It dug adjoining rows, and could safely do it with rows three feet apart. Cost \$100.

The "Centennial," a new machine, made by James Norton, Hingston, N. J., represented by D. Voorhes, next entered the lists. It is a new machine, with two small ploughs for digging, throwing the potatoes together, when falling upon a rapid shaker, they were separated from the dirt and left bare pretty well on centre of row. It seems to move easily and quietly but clogged once or twice in thickest weeds. Price \$75.

George W. Kintz, of Henrietta, next tried his digger. It is a kind of plough, with wide mould-board and share, a wheel inside of landside, a hook ahead to straighten tops, and curved rods and straps to receive and separate the potatoes. It went through successfully, lifting out the hill, and leaving the tubers more in bunches, and a little more mixed with soil than did the others. It would be a great aid to a farmer in digging his crop, and worth the cost, \$35.

The diggers were then called to work in Peachblows, with rank, green tops. The Centennial first tried, clogged, and gave it up.

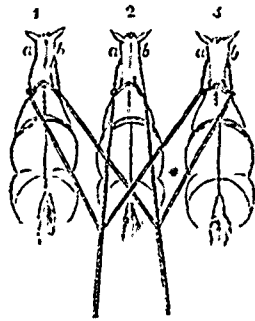
Knox's first put on the tongue, a long iron rod, with two hooks to straighten the tops, and went through without clogging.

Innis took off the rods, went through, clogging some, but not enough to cause a failure.

Kintz went through successfully, leaving the tubers on top of the ground, but adhering to the tops, which may be said of all of them.

Lines for Three Horses Abreast.

The saving in draught by having the horses attached close to the load is so great that three horses abreast will do as much as four in line or two-and-two. We have lately given some designs for equalizing the draught, and we supplement them with a sketch copied from the *Country*



Gentleman, showing a good mode of attaching the lines for driving. The lines run straight to the head of the middle horse (2), the side reins branching from these in the manner shown, and passing to the bit of each outer horse. This is a neat and compact arrangement.

George Geddes on Side-hill Ploughs.

Hon. George Geddes is not much in love with side hill ploughs. He says in the *New-York Tribune*:—The Geddes farm is fully supplied with side-hills, some of them quite steep, and we own a good side-hill plough, so called; that is, a plough that by being turned throws the furrow either way. This plough has stood idle in the tool room for probably twenty years, never once used, as we have found how to cut our side-hills and do our work without this side-hill plough. Some cases will not admit of our way of doing things, and a side-hill plough must be used; but they are, in my opinion, only to be used in cases where an ordinary plough cannot be. As to the dead furrows and back furrows made in the use of the single mould board plough, they amount to nothing practically. Any man that has done much ploughing will have ways of making the dead furrows so shallow and the back furrows so low

that they will hardly be noticed by the driver of the mower or reaper.

Much time, money, and inventive skill have been expended in the attempt to make a double mould-board plough that would do as good work at the same cost of ploughs on level land as with a single mould-board plough, but this is probably a mechanical impossibility. I have been over this matter till I think I understand it, and have served on committees that have made very full tests, and this is my conclusion. I will be told by all the makers of double ploughs that they have each and every one of them a plough that they know does just as good work anywhere as the best single plough ever made. I am entirely willing that they should enjoy this satisfactory opinion, if they will not send me any of their ploughs to try, and I will not object to any means, thinking that the avoidance of dead furrows and back furrows is of sufficient importance to justify poor work and heavy drawing of the teams over all the field—if he is a man that holds the plough himself—but if he is but a farm owner that earns his living by some other means than ploughing, I will venture to suggest to him a journey among grain raisers—practical men—and see how many of them use side ploughs on level land before he invests heavily in reversible ploughs.

IRON PIPES.—The following rule for strength of iron pipes is based upon the fact that a 10-inch pipe, one inch thick, will stand the pressure of 100 yards head of water. The coincidence of one inch of metal to every 10 inches diameter and 100 yards pressure should be remembered. For every inch in the diameter of pipe, increase or deduct 1/10th of an inch, and for every yard of pressure, increase or deduct 1-100th of an inch.

A NEW HORSE-POWER.—A Pennsylvania man has invented a new "level tread railway horse-power," which is spoken of in terms of decided praise. It is said to be a great improvement on the inclined-plane tread, being much easier to horses, who are not placed in an unnatural position in which they are liable to be strained. The same man has also invented a new horse-power "governor," which can be attached to any horse-power; a simple little machine by which the speed of the horse-power can be regulated at will.

SPARING THE BACK.—A correspondent says: For picking stones where they are plenty, I know of no better implement than a pronged hoe, or potato digger. To loosen those that are partly imbedded in the soil, to save wearing the skin of the fingers, to save bending your back all day, and perhaps for many days in succession, as I have done when a boy, I think makes a light job of one that I used to think was the most disagreeable in all the routine of farm labor. With the potato digger I can pick them up and throw them into small heaps much faster than I could with my fingers, and much easier, and after they are all loosened and thrown into piles, it is comparatively but a small job to throw them into the cart. You avoid the necessity of keeping the team in the field all the time, as you would if you were to pick directly into the cart, which is an important saving.

MANAGING BELTS.—A mechanic gives the following directions for managing belts. He says: "I have for the last twenty-five years on every Saturday evening turned the inner side of my engine-belt outside, let the engine run slowly, and washed the belt well with warm water and soda, applied with cotton waste. Next I take a piece of sheet-metal and scrape the belt well, then wash with clean warm water and dry off. I collect the waste oil from the shafting and apply as much of it to the belt as possible. The washing must be done as quickly as possible, so as not to dissolve the glued parts. I let the belt stand on the pulleys till Monday, then give another scraping and turn the belt as before. I keep the pulleys very clean. I have long been surprised at the economy I have effected with very little trouble. I have not bought a new belt for the last ten years. There is an engine near me 14 inches by 36 inches (mine is 12 inches by 36 inches). I have nearly double the shafting and belt, and my neighbor cannot run with less than thirty-eight pounds of steam when all the belts are on the loose pulleys. Mine will run at full speed with five pounds."

TO CLEAN A RUSTY PLOUGH.—Take a quart of water and pour slowly into half a pint of sulphuric acid. The mixture will become quite warm from chemical action, and this is the reason why the acid should be poured slowly into the water, rather than the water into the acid, and let it remain on the iron till it evaporates. Then wash it again. The object is to give the acid time to dissolve the rust. Then wash with water and you will see where the worst spots are. Apply some more acid and rub on those spots with a brick. The acid and the scouring will remove most of the rust. Then wash the mould-board thoroughly with water to remove all the acid, and rub it dry. Brush it over with petroleum or other oil, and let it lie till spring. When you go to ploughing, take a bottle of the acid water to the field with you and apply it every bout to any spot of rust that may remain. The acid and the scouring of the earth will soon make it perfectly bright and smooth. If all iron work be washed off with petroleum as soon as we put our tools, implements, and machines aside for the winter, it will keep them from rusting, and save a great deal of trouble and annoyance, to say nothing of depreciation and loss.

Horticulture.

THE ORCHARD.

Ontario Fruit Growers' Association.

EDITOR CANADA FARMER.—I have sometimes thought that there ought to be a closer connection than now exists between your admirable paper and the fruit-growers of the Province. Their interests have always been attended to in your Monthly, and it does seem a pity that the members of the F. G. A. of Ontario did not make it the vehicle of their wants and wishes. To help to remedy the present state of things, I purpose to give you a paragraph or two on the recent meeting of the Fruit Growers' Association at Belleville.

B.

Hamilton, 27th Oct., 1875.

The fall meeting of the Fruit Growers' Association of Ontario was held two weeks ago in the Town of Belleville. It was not largely attended, but still there was a fair turnout of the members both from a distance and from the immediate neighborhood. In the value of the fruit discussions we are led to believe that the fall meeting would not be behind any of its predecessors. The interest expressed and felt in every subject discussed was a most agreeable feature of the meeting. Every one was more desirous than another to fully sift the subject matter before the meeting. The value of these visits of the Association to different localities is scarcely to be estimated. In the past they have been the means of eliciting an interest in fruit growing which perhaps would not have taken place for years to come. On the other hand it has taught the most advanced members of our Association that others as well as themselves have been thinking of and pushing forward in their own way and place the fruit interests of our province. New features pertaining to fruit have met us on every hand. At Guelph, the nomenclature of fruits was at fault—there the best of all remedies were applied—the true names given. At Goderich an entirely new and beautiful section of country was found which had formerly been almost a *terra incognita*. At Owen Sound, horticulture was found just as far advanced, and as much interest taken in it, as in more favored districts on the frontier. At Ottawa, there was presented the known and the unknown. We learned what the Hon. Mr. Scott could grow in his policies, and generally in what a backward state horticulture was on the whole in the Ottawa Valley. At Belleville again there was a new experience, entirely new. The tables were burdened with a magnificent display of most promising seedlings. There were seedling apples, seedling pears, seedling grapes, and even seedling peaches. The calling out of such a number of excellent seedling apples was felt as a sufficient recompense for those who at some cost of time and trouble undertook a long journey to be present. There we learned that formerly the whole front of the Township of Sydney used to be planted with large orchards of natural fruit. It is true many of these have disappeared, but all over the district the finest and best of these natural fruits have been propagated and preserved. Mr. John Graham, Dr. Coleman, Mr. McClatchey, Mr. Clarke and others all stated how valuable some of these seedlings were esteemed by our fruit-growers. We are persuaded that the Association is moving in the right direction in calling attention to the seedlings to be found in every section of our country.

At Belleville, too, we learned that there were famous hybridists among them. We have been pluming our own western feathers so much that we have been accustomed to regard our Arnold, Saunders, Mills and Haskins as the *ne plus ultra* in hybridizing. We went from home to get better acquainted with a local hybridist of no mean fame, viz: Mr. Peter C. Dempsey. His efforts have extended over a long course of years, and some of his hybridizations are marked with complete success. His grapes are something to be wondered at. The readers of the CANADA FARMER will be rejoiced to hear that some of them are shortly to be disseminated over the length and breadth of the land.

W. H. Mills was also there with the trophies of his genius. Several of his grapes were of singular eminence.

Charles Arnold with his grand rich repository of hybridizing lore was also present. It was pleasing to hear the clash of friendly gladiatorship between him and Dempsey. Arnold's *forte* has been among corn, pears, apples, strawberries and raspberries. Of strawberries he has some thousands, and from eight to a dozen magnificent raspberries.

A feature of the Belleville meeting must not be overlooked, we mean the infusion of the social element. The Hon. Lewis Wallbridge acted as Vice Chairman, and the genial Dr. Palmer as Chairman of the Social meeting. The President of the Association incidentally detailed the means being employed for the advancement of fruit interests in the Province. Dempsey, Arnold and others also spoke on various kindred subjects.

Notably there was absent Mr. Saunders of London, famous for his hybridization between the Philadelphia raspberry and one of the black cap family, and Mr. Beadle, the indefatigable Secretary of the Association. The autumn meeting at Belleville will long be remembered with a white mark by those who had the opportunity of enjoying its discussions and social pleasures.

BLACK WALNUT IN ORCHARDS.—A writer in the *Country Gentleman* states that the presence of black walnut trees in an orchard is sure to kill apple trees. The effect of a small walnut tree on a large apple tree is small at first, but it will show itself after a little and death will be the result.

WEEDS IN ORCHARDS.—Advice is given by a German professor to keep in orchards a certain space around the trees free from grass and weeds, as these draw too much water away from the trees; indeed, it has been proved that trees which were sickly and bore little fruit, have been restored to vigorous growth by returning to them the necessary water in this way. To prove how much water fruit trees need, it may be stated here that an acre planted with them will evaporate in about ten days 3,000,000 pounds of water.

HOW TO STORE RUSSETS.—At the last State Fair in Utica, says the *Herald* of that city, some russet apples grown a year before, attracted attention. These Apples were plump, fresh, and of good flavor; quite as good as the same kind of apples are ordinarily on the approach of spring. The apples had been put up in refuse boxes obtained at the groceries, and in the following manner: A layer of dry sawdust was sprinkled at the bottom of the box, and then a layer of apples placed in, so that they do not touch each other. Upon this was placed a layer of sawdust, and so on until the box was filled. The boxes after being packed in this way, were placed on the wall in the cellar up from the ground, where they kept perfectly, retaining their freshness and flavor until brought out and exhibited at the fair.

RENOVATING PEAR TREES.—A gentleman who has tried it and found it to be very successful, writes to the *Country Gentleman* on the way to renovate pear trees: "He digs a trench, (distance from the tree according to size,) two and two and a half or three feet deep, and two feet wide, all around the tree, cutting off all roots two inches or under. I then go to the blacksmith's and the iron works, and get a wagon load of cinders, and put these into the bottom of the trench, with broken bones, charcoal and wood ashes. I fill the trench with virgin soil, leaf mould, &c., from the forest, a little more than even full. This should be done as early in spring as may be. The effect may not be very apparent the first year, but it will show good results by the second year." This method is successful because it supplies to the soil the ingredients of which it has been deprived by the tree in the preceding years.

THE FAMEUSE APPLE.—The Fameuse or "Snow apple" is always a favorite with those who happen to have a tree of it, for family use. It is also a good market variety, owing to its bright color and fair size for the table. The tree, also, is quite productive and healthy. It is supposed to be of Canadian origin, and is called *Pomme de Neige* by the French speaking residents there. The following is Warder's description:—Tree vigorous, productive; shoots red; foliage dark, abundant. Fruit medium, round, regular; color deep red, except where part of the apple has been shaded by a leaf. Dots minute, basin medium, regular, eye very small, closed; cavity wide, wavy green; stem short; core medium, closed; seeds numerous; pointed, brown. Flesh snowy white, very tender, fine-grained, juicy; flavor sub acid, mild, delicately perfumed, not rich. Quality good. Use, dessert, kitchen and market. Season, October to December.

THE VEGETABLE GARDEN.

The Culture of Sea-Kale.

A gentleman writes from the West of Yorkshire, England, to the *German Town Telegraph*, giving directions how to grow sea-kale. We do not know of sea-kale being grown in Canada, but its valuable qualities must be known to many of our British and Irish Canadians. There seems to be no reason why we cannot add sea-kale to the resources of our tables. The Yorkshireman says:

This plant is a native of the English sea shore, but by no means abundant. It is cultivated extensively both in gentlemen's gardens and for the markets of our large towns, and is of the most service when the cabbage tribe has been

cut down by a severe winter. As the plant is, in a sense perfectly hardy, it will grow on any aspect, yet the better the aspect the earlier it grows in the spring. It grows the best in a deep sandy soil well-supplied with manure.

The plan generally adopted is to trench the land deeply if the surface will admit of it; if not, soil is added to make it two feet deep, both the soil and manure being intimately mixed, which should be done in autumn.

In March, or earlier if the weather will admit of it, the soil is again dug over and thoroughly pulverised. The ground is then marked out into beds four feet wide with paths of two feet broad. Two drills, two inches deep, are made on each bed, which will be two feet row from row. The seeds are then sown and covered with the hoe in the usual way for peas.

Nothing more will be required but the hoe and rake, when weeds appear, till the plants require thinning, which must be done leaving a space of one foot from plant to plant. If the soil and aspect be good the plants will have made strong "crowns" by the end of autumn, when the leaves are cleared off the plants which, if ripe, will leave the crown easily.

In November we take up every other plant and pot them and place them in the mushroom-house to give us a dish of sea-kale at Christmas. The beds are then covered with dead leaves to about six inches thick to protect the crowns from severe frost. In the spring these leaves are removed and the crown covered six or eight inches thick with fine earth, sand, ashes or decayed leaves, which blanches the kale when it grows.

To force the kale out-of-doors, the seeds are sown in little circles of about eighteen inches in diameter, to receive a sea-kale pot two feet in diameter. These pots are open at both ends and have covers to them. In November the beds and pots are covered with the newly-fallen leaves of oak, beech, &c., to the depth of three feet, which give off a gentle heat that forces the kale into activity. By Christmas the kale will be grown six inches long. In taking the crop, the leaves are carefully removed down to the covers of the pots, the covers lifted, when a dish of beautiful sea-kale is cut, the covers replaced and the leaves put back over them.

The market-gardeners have a less-expensive process, as they take up the roots and force them in various ways indoors; and they plant thongs, or pieces of the roots, that by good treatment make good crowns for forcing the following year.

The manure for the growth of sea-kale should be thoroughly rotted, as any kind of "green manure" imparts a strong flavor to its produce. Such is also the case with all kinds of vegetables when grown for "the table," but particularly for all the plants belonging to the same order as this plant belongs, i. e., the crossworts, or *crucifera*.

A lesson on this subject of having our manure thoroughly rotted before applying it to our culinary vegetables may be taken from our pastures fed off by cows and sheep. The droppings from the latter being in small quantities, the atmosphere soon penetrates it and renders it scentless, leaving nothing but sweet dross. Not so with larger quantities that fall from larger animals late in the season when flies have ceased their purifying work. Watch the rank grass that grows round these masses the following summer, and you will not fail to observe that no animal eats it until dire want forces it to do so, as either from the smell or bad flavor of the grass animals refuse it. Hence, we perceive that in our carefulness in thoroughly decomposing our manures before we apply them in rearing our culinary vegetables, we are simply imitating Nature.

NEW KIND OF SPINACH.—Several years ago a new kind of spinach was introduced into England, under the name Australian spinach (*Chenopodium auriconium*), which, according to the unanimous opinion of connoisseurs, must be regarded as a valuable acquisition. It is perennial, very hardy, reaches a height of six inches, and affords a large quantity of tender leaves, which are soon reproduced after plucking. Its flavor is similar to that of common spinach, but not so grassy nor so harsh, and, in general, finer. It is best prepared by throwing the leaves in boiling water, and, after pouring this off, cooking it as usual. Its cultivation is simple. The seed may be sown in a hot-bed in March, for subsequent transplanting, or in the open ground in April or May.

IS THE POTATO DISEASE HEREDITARY?—A correspondent of one of the English journals of horticulture, says he planted in 1865 some pink kidney potatoes of a late keeping kind, called Yorkshire kidneys. They produced much haulm, and were a little given to disease. The crop was diseased. He selected from the diseased potatoes twelve of the very worst, so bad, so rotten as scarcely to have any vitality, and planted them in March 1866, on a piece of poor ground without any manure. The result was 71 potatoes quite sound, and 15 diseased. In 1867 he planted the diseased potatoes and a few sound ones, sufficient to make a long row; the result was scarcely any disease at all. In 1868 he planted two rows, taking all the diseased and small potatoes; the result was a good crop and no disease. On the 21st of April 1869, he looked over the potatoes left, about half a bushel, and could not find a trace of disease.

THE FRUIT GARDEN.

How to Fight the Currant Worm.

L. R. Sunderland sends a valuable article to the Boston Journal of Chemistry, containing the result of his researches into the habits of the currant worm. It will be seen that he advocates precisely the same remedy as was recommended years ago with respect to other pests, viz., concerted action on the part of those owning the trees depredated upon. Efforts by individuals to keep down insects must necessarily be abortive. A co-operative effort must be made by the people of a whole neighborhood. Mr. Sunderland says:—

As we go over the currant bushes in May, after the new growth has got well under way, we notice that some of the new stems have been squarely cut off, so that a few inches of the top hangs to the bark, or has fallen to the ground. The cut appears recent, as if done the night before. Now, this cut has been made by the same currant worm in one of its forms as a fly; and it was done for the purpose of depositing an egg on the top of the place cut off. And by giving attention to the cut end, the currant and gooseberry worm may be annihilated. From that egg there comes the borer, which, if not arrested, bores down the stem eight or ten inches, and after having been frozen solid, the following spring it becomes the fly, which lays its eggs on the under side of the leaves, and from which we have the worms against which the fighting has hitherto been done. But, manifestly, this fight can never annihilate these worms, because it is never possible to destroy the whole of them in any given case. But it is possible to notice each one of the cut stems, and so to prevent the egg from becoming a borer.

It has long been an unsettled problem as to what becomes the status of these worms after they have fulfilled their "mission" in eating up the leaves. Here are my own conclusions on this point, and the demonstration by which they are supported.

On some of the leaves, with these green feeders, may often be found also a white worm that does not feed at all. Noticing the skin of the green worms, with head and legs precisely as if some of them had moulted into another form, suggested to me that probably these white larvae had moulted from some of the others. I therefore placed a few leaves with only the green worms on them in a glass jar which is now before me. This morning, 16 hours after, on looking into this jar I discovered three of these white worms on the leaves, with the skins from which they had moulted. This process of moulting is seemingly gone through with in a single night. But only a small proportion (perhaps the lighter colored ones) moult, and so their cycle is completed. As with the honey-bee, we know that the "workers" constitute by far the largest proportion of the three classes in the swarm, and yet these workers do not propagate; so with these destructive workers on the currant bush. It does not appear that the greatest proportion of them moult or propagate; but the purpose in the cycle is secured without this.

These white worms are always found on leaves where skins may be found, from which they have moulted. And those that do not moult dry up and die upon the leaf. They do not fall to the ground, as some have supposed. The white worms are inactive and never seem to feed. When touched, they instantly curl up and wriggle to the ground. Whether they remain till spring in the earth or make their cocoons above ground, is unknown. But it would seem highly probable that it is from these white larvae that the flies come, which announce their presence in the spring by insidiously cutting off the new growth of the shrub, as I have stated. At any rate, by persistent attention to these cut-off ends in the spring, the currant worm may be annihilated. Every cut can be noticed and numbered, a remark that could not be truly made of any other pest, certainly not of the potato-bug, the curculio, or the "hopper" or the weevil. And hence I affirm that in my locality where all having currant bushes shall agree to follow up this method, these worms must become a thing of the past.

These cut off ends are flat, and a piece should be clipped off with a sharp knife, and above the axle of a leaf, in a sloping or upward direction so as to facilitate the continued growth, and also to distinguish it from any not thus treated. If not attended till to late in the fall, these cut-off stems will be found dead, and should then be cut away and all of them be destroyed.

The first week in July, the present season, I have taken off some dozens of these cut ends, in each of which I found the same borer, and some so very small as only to be seen by the microscope. By an early removal of this cut end, the wood is saved, while its borer, the fly, and the worms, are forestalled. Thus it will be seen, in this circle of insect life, we have two different flies, one borer and two different worms, all having one purpose, which is the destruction of the currant and the gooseberry.

Last fall I cut out all these dead stems I could find, and in them I found this full-grown borer, and in some a number of small ones. This precaution made far less work for me in the fight of these worms the present season. I may perhaps add that my labors in this regard would have been very light indeed but for the gardens of my neighbors. For it is patent that dusting these worms with white hellebore, air-slacked lime, etc., does but slightly

check their increase, if it does at all, from year to year. If we were to destroy all the "workers" from a swarm of bees, this would not cut off all possibility of increase from the two classes that survive. But I am sure that no garden, attended to as I have here suggested, could have a currant worm in the following year, unless indeed the insidious fly should come from some other place.

So much for the currant worm. But I have discovered the present season another destructive creature at work upon my currant and gooseberry bushes. It is a real borer, boring from the outside, into the new wood, which soon dies. It is lively, quick moving, and half an inch in length, black, with white stripes lengthwise, three at each end, and one over the middle. This is a new enemy in this locality, and of its pedigree nothing is at present known.

CURRANT WORMS.—A New York gardener has succeeded in keeping his currant and gooseberry bushes free from the currant worm by mulching heavily with coal ashes. The ashes also have another value not expected, viz.: keeping the ground cool and moist, so that even English gooseberries will bear heavy crops without signs of mildew.

THE HERSTINE RASPBERRY.—The Rural New Yorker says:—The Herstine, which at the time of its introduction was supposed to be "the coming raspberry," has proved to be no more hardy or better than many of the older sorts; consequently nothing has been gained in its production. It is a good variety, but the same may be said of dozens of others, much older and better known.

PLANT A GRAPE-VINE FIRST.—Not one farmer in twenty will buy grapes or other fruit, except apples, for himself and family; but grapes are so easily and cheaply grown that no family with a square rod of ground should be without a few grape-vines. Grapes can be got in bearing earlier than any other fruit, excepting strawberries. The first duty of a settler on new land is to plant half a dozen grape vines, and after that as many as he can afford. Fresh fruit is necessary to the health of a family, and nothing is more quickly, easily or cheaply grown than grapes.—Rural New Yorker.

BLACKBERRIES.—If any reader is now making his first experiment in the culture of blackberries let me give him a word of advice, to wit, that he try mulching instead of hoeing the plants. If, however, he has a large lot of them, set in rows so that a horse cultivator can be used between them, it may be best to cultivate and hoe. But for small patches I think mulching is better for keeping down the weeds and keeping the soil cool and loose round the plants. I used to try hoeing but the rows were very near together so I could not use a cultivator and I found in a short time that I had got hold of a bad job. Wherever I cut a root with my hoe there a shoot would spring up, and very soon I had three plants where there was room for but one. Becoming disgusted with this method of culture I took up my plants and decided to mulch instead of hoeing. Old hay or straw costs but little, will keep down weeds and promote the growth of the plants. Let those who have been in the habit of hoeing give the mulching a trial.—Cor. Boston Cultivator.

THE FLOWER GARDEN.

The Ice Plant.

The Ice Plant, *Mesembryanthemum Crystallinum*, is one of the prettiest of the trailing plants. It is especially suited for basket and vase culture, being a free grower. It is a native of the Cape of Good Hope. It gets its name



from the peculiar cold, icy appearance that the foliage presents, the stems and leaves being covered throughout with crystal frost-like gems rendering the plant very attractive. It is grown from seed and should be treated as a half-hardy annual. The Ice Plant, and several others of the genus *Mesembryanthemum* succeeded well bedded out of doors where they continue in bloom during most of the season. For the illustration we are obliged to Mr. Rennie.

Pure Air and Moisture for House Plants.

House plants are things of life which require pure and warm air and moisture as well as animals. A wide pan of water should always be placed on the stove or in the heating furnace at a point where it will be heated enough to send off vapor into the air, and it should be kept supplied with water at all times. Towels, napkins or other cloths hung near the fire and wetted as often as they become dry will impart an agreeable feeling to the air of a warm room. Every lady must have noticed how pleasant the change from the dry sitting or dining room to the kitchen or laundry where damp clothes are hanging around, if not in so large a quantity as to produce over-dampness. The objection to stoves and hot-air furnaces has no doubt resulted from the absence of sufficient moisture applying apparatus. Stove rooms that are not properly ventilated are ruinous to growing plants. The whole atmosphere in the conservatories of florists is always kept so moist that a person, when entering, observes the dampness. Yet such an atmosphere is congenial to tender plants.

Most growing plants become sickly and "drawn up" in the parlors of our first-class houses, while in those of less pretension we frequently see them vigorous and flourishing. In houses without "modern improvements" the air is not heated until its capacity for moisture is such as to greedily take it from the plants, as well as from the persons who dwell there, nor are the windows sealed so tightly that the plants cannot have a breath of fresh air from without. If people will make a climate in their houses like that of a desert, they must content themselves with such plants as are naturally adapted to arid regions. Cactuses, crassulas, sedums and such thick-skinned plants will endure an amount of roasting and drying which would kill a camelia or a rose.

Supposing the plants to be well established in good soil, the three points to be attended to are air, water and cleanliness. Every day when the weather is not too cold, the window sash should be let down at the top, and on mild days kept open during the warmer part of the day. In the first place, cleanliness is to be observed with the pots. If they have become covered with a green film they are to be set in a pail of water and soaked awhile, and the green matter washed off with a cloth or scrubbing brush. The inside of the pot should be clean down to the earth, and the surface of the soil free from moss and fallen leaves.

As to the plants themselves, the two great troubles are dust and insects. A paper or light muslin screen laid over them while the room is being swept, will keep off a great deal of dust, but even this will not obviate the necessity for washing and syringing. Broad and smooth-leaved plants may be washed with a soft sponge, or, what is better, placing the hand over the earth, turn the plant upside down and move it briskly about for a few seconds in a vessel of water. Then set the plant upright, wash each leaf between the finger and thumb, and afterwards give it another rinsing. A plant too large to be treated in this way may be syringed, or lay it down and let water fall upon it from a considerable height from a watering pot. This can be done out of doors in mild weather, and in cold weather in a sink or bathing tub. If plants are frequently washed they will be but little troubled by insects.

PRESERVING BOUQUETS.—The American Artisan says that bouquets may be kept a month in continuous blooming (of course with a proper selection of continuous bloomers), by first sprinkling with fresh water, and then placing in water containing some soap suds. Take them out each morning and lay them in fresh water a minute or two, and replace them. Change the soap suds twice a week.

POOR SOIL FOR FLOWERS.—Some species of plants will bloom much freer and fuller on a light, weak soil than on a heavy strong one. Last year we sowed the variety in question—Dwarf Nasturtium—on a rich soil, where Asters, Cockscombs, Balsams, Pansies, and some others grew, and bloomed magnificently, and although it made a luxuriant growth of plant, the bloom was sparse and unsatisfactory. Portulacca is another variety that will keep up a brilliant bloom on a dry, sandy soil, too poor to produce a good crop of corn or potatoes, but will run too much to plant and bloom shyly, on a rich, productive soil. We could name several other species in the same category, but it is unnecessary to establish the fact.—Rural Home.

A NOVELTY AMONG ROSES.—A correspondent writing last week to the Garden, says: "Mr. Woodthorpe's new Japan rose, Beauty of Glazenwood, will be without doubt the most striking novelty introduced for many years. A rose of golden yellow, striped and flaked with scarlet or vermillion, sounds like a dream or a fairy tale. It is, nevertheless, a reality." After giving some particulars as regards what he had seen of its habit and season of flowering, he says Mr. Woodthorpe describes it as strikingly lovely in the bud state. It is like Madame Falcot in its yellow ground, while the vermillion flakes and stripes on the petals resemble "the coloration of a tulip," and it has also a delicate fragrance. It will certainly prove an important and charming addition to our already rich array of roses, and be most valuable in hybridization, on account of its peculiar coloring and distinctness.

The Poultry Yard.

Frizzled Fowls.

"Friesland" fowls is a name often applied to this breed of fowls, although on what foundation has never been satisfactorily accounted for, as this breed is not confined to one particular country, it being found in nearly every part of the world. Close observers of all the Asiatic breeds, but more especially the Cochins and Bralunas, have not failed to notice that feathers in the neck hackles have a tendency to twist, and this defect has been called by fanciers "twisted hackle." Several causes are assigned for this defect, which it is unnecessary here to cauterate, but of this we are quite certain, that twisted hackles have a strong tendency to become hereditary, so much so, that experienced breeders do not hesitate to say that by mating together such defective hackled birds, partly frizzled fowls would be sure to be produced. Hence the breed of frizzled fowls is not indigenous to any country. Apart from these, however, there is now a distinct breed of frizzled fowls which breed true to feather and markings, and are of different colors of plumage, some white, others brown or partridge colored, and some black. White is the most usual color shown in England, but black is by some breeders considered the handsomest bird.

Nearly all frizzled fowls have neat rose combs and short dark legs. The chief peculiarity is, however, in the plumage, every feather being curled back in the wrong direction, as if the bird had been roughly stroked the wrong way, and presenting a most grotesque appearance. The tail feathers are not recurved like those on the body, but the webs are loose and disconnected. From the loose and unprotected character of the plumage they are said to be rather susceptible to cold or wet, and therefore have the reputation of being delicate, and this would seem reasonable, although breeders who have kept them for years, do not endorse this statement. Mrs. Taylor of Ardglan Castle, Balbriggan, Ireland, writing in the "Illustrated Book of Poultry" says:

"I have kept White Frizzled fowls now for seven or eight years, and think them a most useful and profitable variety. They are always the first to lay in the autumn, which I attribute to their early moulting. My poultry woman writes me from home that they are all featherless already (June 10th). They are also excellent mothers, and from their feathers being nothing but fluff, they always seem to keep their eggs warmer than other hens when sitting. They have a very marked power to reproduce their peculiarities—the turned back feather and rose comb—even when several times crossed with other breeds. I have also remarked that although the parent birds in my pure bred runs are all white, a jet black chicken has often been produced; which fact and the observations of Captain Tollemache in the Mauritius, led me to believe that the Black is not an original variety. The first I ever possessed came from a farmer in Westmeath, and at that time they were common both in that county and in Cavan. I have since tried to obtain some from that locality, but they are nearly extinct, and I could not meet with any true bred specimens. My first birds were not pure white, but each feather had very delicate pencilling of grey, which Captain Tollemache states is the general color of the Mozambique fowl in the Mauritius. By always selecting the whitest birds, my stock is now pure white, but a black chick still occasionally appears. I consider them the most valuable fowls I possess. They are excellent for the table, and even a hen two years old gives very white meat, and much more tender than that of any other variety. The smallness of their bones also makes them desirable for the table. They seldom or never want to sit, and are, to my taste, very ornamental. They are very hardy, and the chicks easily reared. They are also slow in feathering, and therefore require to run long with the hen, but on the other hand there is no harbor for vermin."

Captain Tollemache, to whom reference is made by Mrs. Taylor, in the same publication writes "The Hurricane Fowls, as they are there (Mauritius) called, are very common, especially in the best camps of the Malibars. The name arose from the happy idea of their progenitor being

caught in a hurricane, and so having their feathers all blown the wrong way. They are natives of that part of the African coast opposite Madagascar, hence I should say the proper name would be the Mozambique fowl. Their color is generally brown, but I have seen them in much brighter colors, each feather being barred with brown and yellow, giving the appearance of shot silk. I never saw them white. I have bred them myself, but am sorry to say that I did not then observe their habits and peculiarities very closely. I can however, say that they were very good layers, laying a nice egg, and also very good eating. They are also very careful and excellent bringers-up of a young family."

Naturalists state that the Frizzled Fowl is to be found throughout Southern Asia, Java, Sumatra and the Philippines. It is also to be found in Ceylon, but is said not to be a native of that place, having been brought there from Batavia. It is also stated to be found in the West Indies. The chief point to be observed in breeding these fowls is neatness in the frizzled plumage, and in choosing stock birds this point should not be lost sight of.

ONE OF THE AMERICAN writers on poultry says: We have protected into existence, by isolation and class favoritism, races of poultry that can no more hold their own against the common stock than could the ancient Jews, Greeks, and Romans.

CHICKEN LORE. Chickens do not thrive if kept on bare boards the boards become impregnated with their filth and yield poisonous gases. This may be prevented by covering the boards with finely-sifted dry earth, from one to two inches thick. This acts as a disinfectant and deodorizer, and the chickens thrive. *For the gapes.*—I apply a drop of the oil of amber with a feather to the nostrils. Be careful that it does not enter their mouths, as it is poisonous. *For cramp and leg-weakness.*—Bathe in hot water so that the hand can comfortably use it, add one part tincture of arnica to fifteen of water. This may be used for a few days by being again warmed; the legs and feet should be gently shampooed whilst in the water. I have found it effectual. —J. F. W., Exeter, England.

MESMERIZING POULTRY.—The *Scientific American* describes a method of putting any rooster in a state of catalepsy. Select a dark-colored table with a smooth top; place it so a narrow streak of sunlight will fall across the surface. Then set the rooster on the table, and hold his head down so that his beak comes in contact with the wood. Now, with a piece of chalk and in the sunlight, draw a line straight from the bird's beak. Move the chalk very slowly, and by the time the line is a couple of feet in length the rooster will fall into a cataleptic or trance-like condition; and although the hands are removed from his body he will remain perfectly rigid for a minute or two. It is said that a black line on a white surface will produce the same effect. Hens may be similarly treated, but it takes much longer to get them into the trance state, it being necessary to hold the head down several minutes before they come under the influence.

A PIGEON POST BETWEEN EUROPE AND AMERICA.—An Ocean Homing Bird, of great docility, intelligence, and spirit, has been found in Iceland, which flies at a meteor-like speed of 150 miles an hour, and is able to find its home, over sea and land, from any part of the habitable world. A pair of these birds, a few days ago, brought despatches from Paris to a lonely spot, congenial to their nature, in a wild and rocky part of Kent, within 10 miles of London, in 1½ hour. Press Carrier Pigeons took the despatches on to the City, the whole distance from Paris to London, by actual parcel mode of conveyance, being done within 1½ hour! If the experiments at present being made in training and educating them continue successful, it is hoped by next summer to establish a daily miniature ocean mail between America and Europe, the whole distance to be traversed between sunrise in one hemisphere and sunset in the other.—*Live Stock Journal*.

FOOD AND EXERCISE.—Our domestic animals, derived as they are from wild ancestors, require a certain amount of exercise to keep them in sound and vigorous health. Poultry cannot be kept in large numbers in confined areas without detriment to their constitution. Colonel Taggart, of Pennsylvania, provides food and exercise for his fowls at the same time. The Editor of the *Fanciers' Journal*, Philadelphia, found in his poultry yard several beds about 30 feet square each, in which Mr. Taggart buries oats, several bushels to the bed. The grain begins of course at once to swell and germinate, and the fowls have free access, scratching and eating the tender sprouts to their hearts content. While the fowls are thus busy on one bed, a new one is prepared which is in readiness for them by the time it is required. "The idea is a good one," says the editor, "and we are glad to call attention to it. In our own yards we have found the benefit of it, and we are glad to learn that we are not alone in the practice."

The Apiary.

Seasonable Hints on Bee Management.

During the month of November, though we may have some warm pleasant days, bees will remain quiet and fly out very little. All work with them should have been done before now, and they be disturbed as little as possible. No feeding of liquids should now be done; it is too late to give syrup. We are certain that much of the fatality among bees has been caused by too much water in the food, whether it has been fed to them in syrup, or they take it in the honey, which being gathered late in the Fall, has not lost the watery particles by evaporation. We have seen honey in hives, often in this state. The bees when not able to fly and discharge the fecal matter, are injured by taking too much water. To avoid this, if it is necessary to feed them, give sugar candy, instead of syrup. We find this the best way of feeding at all times, when bees are not able to fly out every day.

By the middle or last of this month, according to the weather and time, varying of course with the locality, bees must be put into winter quarters or protected on their summer stands. It is not well to house them too early.

A cold time should be chosen to take them in, and they should be moved easily, so as not to stir them up. We have carried fifty hives into a cellar without a buzz from a bee; and then again by an unfucky jar, a colony has been stirred up so that it did not quiet down for hours.

Under favorable conditions, bees in the winter remain very quiet. Any noise from the hive is evidence of discomfort. As long as you do not hear from them you may be sure all is well; but if a constant noise is heard, be sure something is wrong.

Much has been said about ventilation in the winter. We have found that very little is necessary where the bee quilts are kept on. These absorb the moisture as it passes off from the cluster, and yet prevents all draughts through the hive.

After your bees are put away for the winter, let them alone. To those who winter them out of doors, we can only say: be sure that they have plenty of honey in the hive, while at the same time they have empty comb, in which to cluster. It will require much more honey for those left out of doors, and they should, by all means, be sheltered from the rays of the sun upon the entrances. This is more dangerous than cold or snow, as it tempts the bees to activity in weather too chilly for them to fly. We have all seen bee hives covered with a snow bank for weeks, without injury. Whether bees are in houses, cellars, or out-of-doors, a quilt, carpet or mat, over the tops of the frames, is a great protection worth many times the cost and trouble.—Mrs. E. S. Tupper in *American Bee Journal*.

How the Bee Savants Agree.

The German, Huber, the most painstaking student of the honey bee, who gave his life to its study, and Robert Huish, an Englishman, who wrote a work of some celebrity upon "Bees: Their Natural History and Management," but who seemed, like some other of his countrymen, to be anxious to differ with every body. We (*Live Stock Journal*) need not state that Huber is looked upon, by apiculturians, as the best authority upon all matters which came under his personal observation. We quote, in parallel columns, the views of these savants upon some points:—

HUBER.	HUSH.
1. The drones, one of which is sufficient to fecundate a queen during the whole of her life.	1. The drones, who are the males, and who fecundate the eggs of the queen as they are laid in their cells.
2. The queen oviposits at all seasons of the year, even in winter.	2. The queen oviposits only in the spring and summer, and never in the winter.
3. It is the mother queen who departs with the first swarm.	3. It is the young queen who departs with the first swarm.
4. The hive which has lost its queen can rear another from a common egg, selected for that purpose, by the giving of royal jelly.	4. The hive which has lost its queen cannot rear another unless there be a royal egg in the hive.
5. The queen is fecundated in the open air by the drone, who then dies.	5. The queen is not fecundated by any act of coition with the drone.
6. Bee-bread is used as the food of the larvae administered by the common bees.	6. Bee-bread is not applied to the nutriment of the bees nor as the food of the larvae.

AN ENGLISH AUTHORITY on apiculture declares that there exists no satisfactory evidence or proof that Italians either breed or work better than common bees.

The Breeder and Grazier.

Walking Horses.

The improvement of the walking-gait of the horse, the gait which is most useful to the farmer, is attracting attention in England as well as in Canada and the United States. One of the sporting papers of the former country notes that a good walk is one of the rarest of equine virtues. The breeds to which the walk is most valuable are hacks, hunters, and draught-horses. But the number of hacks that can walk decently is lamentably small, while of hunters the number of good walkers is still less. All descriptions of draught horses are to a certain extent dependent on walking as a pace, but draught horses used in slow work, such as in drays or carts, and for all farm purposes, require no other pace, and, therefore, a good, active, quick walk is of the first importance to them. The horse that can drag the same load for five miles, in the same time that another takes it three, must be able to perform more work in a day, and will naturally command

able to tell whether the animal is a shearing or a two-shear by its general appearance. It frequently happens that a very early lamb, born say in February, will show such an advanced state of dentition as compared with one born in April or May, that a judge of small experience is scarcely to be found fault with for rejecting the more mature animal from the class. If evidence is forthcoming showing undeniably that the rejected animal is only a shearing, we think the judge ought not to disqualify the animal solely on account of its having four full teeth. He will probably be guided by surrounding circumstances, and might decide as much by the reputation of the exhibitor as of the animal.

Dentition in the Pig.

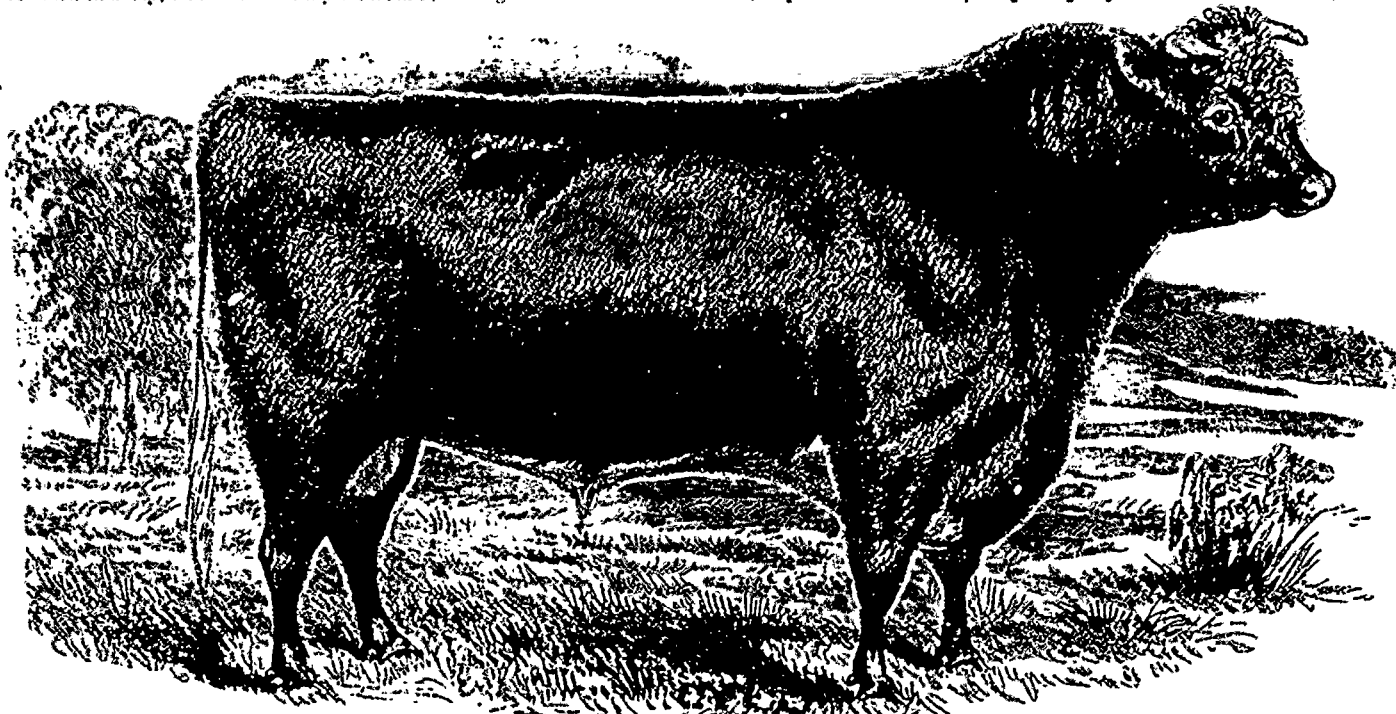
At birth the pig has the temporary tusks and the corner incisors well up. These teeth are very fine and sharp, almost like fine needles, and occupy a position on each side the mouth, leaving a clear space in front. In a month to six weeks the central temporaries are cut, and soon after the completion of the second month the lateral incisors are cut, and the animal has its full set of temporary teeth, including three molars on each side, top and bottom, six

Potatoes for Horses.

I. T. Scott writes in the *Country Gentleman*:—nearly every winter when I have my horses up in stable, I think that I will call the attention of your readers to the practice of feeding potatoes to their horses. I once came near losing a very valuable horse from feeding him dry hay and oats with nothing loosening. I have never believed in dosing a horse with medicine, but something is actually necessary to keep a horse in the right condition. Many use powders, but potatoes are better, and safer, and cheaper, if fed judiciously.

If those who are not in the habit of feeding potatoes to horses will try them, they will be astonished at the result. I have known a horse changed from a lazy, dumpy one, to a quick, active, headstrong animal in five days, by simply adding two quarts of potatoes to his feed daily. If very much clear corn meal is fed, they do not need so many potatoes.

Too many potatoes are weakening, and so are too many apples. When I was a lad, I was away from home at school one winter, and had the care of one horse, one yoke of oxen, and one cow, every one of which I had to card or curry every day. The horse had three pails of water, four



2 Lord Compton Wildeyes.

a higher price. There is no reason for doubting that our horses may be as much improved in their walking as they have been in their other paces, and all that is necessary to effect so desirable a result is the offering of sufficient encouragement to induce breeders to turn their attention towards this particular pace. Premiums at horse shows would probably be of service, but a properly organized system of walking races would do more good, and would give the general public a better opportunity of judging what improvement was really made, and would at the same time provide a sport at once interesting and useful."

The Teeth of Shearlings.

EDITOR CANADA FARMER.—Please let me know the decision of the best judges of sheep in regard to the following marks, that is to say: Two full teeth in the centre, and the one on each side the same breadth, but not level with the others, or appeared as if a piece were broken off. Can such be allowed to compete as shearlings, or what might their age be?

G. D.

In an ordinary case the marks mentioned would be taken to indicate that the animal was a two-shear sheep. It depends much on the nature of the judge's experience whether such an animal could be permitted to be shown as a shearling. If the judge has had a great deal of experience and is a first-class judge of stock, he will be

incisors, top and bottom, and a tusk on each side, top and bottom. At the age of six months the premolars, which occupy a position between the first temporary molar and the tusk, are cut, also a permanent molar, which is fourth in situation. The premolars are not always present, and in their absence the fourth molar will be accepted as an indication of the age of six months. At nine months the permanent tusks are cut, and the corner permanent incisors, which often prick through the gum soon after seven months, are fairly up. At one year old the central permanent incisors take the place of the temporary teeth, and the fifth molar is also in position.

Many pigs at the age of twelve months retain the temporary incisors, and we have met with no instance of the permanent centrals being in their place before the full age of a year; hence the fact of these teeth being well up in an animal which was certified to be under one year, would be a ground of disqualification. At fifteen months the three anterior molars are permanent, and they may be easily recognized by their recent appearance and the absence of any signs of wear. At eighteen months the permanent dentition of the pig is completed by the cutting of the last molar, and also the external permanent incisors.

After this period it is seldom necessary to define the age of the pig, nor is the evidence which is afforded by the growth and wear of the teeth sufficiently exact to enable the examiner to form a positive opinion. *—A. Gazette.*

quarts of oats, two quarts small potatoes, and two quarts of corn extra every day he worked, with what hay he wanted, and a stronger, and more active horse, of his inches. I have never yet seen.

Short-Horn Bull 2d Lord Compton Wildeyes.

The Short-horn bull 2d Lord Compton Wildeyes, represented by the cut on this page, was bred by Hon. M. H. Cochrane, Quebec. He was sold at the late sale of B. B. Groom & Son, Winchester, Ky., to Mr. J. Collard, Des Moines, Iowa, for \$2,500. In color he is red; was calved Nov. 30, 1869. His pedigree is:

- | | |
|------------------|-------------------------------|
| Imp. Wildeyes 26 | by 11th Duke of Thomdale. |
| Wildeyes 24th | by Earl of Walton. |
| Wildeyes 22d | by 4th Duke of Oxford. |
| Wildeyes 21d | by Wild Duke. |
| Wildeyes 16th | by 2d Duke of Oxford. |
| Wildeyes 15th | by 4th Duke of Northumberland |
| Wildeyes 8th | by Duke of Northumberland. |
| Wildeyes 2d | by Belvedere. |
| Wildeyes | by Emperor. |

A GREAT SPLUTTER was made a year ago about a large fleece that hailed from California, and weighed fifty pounds. It was handed over to a committee who were to wash it and report. They have done both. It does not pan out very good. With the grease and dirt out there remains about twelve pounds of wool and burrs, the latter in the opinion of the committee weighing two pounds, so that of wool there remained but about ten pounds.

Berkshire and Essex Swine.

The following is the description of the Berkshire and Essex breeds as adopted by the Natural Swine Breeders' Association of the United States at their meeting at Madisonapolis:

Berkshires.

Color black with white on feet, face, tip of tail, and an occasional splash of white on the arm; while a small spot of white on some other part of the body does not argue an impurity of blood, yet it is to be discouraged to the end that uniformity of color may be attained by breeders.

Face short, fine, and well dished; broad between the eyes. Ears generally almost erect, but sometimes inclining forward with advancing age; small, thin, soft, and showing veins. Jowl full. Neck short and thick. Shoulders short from neck to muddling, deep from back down. Back broad and straight, or a very little arched. Ribs long ribs well sprung, giving rotundity of body; short ribs of good length, giving breadth and levelness of loins. Hips, good length from point of hip to rump. Hams thick, round and deep, holding their thickness well back and down to the hocks. Tail, fine and small, set on high up. Legs, short and fine, but straight and very strong, with hoofs erect, legs set wide apart. Size, medium. Length, medium; extremes are to be avoided. Bone, fine and compact. Oil, very light. Hair, fine and soft; no bristles. Skin, pliable. The Berkshires are hardy, prolific and excellent nurses; their meat is of a superior quality, with fat and lean well mixed.

Essex.

Color, black; face, short and dishing; ears, small, soft, and stand erect while young, but coming down somewhat as they get age; carcass, long, broad, deep and straight; ham, heavy and well let down; bone, fine; carcass, when fat, composed mostly of lard; hair, ordinarily rather thin. The fattening qualities are very superior; as breeders they are very prolific, and are fair nurses.

The Liver Fluke.

The "fluke" is a parasite that inhabits the gall bladders and gall-ducts of a large number of animals. It has been found in the squirrel, the rabbit, hare, dog, sheep, deer, ox, horse, elephant, and also in man. It is the most



Fig. 1.—Full-Grown Flukes.

destructive parasite that infests the sheep, causing a disorder that carries off whole flocks, when the proper remedies are neglected or unknown. The shape of the fluke is flat, oval, with a thicker conical portion towards the head, and flattening out like a leaf at the hinder part. In fig. 1 are shown some specimens taken from the liver of a sheep, and in fig. 2, young flukes from the same animal; these are all of the natural size. This creature is highly organized, and is provided with an intricate digestive and circulatory apparatus. In figures 3 and 4, is shown the in-



Fig. 2.—Young Flukes

testinal canal with the digestive organs. The mouth is situated in the conical head, and there is a second sucker below the first on the under side of the animal. Its nutriment is derived from the bile of its host. Fig. 5 represents the veins and other circulatory organs.

The sheep is the most seriously infested of any of the domestic animals. The disease caused by the presence of these animals in the liver has carried off millions of sheep in a year. In one year 2,000,000 sheep died in England alone, and many millions have died in a single year in Australia and South America. Many sheep yearly die in this country from this disease, without any suspicion or knowledge of

the cause. The disease is known as the "rot," or the "liver rot." It is caused by the obstruction of the gall-ducts by the flukes, which have entered them from the stomach. The parasites are taken into the stomach along with the food cropped in wet or marshy places, in which they pass one of the stages of their existence. If there are but few flukes, the sheep suffers little or no inconvenience from them, but if they are numerous, they choke the smaller ducts, arrest the flow of bile, and irritate and inflame the liver. The sheep suffers first from jaundice, which causes the skin and eyes to become yellow. At this stage the sheep thrives and fattens rapidly, and the yellow color of the fat of the many carcasses of mutton that are sold in the market, is due to this bilious derangement. In a short time the sheep fails, the skin and eyes become white and bloodless, a watery tumor appears beneath the jaws, the abdomen swells from dropsy, the wool becomes harsh and curly parts from the skin, and after lingering some time, the sheep dies, completely rotten, with every organ diseased. A knowledge of the natural history of this parasite teaches a simple and complete

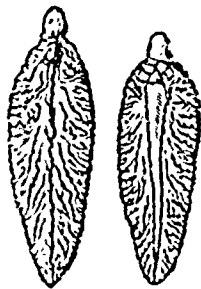


Fig. 3.—Fig. 4.—Digestive Organs.

preventive. As the fluke passes the first stage of its existence in water, the eggs voided in the dung of the infected sheep being hatched therein, it is only in wet undrained pastures, or in the neighborhood of ponds, that the sheep can take them into their system. Sheep that are pastured on dry fields are exempt. Wet pastures and meadows should therefore be drained and freed from stagnant water. Where their presence in the sheep is suspected, a cure may generally be effected by administering the following medicines, viz: 3 oz. of saltpetre, 2 oz ground ginger, 1 oz carbonate of iron, (colcothar of vitriol), 2 lbs. of salt, mixed with 6 quarts of hot water; to this mixture is added 6 ounces of spirits of turpentine, and the whole is bottled for use, in pint or quart bottles for convenience. A dose is two ounces or two table-spoonfuls of the mixture, well shaken, given in the morning before feeding; no food to be given for three hours afterwards. The dose is repeated every fourth day three times. A cow's horn open at the small end, is convenient for giving the medicine. The flukes are never found in salt marshes and near the sea coast, and a regular supply of salt is an excellent preventive in those cases where the use of low lands for pasture can not be avoided. The wide distribution of the fluke in America is now a well ascertained fact. It has been stated that it was not native to this country, and only existed in imported sheep. Last winter flukes were discovered in the liver of the hare, and in that of the deer in Minnesota, and we have examined a portion of a deer's liver, in which more than a hundred of these parasites were imbedded. Fig. 6 is an accurate drawing—half life size—of a fluke taken from a deer's liver in Minnesota, by Mr. Joseph Batty, formerly connected with the *Agriculturist*, and an experienced naturalist. Numerous other specimens were sent by him to the Smithsonian Institute, at Washington, for preservation. The fact that this parasite abounds, should be a caution to owners of sheep to be on the lookout for its appearance in their flocks. The present season having been more than usually rainy, has been a favorable one for its increase in low grounds, and

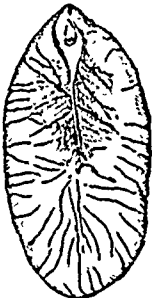


Fig. 5.—Vein System.



Fig. 6.—Fluke from a Deer.

it is probable that during the coming winter we may experience more than usual trouble from this cause. Fortunately we have an unerring and timely symptom of the disease in the absence of the usual red color at the corner of the sheep's eye, and beneath the eyelid. When the sheep seen to be ailing, and this sign is perceived, the above remedy should be administered without delay, and the sheep should have some extra nutritious food, linseed-lake meal being the best.—*American Agriculturist*.

Rain Water for Drinking Purposes.

Rain water collected from the farm buildings is not unsuitable for either horses or cattle, and with reasonable precautions, is not injurious. The sickly, mawkish taste which distinguishes it, is soon disregarded by animals in the habit of drinking it. Its brightness and purity are enhanced by keeping the roofs clean, and especially by having the spouts, heads, down pipes, and cisterns cleaned out at intervals of every few weeks. Leaves lodging in the spouts or cisterns often impart a dirty color and disagreeable flavour to rain water. To keep out leaves and other impurities, it is desirable that your cistern, whether of lead, iron, stone, or brick, be covered either with stout boards or with stone, which should be partially movable to admit of the cleansing just advised. It conduces to the purity of the water, and facilitates cleansing, if the cistern or tank has near the bottom an opening from which the turbid residue can from time to time be withdrawn.

For the conveyance of water over tolerably level surfaces, iron gas tubing of 1 or 2 inch bore is often preferred to lead piping; it is less expensive, equally durable, and not liable to give off any poisoning principle to the water. Unless, however, water stands long in leaden pipes or cisterns, unless mortar and other such rubbish which exert a chemical influence on the metal are in contact with the lead, there is no fear of its contaminating the water.—*North British Agriculturist*.

THE SELECTION OF THE BULL should be made with special reference to the wants of the owner and the style of improvement which he desires. If he sells milk, an Ayrshire or Holstein will probably be the best to cross with his stock; if he sells butter, the Jerseys; if he wants working oxen, the Devons; while for steers, oxen or cows for beef, or for general purposes, the Short horns will be all that can be desired.

THE BEST CROSS UPON THE BERKSHIRE.—The question having been propounded through one of our cotemporaries, "what is the best cross upon the Berkshire?" the questioner is very properly answered by the *Live Stock Journal* thus:—The "best cross" is to let the Berkshire entirely alone as he now is. What is his distinguished merit? Well-marbled, lean, tender meat, more suitable than that of all other breeds for smoked hams, shoulders and side pieces. Now, if you cross any other breed upon him, and especially the Essex, or Suffolk, or Prince Albert, you spoil the Berkshire for hams and bacon. These small, fine, fat breeds are good for salted side pork, but are of little value for smoked meat. Besides, does the writer of this article know how the improved Berkshire and Essex breeds were made? If not, he had best study into this subject before he writes any more nonsense upon it.

HAND-FEEDING OF CALVES.—Mr. A. L. Bradbury said, at a meeting of Maine farmers, that some years ago he took two calves from the cows at two weeks old, and put them on skimmed milk and potatoes, and fed two others on the cows until thirteen weeks old. The result was that the hand fed calves so far outgrew the others, that he had hard work to keep them from the butcher, while the others he did not want. The hand fed ones kept constantly ahead of the others, and at two years old the smallest one came in as a cow and measured more than six feet; while the best one fed on the cow was only five feet—both having had the same treatment after having been weaned. Similar results followed other experiments of a similar character, and proved beyond question the value of whey and skimmed milk for feeding to calves. Whey alone, fed to pigs, had proved that it was worth saving for this purpose.

SALT IN ANIMAL ECONOMY.—Common salt is, perhaps, one of the most valuable of the complementary food stuffs. Its presence is needed in almost all of the most valuable fluids of the body which are concerned in digestion. It furnishes the hydrochloric acid of the gastric juice, and the soda of the bile; it is needed for the conservation of the organic compounds of the blood in their normal condition, and in this way is most valuable in preventing morbid changes, which give rise to disease; it hardens, and renders the muscular and other tissues tense, and gives vigorous tone to the health and system. In this way it counteracts any ill effects that may arise from an excess of potash salts in the animal's food. The abundant presence of salt in the intestinal canal is hostile to almost all intestinal parasites; and it is also hostile to parasitic worms which it cannot immediately reach, because it gives a vigor to the health that is unfavorable to their development and existence within the body. If, instead of getting food seasoned with salt, as well as having the salt-cellar at table, to take as many punches from as we may wish for, we had to get all our salt by licking a piece of rock-salt, and if, moreover, there were several others behind us, who were impatiently pushing us out of the way, in order to have their turn at the piece of rock-salt, we think it is very likely that we should not get salt enough for our health, and that many more of us would suffer from worms than do now.—*Prairie Farmer*.

The Dairy.

How Prize Cheese Are Made.

Seth Bonfoy, of West Winfield, N. Y., says the *Utica Herald*, is a cheese-maker of long experience. He has had factories in several counties, and has studied the art of manufacture thoroughly. Of late he has been doing unusual things in the way of making cheese, which captures the judges at our largest cheese exhibitions, and sends him home with the leading premiums. For two years, at least, he has taken the first premiums at the State and the Central New York Fairs. These achievements make his method of manufacture of special interest, and we have secured from him for our readers some facts which may be of wide usefulness. We print the following as the result of an interview:

Question. At what temperature do you set your milk, and why?

Answer. I set at 82 degrees, because I believe the whey separates more freely, the curd handles with more life, and in the end makes more cheese than when set at a higher temperature.

Question. Do you vary the heat of setting at different seasons of the year, and why?

Answer. I set slightly higher in the spring and a trifle lower in the fall. The separation is more tardy as the season advances.

Question. What rennets do you use, and how do you prepare them?

Answer. Patrons' rennets. I prepare them for use by soaking twelve hours in warm water, at 98 degrees. Then take them out and salt the liquor to keep. The skins are re-soaked in the same manner.

Question. How do you judge when to break the curd?

Answer. I break the curd a little before it will cleave before the finger.

Question. How do you break the curd and make it fine?

Answer. I cut with Young's perpendicular curd knife, lengthwise and crosswise carefully, and then handle with hands carefully, while warming until the curd is sufficiently fine. Careful cutting and handling adds to the weight and character of the cheese.

Question. How much time do you occupy in breaking the curd?

Answer. I am governed altogether by the condition of the milk in its keeping qualities. If it is old I warm carefully and constantly until it reaches 95 or 96, and do not venture too far.

Question. Do you have any rule as to the time when you begin to apply the scald, and the time occupied in raising the heat?

Answer. I have none but judgment. The curd should be properly matured at a medium low temperature. The time occupied depends upon the slowness or rapidity with which it matures. The heating should always be slow and careful, and the curd should be carefully and constantly handled while raising the heat.

Question. How high do you scald, and how long do you cook the curd?

Answer. I scald to 98 degrees, and the time taken varies from fifteen to sixty minutes. In the spring I heat slightly quicker and slower, as the season advances, especially in the fall.

Question. How do you tell when the curd is scalded enough?

Answer. By my judgment of the appearance of the curd.

Question. What are the concluding steps of the handling of the curd?

Answer. I draw off the whey with a siphon, forming a channel in the centre of the curd, elevating the vat slightly at one end. When the curd is thoroughly drained, I grind it with one of Jones & Faulkner's curd mills, and salt immediately. I use three pounds of Syracuse dairy salt to the 1,000 pounds of milk, stirring in the salt thoroughly. I then put to press immediately in a luke-warm condition, believing it closes more perfectly. I press twenty-two hours with Frazer's gang press.

Question. How do you secure a perfect rind?

Answer. By perfect manufacture. I rub the faces of the cheese with a strong alkali, colored slightly with annatto. This is done when the cheese are taken from the press, and they are allowed to stand until dry before dressing. I use whey butter for greasing. It is made by thorough trying out the whey cream until completely separated. It is applied quite warm.

The above facts of Mr. Bonfoy's methods, of course, contain many items which are well known to many cheese-makers, but some of the ideas advanced are deserving of a careful consideration. The whole practise will prove valuable and suggestive to our readers in the new regions where cheese-making processes are just now of greatest value.

Wintering Dairy Stock.

Over-feeding is, perhaps, the most serious error of wintering stock under the old or common system. It has been supposed that an animal would eat only what nature requires; consequently the general rule has been, in feeding ruminants, to give them all they would eat, without regard to its fitness or quality. In feeding late-cut and very ripe hay, the food constituents of which have in great part been changed into almost indigestible cellulose, it might require all, and even more than an animal could be induced to eat, to keep it in condition. It is no uncommon occurrence, in the experience of stock-keepers, that strong, healthy animals lose flesh when fed upon poor hay alone in un stinted quantity. Animals thus treated acquire the habit of stuffing themselves very full; in fact, they are obliged to do so in order to obtain sufficient nutriment.

But change from poor hay to that cut in the first blossom (the very best time in point of economy for cutting grass), one pound of which is worth for feeding at least two pounds of that which is over-ripe; the animal relishing it much better, will eat even more, if possible, than of the poor hay; consequently she may have more than twice the nutriment she had formerly. If her digestive capacity were unlimited, so that the added nutriment would add so much to growth or the accumulation of flesh or fat, the error would not be so serious; but here comes in the important fact upon which my system of wintering stock is founded—an absolute limit to the digestive capacity of the animal. If that is exceeded, there is not only waste in proportion to the excess, but the system becomes clogged, and in the very nature of things, seriously deranged.

But suppose that in the place of the early cut hay, we feed timothy or aftermath, which, pound for pound, has twice the value in food elements of the former, (if cut when not over six or eight inches high,) and what utter folly to allow the animal all it will consume of this rich food! Some new milk cows, whose lacteal glands are very active and well developed, might possibly consume it without much waste; but it is safe to say that not one cow in one hundred could do it. Yet many dairymen are in the habit of feeding their cows all they will eat the year round, regardless of the fact that as the flow of milk naturally decreases, the capacity of the lacteal glands to convert the constituents of food into milk, is diminished in proportion, and even when the cow is dried off, they go on feeding at the same rate, not considering that half her digestive powers are dormant.

The question for every man who keeps a cow to study, is not how much hay or grain, as the case may be, she will eat; that is easily determined by placing the food before her, but how much can she assimilate without waste? If she has recently dropped her calf and is giving, we will say forty pounds of milk daily, she will require more than twice the succulent food that would serve her if dry; if she has been in milk, say six months, and her flow of milk is reduced one-half, about one-third less will supply her wants; if she is dry and is treated according to the rules laid down in my pamphlet on meal-feeding, the amount of nutriment required to keep her in condition is surprisingly small. I use the word nutriment, not hay—not woody fibre, so much bulk, or so many pounds, but actual nutriment, susceptible of ready assimilation. This is just what the whole animal kingdom, man included, want and must have, in order to live and thrive. Nature gives a capacity to assimilate in proportion to those wants, but not in excess of them. In feeding meal under my system this digestive capacity is easily ascertained and no loss occurs.—*L. W. Miller, in New York Times.*

Is Pasturing Exhaustive?

Writers upon Agriculture, says the *New York Times*, whether they be practically acquainted with their subject or not, are given to greatly enlarge upon the exhaustive effects upon the soil of raising wheat and other grain. The annual removal of so many bushels of grain from every acre is made the basis of a calculation as to how soon every farm in the country will be brought to a condition of barrenness and every farmer to destitution. To a certain extent this is true, and no good or intelligent farmer needs to be told so plain a truth. But few persons take any thought that the remedy proposed for this supposed evil, is equally injurious to the soil as the evil itself. Along with the remonstrance comes the advice to raise stock, to pasture cattle, or to substitute dairying for fruit growing. Dairying is the favorite alternative. Grass is not exhaustive of the soil, and may be grown indefinitely, we are told, without injury thereto, if not with positive advantage. Now, there are a few facts which bear upon the question which are very pertinent and useful to study. We all admit that a crop of wheat taken from a field and

solidly away to be consumed in some distant place, necessarily takes from the soil certain elements of absolute necessity to its fertility. The continued growth of crops must in time remove from the soil all these necessary elements that it may contain, the exhaustion of the richest of soil being thus only a question of time.

But if we estimate the effect of the removal of a certain quantity of grass, or its product in milk, in the same manner that we estimate the effect of the wheat crop, we shall find very little difference. Nay, we shall find the average yearly product of a cow in milk actually takes more from the soil, and of the same elements, than the average crop of wheat does. If we compare the mineral constituents of twenty-five bushels of wheat, which is a fair crop from soil that would produce 2,500 quarts of milk to the acre, with those of this quantity of milk, we have the following result:

	In 25 bushels of wheat, (grain), lb.	In 2,500 quarts of milk, lb.
Potash	9.047	8.100
Soda	1.056	2.117
Magnesia	3.759	7.590
Lime	.961	5.987
Phosphoric acid	14.315	9.806
Sulphuric acid	.745	.105
Silica	.527	.125
Chloride of potassium	...	4.896
Chloride of sodium	...	1.639
Total mineral elements	31.163	40.965
Nitrogen	50.900	32.120

Thus of every valuable element of the soil the crop of milk is more exhaustive than the crop of wheat. The dairyman who every day, for half the year, carries to the factory, or ships to the city, six cans of milk, exhausts his soil more than the farmer who sells 500 bushels of wheat each season. If, then, the farmer is compelled to return some equivalent to his soil for the wheat removed, that he may keep his farm in good condition, equally must the dairyman return to his meadows an equivalent for the draft he makes from them in the shape of milk. The manure from his stock alone will not be sufficient, unless he feeds them purchased grain or other food rich in nitrogen, phosphate of lime, and potash, or add these to the shape of wood ashes or potash salts, and superphosphate of lime or bone-dust.

Dairying, then, can only be carried on at an expense to soil equal to that of growing grain, and it is a mistake to suppose that we can congratulate ourselves upon the steady increase of this industry as an escape from the exhaustive effects of grain farming. If dairymen should be led to suppose that their fields may be pastured indefinitely without injury to their fertility, they will fall into a mischievous error. The relief from the heavier labor of growing grain will be dearly purchased if the meadows are pastured from year to year without frequent top-dressings of the needed fertilizers or of manure enriched with purchased food. It may be, and to some extent undoubtedly is, owing to this unexpected exhaustion of meadows by pasturing that many farmers find them to fail prematurely, and are obliged to break them up and reseed them with the hope to restore the herbage which they think has "run out."

PACKING BUTTER IN BRINE.—This is how they pack butter in California. They take a sack made to fit loosely in the barrel, half-barrel, or other package, as the case may be. The butter is pressed into little oblong sacks, something like those in which table salt is sold. It is then packed within the sack, in the barrel, headed up, and the package is then filled with strong, pure brine. Thus it may be carried long distances by sea, and will come out sweet and good.

SHORT-HORNS AS MILKERS.—In support of our assertion that the Short-horn cross is the best for the dairyman we would cite the fact that the Yorkshire cows have always brought the highest prices in the London market, surpassing the Ayrshire and other milk breeds, because when dried off they pay rapidly in beef for fattening. As the country becomes more thickly settled, our western breeders will pay more attention to the milking qualities, and as the original Teeswaters were extra milkers, this quality can be readily brought back where it has not been too long neglected.—*Bailey's Reporter.*

THE SCHOOL OF CRUELTY.—So long as milk cows are kept during the winter out doors and fed on straw and hay, we shall have neither a good breed of cattle nor of men, for humanity and civilization go together. Where cows are fed a quart or so of bran, which is poured on the ground, while the milker stands at arm's length and milks into a pint cup, as is the case in this half of the United States at least, the schools are poor, a large part of the people cannot read, and spooks and ghosts travel around at nights and often in the daytime. Where cows are kept in comfortable stables, and are so well fed that their eyes bulge out, there are good schools, the family has plenty of bed-clothes, there are apples in the cellar, and the children like to read history almost as well as novels. In such places the girls are not likely to marry drunkards, nor the boys slatterns.—*Nicarber in N. Y. Tribune.*

Veterinary.

Disease of the Organs of Respiration in the Horse— Catarrhal Fever and Sore Throat.

During the past month or six weeks, the horses of Canada have again been affected with a mild catarrh and sore throat, somewhat similar in character to the disease which originated in the district of Toronto, and very soon spread over the Northern Continent, in the fall of 1872.

The disease at that time created a great deal of excitement and alarm, and owing to the severity of the attack in many cities, a great deal of inconvenience and loss was sustained from many horses being unable for work.

The disease in question was then generally known as catarrhal fever of an epizootic character, and was technically designated "The Epizootic." This season the same name has usually been applied to it. The present outbreak has generally proved of a very mild character, and when horses have been moderately worked and otherwise well cared for, they have suffered but little.

The exciting cause of the malady is no doubt atmospheric influences. In the beginning of September, the temperature was extremely variable, and at that time the respiratory organs of the horse are exceedingly liable to become affected by sudden changes in the weather. The disease appears suddenly, and one of the first noticeable symptoms is a dry husky cough, easily excited by pressure upon the throat, or when the horse comes out of the stable. The pulse is quickened and weak, the coat dry and staring, the appetite more or less affected. In the course of twenty-four hours, a slight watery discharge comes from the nostrils, which discharge gradually increases. The lining membrane of the nose is reddened, the breathing is very slightly increased, and the temperature of the extremities is somewhat changeable. In more severe cases, rigors or chills are noticed, more especially after drinking. And, now and then when animals are greatly exposed and abused, the lungs become involved, when the characteristic symptoms of lungs diseased are specially developed. The breathing then becomes very much quickened and oppressed, the pulse is quick and also oppressed, the ears and limbs are cold, and the mouth hot and clammy. A general movement of the flank can be easily perceived, the appetite fails and the horse generally returns to the standing position.

The prevailing epizootic is easily treated, the horse may be kept at his usual work, if not too hard. He should not be allowed to stand for any length of time exposed to cold or draughts. He should be allowed, once or twice a day, some cooked food, such as boiled oats or barley with bran. If there is much discharge from the nostrils, the nostrils should be sponged frequently with tepid water, but steaming the head should not be resorted to. Stimulate the throat externally with mustard or any mild embrocation, and give a few doses of chlorate of potash.

A termination of the prevailing disease has been what is technically termed *purpura hemorrhagica*, when the limbs begin to swell to a great extent, the breathing becomes greatly increased and little red patches appear on the mucous membrane of the nose. The lips also swell, and the swelling soon extends to the nostrils and head. A bloody discharge issues from the nostrils, the swelling of the limbs continues and not unfrequently a swelling appears under the breast and belly and along the neck. It is with the greatest difficulty the poor sufferer can be made to move. Matter will also exude from the heels and hocks, and the nostrils swell to such an extent as to seriously interfere with respiration. When it assumes this condition the animal becomes a pitiable looking object.

CLACKING AND OVERREACHING IN HORSES.—I have found a most effectual mode of treatment, viz: to shorten the toe of the hind shoe and raise the heels of the hind shoes to nearly an inch. This takes the ground sooner in the horse's stride and consequently brings the toe to the ground before it reaches the forefoot. To prevent the weight being increased, the extreme heel of the shoe may be reduced to half the usual width and eased with steel to prevent its wearing too rapidly. The front shoes will require no alteration.—*J. F. W., Exeter, England.*

Malignant Anthrax.

As this disease is raging so near us as New York State, the following particulars about it, from Clater's "Cattle Doctor," will be read with interest:—

CARBUNCULAR ERYSIPELAS (*Erysipelas carbunculorum*), *Anthrac of the Extremities*: known in the vernacular as *Black Quarter, Quarter-Evil, Quarter-III, Joint-III, Black Leg, Speed, Hasty, Puck, Shout or Shoot of Blood, Inflammatory Fever of Youatt; Miltbrand emphysem of the Germans; Charbon of the French.*

This disease is called by a great number of other names; but as they all indicate the same disorder, it would be of no advantage to the reader here to repeat them.

The symptoms are in many respects similar to those of the murrain or pestilential fever, described in page 133. It is, however, highly necessary to discuss this malady in a separate section, as it does not appear to be either infectious or epidemic, but is almost wholly confined to young cattle from one to two years old. The quarter-evil chiefly affects such as are in the best condition. Milch cows, or lean cattle of all descriptions, are seldom seized with this disease, and during the winter it is not known. The summer season is the time when it makes its appearance, and very often proves destructive to great numbers of young cattle in different parts of the Kingdom. When the vegetable creation springs up in all its perfection, the young animals are not able to stand against such luxurious living, particularly those which have been much reduced by bad keeping and scanty food during a long and severe winter.

The cause proceeds from a redundancy or overflowing of the blood, which is very great, and frequently occasions them to drop and die suddenly in a state of putrefaction.

The symptoms are a sudden depression of the whole animal frame, as if seized or struck with the palsy. A swelling takes place immediately in some part of the body, as on the legs, shoulders, under the belly, or on some part of the back; when it is on this last part toward the loins, it will be attended with the most danger. It is first discovered by the crackling noise made by the swelling when the hand is pressed upon it, and owing to a quantity of air being collected between the skin and flesh. The mouth and tongue are full of blisters from the violence of the fever.

Carbuncular erysipelas is very common among calves throughout Britain. It is the "Black Spauld" of young sheep. It rarely appears in animals of mature age, the system being then proof against the morbid conditions which produce anthrax.

Nature. Extensive sub-cutaneous extravasation, as well as general infiltration of blood and lymph beneath the skin, &c., and ecchymosis as a result of blood poison.

Symptoms. All the forms of anthrax are remarkable for the paucity of premonitory signs, except as far as the condition of plethora is concerned. Usually, the first intimation is the discovery of one or more dead carcasses in early morning. When opportunities for observation occur, the signs are as follows: Costiveness, frequently attended with bloody stools (*proctorrhœa*); deficient and highly-colored urine, slight excitement, protruding eyes, and injected visible membranes; hot mouth, slight frequency and fullness of the pulse, and accelerated respiration. These constitute the *first stage*, and are seldom noticed.

Second stage. Lameness or stiffness is now added to the previous signs. Respiration and circulation are notably disturbed, the pulse being full and rapid. The head and neck are protruded, eyes bloodshot, appetite lost, intense thirst, urine darker in color, and the creature stands gloomily away from all his companions. Lameness increases every hour; other signs also rapidly suffer aggravation, and the animal utters low moans, particularly when disturbed. Diffused emphysematous swellings (containing air) appear upon the sides, quarters or extremities, which crepitate, or crackle like tissue paper, when the hands are pressed over them.

Third stage.—The power of standing is lost, breathing difficult, pulse small, feeble, or imperceptible; swellings have increased, and the sufferer lies upon one side with outstretched neck, stomach painfully distended with gas (*Hoven*), tongue protruded, eyeballs retracted and covered by the jaw (*morvana nitibus*). The ears, horns and extremities are cold, and insensibility (*coma*) and death speedily follow, the whole train of symptoms frequently terminating within twelve hours.

In protracted cases the animal continues for several days, when opportunity is thus given for the swollen parts to slough extensively, and smaller spots to appear on the tongue, buccal and other membranes, which at first form apparent blisters, and afterwards slough, exhibiting very tardy healing powers.

Post-mortem Appearances.—Emphysema (air) in all available spaces, as beneath the skin and membranes, between muscles and in all closed cavities, as a result of early and rapid putrefaction, by which the abdomen is greatly distended. Black exudations of blood form extensive patches, which may be confined to one limb or quarter. Similar exudation also occurs between muscles which are more or less gangrenous, and the vessels of the locality in a state of extreme turgescence; the blood, however, being dark and fluid. The lungs are congested, one, the lower, being always the worst; frothy mucus

always fills the bronchial tubes, extensive ecchymosis covers the serous membranes, and free transudation occurs beneath this covering in many organs; the heart is soft, flabby, and filled with blood that is black and semi-fluid, and numerous blood-stains are seen, formerly believed to be an evidence of inflammation. Cadaveric rigidity is slight, and observed only immediately after death.

Treatment.—The great secret in diseases of this kind is to limit or destroy the power of the operating cause. Every possible precaution cannot be too strictly adhered to in preventing so destructive a disease among young cattle, for, if once attacked, their cure may be doubtful. Such as thrive most are in general first attacked, and in the greatest danger. As soon as this disease makes its appearance upon any one of the herd, while in the pasture, let them all be brought out in the evening into a fold-yard, when from two to three quarts of blood may be taken from each, according to its size, condition and strength. Let them be kept there till next morning, and then give to each beast one of the following drinks:

Take of crude antimony in powder.....	1/2 oz.
Brown sugar candy, and nitre in powder, of each.....	1 "
Myrrh, in powder.....	1 "
Flowers of sulphur.....	2 "

Mix for one drink. This drink must be given fasting in the morning, in a quart of warm gruel; two hours after the beasts may be turned into the pasture. Or the following may be given, if thought more proper:

Take of nitre and madder, of each in powder.....	1 oz.
Alum in powder and flowers of sulphur, of each.....	2 "
Treacle, table-spoonfuls.....	4 "

Mix for one drink. This must be given in a quart of warm gruel and a wine-glassful of common gin added to it. Two or three of these drinks, with bleeding, are in general deemed sufficient to protect them against the future approach of this disease, if given every third morning. By adhering to the treatment laid down as above, the disease may not only be cured, but its ravages may also be prevented.

THE EPIZOOTIC.—This is what Adromlac Murray recommends as treatment for horses that have the epizootic influenza. The best remedy for the epizootic is to feed the horse with soft food, blanket warmly, bandage his legs loosely, give him two or three table-spoonfuls of ginger in his feed morning and night, and keep the horse doctor of the neighborhood at least half a mile off. If your horse dies under such treatment send the bill to us, and we will think it over!

BLOAT OR HOVEN.—Solutions of ammonia are commonly administered in France as a remedy against distension among ruminants. The accident is most prevalent during the season of young and succulent forage. The difficulty hitherto has been to enable the ammonia to reach at once the paunch, and so combining with the carbonic acid gas, the hoven, reduce the distension. M. Salles has patented a trocar, having at the end an India-rubber ball filled with the solution and communicating with the trocar by means of a cock; when the trocar is inserted in that part of the animal formed by the targe and abdomen, the ball is pressed, the liquid enters the stomach, and the inflation at once disappears; the gas can even be let off by the trocar. The animal has only to be kept on a low diet for a few days till the little wound heals.

REMOVING THE TAIL. Mr. McCormick's colt has a habit of rubbing the tail. What will stop it? "Soap and water," he says, "are useless." He probably suffers from worms. Clear out the bowels by giving a pint of raw linseed oil, with an ounce of oil of turpentine (half the above for a two-year-old, or one-quarter for a yearling), and follow this up by giving every morning fasting two drams sulphate of iron, two drams santonicum, and five grains arsenious acid for six days. Follow this again by a dose of oil. It should be added that it is often impossible to rid a horse of the most common species of the pin-worm, as the immature worms inhabit small sacs in the mucous membrane and even the interior of the blood vessels. The symptoms therefore may re-appear and require renewed treatment a short time after the intestines have been cleared.—*New York Tribune.*

THRUSH.—The present stoppage of thrush is seldom difficult, but to prevent its recurrence is not so easy always, for the part, having once taken on this morbid action, easily falls into it again. Almost all active astringents will check the suppurative action of the vascular frog, as cold saturated solutions of white, green, or blue vitriol, alum, common salt, &c. A mixture composed of one part finely powdered white vitriol (sulphate of zinc), with four parts of pine tar, is one of the best applications we know of. Before the introduction of this preparation, the frog should be carefully inspected, and all decayed parts removed, so that the introduction of the mixture may be facilitated, and the dispositions to harbour filth and moisture prevented. The whole frog may then be smeared over with the mixture, but more particularly a small piece of tow should be charged with it, and, by means of a small wooden spatula, pressed to the bottom of the cleft of the frog, and also every other fissure that may exist. The dressing should be repeated about twice a week.

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

New subscribers who send in their subscriptions previous to the issue of our next month's number will receive that number as well as the volume for next year.

CANASSING 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, OCTOBER 15, 1875.

Work for November—December.

The season of hurry and hard work is over. One job is not now crowding another. The farmer has leisure to think over the successes and mistakes of the past season, and to make notes of what to repeat and what to avoid. There is still plenty of work to do. There is never any need, as far as farmers are concerned, that Satan should be troubled looking up his proverbial remedy for illness.

The past season has been emphatically a good one for Canadian farmers. Taken all round it is questionable if it will not excel all former years. The outlook for prices is also good. The English wheat crop is turning out much worse in quality than has been anticipated, while the United States Department of Agriculture puts the wheat crop on the other side at only eighty per cent. of last year's crop, and at fourteen per cent. below it in quality. The fall wheat has suffered from the continued low temperature of the last month, both in Canada and the States. It will not go into the winter in nearly such good condition as it was in at this time last year.

Barns and cellars should be well banked before frost shuts down on us. Cracks and crevices in the walls should be chinked or otherwise stopped. Loose boards should be nailed up and open cracks boarded over, windows and doors fixed properly. Every hole represents so much heat wasted—so many cords of wood extra to haul and cut—or so much fat gone from the cattle. Be satisfied that the cellar and root-house are frost-proof. A good coat of whitewash before they are filled will be found profitable.

The roots and potatoes will be all stored and protected from frost by this time.

Opportunity should be taken of all open days to push through the underdraining. See that surface drains are made among the fall grains in all places where water stands or is likely to gather in the spring.

Stacks should be inspected and, if not in the best order, should be rebuilt, so that the wind and rain can be resisted.

Outdoor painting can be done cheaply and with comfort at this time of the year when there are no dust and insects going, and the cold is not so severe as to make all one's fingers seem like thumbs.

House all the implements and protect them from the weather. Reapers, mowers, grain drills, ploughs, etc., do not grow on gooseberry bushes. Many farmers lose in ten years by neglecting their implements as much money as they earn in a whole season's work. Give all bright surfaces a coat of kerosene. Paint all woodwork. Plenty of indoor work can be found for stormy days at this kind of work and at repairing harness, grain bags, etc. Hay-forks, spades, shovels, rakes, hoes and small tools should be looked up before snow comes. Taking proper care of his tools is as good an indication of a thrifty farmer as neat and efficient fences.

It is well to have the tools stored in a separate building from the barn. The barns are the buildings which are most frequently burnt down, both by accidental fires and fires kindled in malice. The loss of a barn and its store of crops will be less crushing if the tools have been saved, and an immediate outlay to replenish them is thus avoided.

Some are inclined to believe that fall ploughing is not good. Don't believe them. Plough up all the stiff land that you will want to seed next spring and let it have the full benefit of the pulverizing frosts.

This is the best time of the year to put up spouting' build cisterns, clean out old cisterns and wells, etc. If you have not got a never-failing stream at hand, it will pay to spout all the barns and sheds and conduct the water into underground cisterns.

The fattening animals should be finished off as quickly as possible. The colder the weather, the more food is lost in keeping up the animal heat which remains at the same point all the year round, and has to be supplied as fast as the surrounding air removes it. The animals that are going to be kept over the winter should go into the winter in good heart, or spring will find them in sorry plight. The magnificent root crops this year will convert many a farmer from the notion that "roots will not pay." Many farmers will have roots to sell this year that before have never had enough for their stock.

Horses and cattle frequently suffer in the winter from the ammonia given off by their manure in the stable. Their eyes become inflamed and sometimes they go quite blind. It is easy to prevent this. By sprinkling plaster around, the ammonia is fixed, the trouble prevented, and the manure made more valuable. The manure should not be allowed to be under the horses' feet, as it brings on cracked hoof.

Give constant attention to the milch cows during winter. No animals feel neglect and show the effect of it so quickly. If exposed to cold, the milk decreases, and condition falls off. Hay or chopped cornstalks, mixed with meal or bran and steamed and served up warm, will make them feel good. Give them as much variety in food as is practicable. Let them have exercise on all bright, comfortable days. Give them good beds, comfortable quarters, regular feeding, watering and salting, and their looks will thank you.

Sheep want good care and warm quarters, being animals of very low vitality. Roots and grain, as well as hay, should be fed to them. The period of gestation being about five months, those ewes which are to lamb in April should be served now.

Swine should be finished off and killed before cold weather comes, or they will waste in fat. Those that are kept will want warmth. Feed to them now the class of food that will not keep much longer, such as damaged apples, potatoes, etc. Swine should have a deep bed that they can burrow under. Breeding sows and young will want extra care. Don't try to keep more than you are sure you can carry through. If pigs are wanted in early spring, the sow should be put to the boar now. In no stock is the use of a pure male so profitable as with swine. The increased value of the first litter will often pay for the boar. To get the best value from them, they must be well-fed.

If you have any doubt about the sufficiency of your food for the stock you have, sell part of your stock now, while it is in good condition. This will save giving it away when it is half dead of starvation three months hence, and will save the food that it will take to half-starve it.

Provide plenty of blanketing for the horses, and repair that which is holey. If the horses get wet, rub them dry before leaving them. Use the brush and curry-comb regularly. Their use stimulates the skin, and promotes healthy secretions.

Evergreens and hardy shrubs may be planted till the ground freezes up, but do not plant when the soil is partially frozen. All plants in the ground, not thoroughly hardy, should be covered with straw, leaves, boxes, matting, or some such thing. If they will stand bending, bend down roses and cover them with about three inches of earth. If too rigid, wrap them with hay or straw.

Lay down grape-vines, and cover them with about three inches of earth. The hardiest vines are better for being so served.

Protecting orchard and other trees from rabbits and mice cannot be delayed longer. Practical directions were given in last month's CANADA FARMER.

Collect all the dead leaves possible. They are valuable for making manure, mulching, and other purposes.

The woodpile should be covered in and it will add much to the comfort of those who have to fetch in the wood, if the way to the pile from the house is also covered.

Provide yourself and family with entertaining and instructive reading for the winter nights. If you have a

neighbor to whom you wish to do a service, and who is not already a reader of the CANADA FARMER, oblige us by telling him your opinion of this journal.

Reform Needed in the Sale of Live Stock.

A feeling seems to be springing up among Canadian farmers, in several sections, in favor of instituting periodical sales of stock at local centres. In England, local auction sales of stock are now the means by which nearly all the fat animals pass into the butchers' hands. The sales are held by auctioneers of local repute, weekly, fortnightly, or monthly, according to the extent of the district tributary to the local centre, and its capacities for furnishing stock enough to make the attendance of buyers from a distance profitable. The places of sale are mainly those having good railroad facilities, so that stock can be readily movable by the purchaser, either by rail or road.

The present system of selling fat-stock is open to many objections—the principal one, perhaps, being the loss of time in haggling over the price. This is a business which is distasteful to many farmers, and they would be glad to be quit of it. Then, again, it is no disparagement to farmers to say that, as judges of live stock, they are inferior to the dealers. The latter have frequently devoted their whole lives to studying the points of animals. They are constantly handling stock, and can frequently guess nearer the correct weight of an animal than can be told by inferior scales. The young farmer, especially, is now at a disadvantage, for a keen dealer knows as much of human nature as he does of the weight of "critters." Then, again, the farmer not only loses his own time, but has to pay for the time spent by the dealer in beating him down. The dealer's time is his money just the same as the farmer's time is his money. If the two parties haggle and split hairs for half a day about the price of a fat cow, or four or five sheep or hogs, so much the more profit has to be got by the dealer. If a sale is effected, at least one party is mad because he had to yield. Probably both had to yield, and both are correspondingly mad. If a sale is not made, each is worried because he could not beat the other. In fact, the whole thing is unsatisfactory.

At an auction sale of stock, now, things are on a different basis. There are the animals, and, if the dealers want to buy, they buy. And other dealers are competing against them. Their skill in drawing the wool over the farmer's eyes avails them nothing; for bidding against them are other dealers just as wide-awake as they. Purchasers at a sale can give more for a beast than they could if they had to go miles into the country on an uncertainty. The younger buyers, too, are more on an equality with the experienced dealers. It will pay a new hand to go on bidding after the old one has retired from the battle. The expense to the farmer need be but trifling. About one and a half cents on the dollar should pay the auctioneer for all his advertising and other expenses, and leave him a good sum for his trouble.

For these and other reasons, we think that the system of periodical stock sales at central points will soon become universal in the Dominion. It should also be kept in sight that a live-stock trade with England is one of the near probabilities. The cattle for this trade will be necessarily bought in lots. If the trade should develop to the extent it promises, stock auction sales will become indispensable.

Any person that is known to the farmers of a district to be a trustworthy man, and who has some knowledge of stock, can set this reform on foot. It may not be any great shakes at first, but success is sure to attend him, if he will persist for awhile. When the auction sale system is once started, its convenience will be found so great that both farmers and dealers will wonder why they have put up with the present system so long.

CANADIAN FARMERS who have a hankering after sunnier climes, Kansas for instance, should ponder over the fact that, among other blessings too numerous to mention, fever and ague is so common in that earthly paradise as to be the staple subject for jokes. Paragraph from a Kansas paper:—"If to-morrow is not your chill day, we want you for judge in the ring," is a very common expression of the officers of some of the fairs.

Mr. Lawes' Estimate of the British Wheat Crop.

Mr. J. B. Lawes, the great English experimentalist, has written his annual letter on the result of his year's wheat culture. He has several plots of ground, selected and differently manured, that have grown wheat for thirty-two years in succession. The crops on these plots have been found in former years to have been reliable guides upon which to estimate the total crop of Great Britain. The average yield of the plots this year has been only 21½ bushels of 61 lbs. per bushel. This is 23 per cent. below the average crops on those plots.

The population of Great Britain and Ireland consume on an average, 5½ bushels per head, and the number to be fed is close upon 33,000,000. The total quantity of wheat required during the year is 22,666,000 quarters (a quarter is eight bushels).

This year, the area under wheat was somewhat smaller than the average. Mr. Lawes' experiments, as above, indicate that the crop is 23 per cent. below condition; but, as Ireland and Scotland and the North of England did not suffer from bad weather so much as the remainder of England did, Mr. Lawes estimates that the crop of the entire Kingdom will turn out to be from 18 to 20 per cent. below an average. Deducting 1,000,000 quarters for seed, this will leave the net crop at 9,000,000. On this assumption there would be required about 13,666,000 qr. to be provided from stocks of old home and of foreign wheat in hand at the commencement of the harvest year and from imports during the year.

The stock of wheat on hand in England is estimated to be somewhat large. An import of 9,000,000 quarters would have been sufficient; whereas 11,750,000 quarters were actually imported.

Vegetarianism vs. Intemperance.

We believe in every man having at least one hobby, and in allowing him to ride his hobby to death if he choose to do so—and many men are apt to do it. Dietetic reformers, for instance, who are necessarily enthusiasts, are addicted to going to extremes, and to running their cause to death, by indiscreet advocacy. And if they practise their notions with as much virulence as they preach them, they sometimes run themselves to death also. Dio Lewis may be mentioned as an awful example. For many weary years he has preached Brown Bread and Living by Rule to our neighbors over the line, and now, what is he? Why, he has become the great American Dyspeptic, and suffers from indigestion in one of its most uncomfortable forms.

Of all dietetic eccentricities, probably, Vegetarianism is most rampant and most easily ridden to death—that is, to the rider's death. Of late years, as is not to be wondered at, the public interest in Vegetarianism has flagged. To keep themselves before the people, the Vegs. now advance the notion that their hobby and intemperance cannot exist together. Utter nonsense, surely, for do not the Hindoos, vegetarians mainly, have their chag and arrack? And do not they drink themselves into a state of beastly intoxication?

Alcoholism is a great evil—probably the greatest evil under which civilization travails—but Vegetarianism is powerless against it. On the other hand, the CANADA FARMER believes that Vegetarianism is very easy of cure. Let any person suffering from it hire out on a farm for a year. He would soon find his stomach petitioning for a stronger diet than vegetables.

Against the Use of Paris Green.

EDITOR CANADA FARMER: Paris green is a virulent poison, and each year brings a crop of serious and fatal accidents, from its careless and criminal use. Our laws wisely restrict the sale of poisonous drugs, but it is very strange that the most respectable old farmer cannot buy a scruple of chloroform to cure an aching tooth, without an order from an M. D., while any tatterdemalion, without let or hindrance, if he has the money, can buy as much Paris green as would kill every man, woman, horse and cow in a township, and from the facts of its being so common, the facilities for its criminal use are many, and the chances of detection correspondingly few.

Although it has been in use for several years, and although "men and papers" have not been sparing in

recommendations and directions, yet much ignorance prevails as to its properties, and as to the proper quantity to be used; this ranges from 1½ to 14 lbs. per acre, 9 lbs. per acre being a common application. Seven pounds per acre is often applied over large fields, while the larger quantities mentioned are usually applied to small garden plots.

In cases when rain falls soon after an application has been made, it is repeated, and in this way I heard of one case where eighteen pounds per acre were applied during the season. Yet for all this, beetles enough were perfected to infest the field the following season. In fact it is quite certain the beetle is increasing, which proves Paris green to be practically a failure.

The old adage: "Set a thief to catch a thief," may be changed, with greatly enhanced force to "Set insects to destroy insects." Every student of entomology knows something of the force and value of the fact, that the best and cheapest method of destroying injurious insects is to aid the increase of their insect enemies, and by importing from foreign countries species likely to attack our native pests.

The obvious impropriety of killing Doryphora larvæ is apparent from the fact, that it is while in the larval state that insects are mostly destroyed by insects, and so in killing one insect enemy you may kill fifty friends more interested in Doryphora flesh than yourself, and who in a couple of seasons would have destroyed more "bugs" than would a wagon load of Paris green.

Besides killing insects useful in destroying "the bug," Paris green kills scavenger insects useful in feeding on decaying animal and vegetable matters, which would otherwise result in offensive and noxious gases.

We in Ontario should be slow to differ from so eminent an authority as C. V. Riley, seeing that our official reports are so largely copied from him. Yet I feel quite certain that even Riley will say that fourteen pounds per acre per annum is a dangerous quantity.

Toronto.

W. BROWER.

Patrons of Husbandry.

EDITOR CANADA FARMER:—The unprecedented success of our Order which now numbers two hundred and fifty Granges, with a membership of nearly fourteen thousand is such that must inspire in the mind of every Patron feelings of pleasure and satisfaction. We are now standing upon a firm foundation, a foundation supported by fourteen thousand of the agriculturists of Canada, whose hearts are in the cause. Our principles are before the people, we ask for them a careful examination. We are established for a purpose; and that purpose is to advance our interests, and at the same time the interests of all mankind.

As agriculture is the rock upon which the business of the country is built, it requires no argument to prove that whatever will be of advantage to the agricultural class will be of equal advantage to all others.

The farmers of Canada are now on trial; the question is now to be solved, Are we able to discuss and master the questions which are so closely connected with our social and material advancement? Can we as tillers of the soil increase our profits and multiply the rewards of labor, by organization and co-operation? Can we improve our social and intellectual capacities by the opportunities thus afforded for a more frequent interchange of ideas and opinions, and the noble influence of a fraternal organization? These are questions the future is to settle, and under such favorable auspices as are now before us, the experiment can not fail—must not fail. The noble structure which we have reared will stand for ages, and under its shadow will be seen the ripened fruits of our labors. But to accomplish these great results we need the untiring energy, the unabated zeal, the hearty co-operation of all our members. And with this the Grange will be a power to be felt.

The past we will leave; the future is in our hands, let us now look around and see what we want, and then work together to accomplish the end. We require nothing unreasonable. We ask for the legitimate fruits of our labors; we ask to be relieved from burdens that tax our energies and earnings without compensation. We ask to be protected from the unsparing hands of monopolists; and we ask for equal protection upon our interests that is

awarded to others. With these subjects before us let me impress upon the mind of every Patron the necessity of pressing forward with energy to the ultimate success of our work.

W. PEMBERTON PAGE,
Secretary Dominion Grange.

The Grange Movement.

EDITOR CANADA FARMER:—The Grange is an organization in which farmers, their wives, sons and daughters are only admitted. The Order is a secret one in so far as the ceremony of initiation, signs, passwords, obligations and business transactions are concerned. There is nothing in the ceremony of initiation that need alarm the nervous, or be distasteful to the most fastidious. It is pleasing, instructive and impressive.

The objects and aims of the Organization are to protect and promote mentally, morally and pecuniarily the interests of those connected with the noble pursuit of Agriculture. It would indeed be strange if Farmers did not organize to promote their interests when Merchants have their Boards of Trade, Bankers their Board of Exchange, Doctors their Medical Associations, Lawyers their Bar Associations. Manufacturers have their associations, Mechanics their organizations, and Laborers their unions, but the Farmer must stand isolated and alone, and coolly look on while all these associations enrich themselves at his expense. But the farmers have at last awoke to the necessity of themselves organizing. They begin to see that unity is strength, and the bitter experience of the past has taught them lessons they will not speedily forget.

A recent instance of this came under the writer's notice, lately, in the shape of a Yankee tree-peddler, who has been victimising the farmers, professing to sell them trees from a nursery which has no existence. The trees are promised to be first-class, while, judging from similar operators, they will be the culls from some old dilapidated nursery, which in all probability the proprietor thought worthless and was about to throw away, had not some sharper come along and purchased them. Now had these farmers purchased their trees through the Grange, they would have dealt with some honorable nurseryman himself who had sent his circular to the Grange with his private price list. The trees could have been got for less money, and the purchaser have been assured he was getting what he bargained for. The seller would not be likely to cheat a Patron, as the fact would become known throughout every Grange in the Dominion, and his career be suddenly cut short so far as defrauding farmers is concerned.

And thus are the farmers being continually victimised by the thousand and one agents prowling about the country seeking whom they may devour. Farmers are being continually pestered with these oily-tongued gentry and often yield to their importuning and purchase from them, when in five minutes after they are gone, they curse themselves for their folly.

One of the objects of this organization is to a great extent to do away with these useless appendages by dealing direct with nurserymen and manufacturers themselves and dealing for cash through the Grange. This is done by the members giving in to their secretary a list of all the implements and other things they require; say, 50 farmers in a Grange want for next year, eight reapers, ten mowers, twenty sulky horse-rakes, twelve ploughs, 150 lbs of plaster, twenty tons of salt, three chests of tea, ten barrels of sugar, forty boxes raisins, and so on throughout the whole list of wants. These orders are collected from each subordinate Grange, and sent to the Secretary of the Division Grange and are forwarded direct to the manufacturer and wholesale dealers, and are purchased in bulk and consigned to each subordinate Grange.

It is said that it costs manufacturers from three to four per cent. to sell their wares and collect the money, including a small margin for bad debts. Now all this is saved, and the manufacturers can afford to sell to the farmers this much less, to say nothing of the value of receiving large orders, and having them sent in the fall of the year, so that he is enabled to gauge the purchase of his raw material to a great extent. It has become at last a recognized fact even among farmers that the old system of buying articles after they have passed through three or four hands and all have had what is called a fair living profit out of them, and in addition buying on credit and paying

for all those who never pay (including merchants as well as others, for the wholesale merchant has to put on a margin to cover bad debts as well as the retailer), is about played out and ought to be relegated to the limbo of the past along with wooden mouldboards and threshing flails, and the days when people went to mill on horseback or in the ox cart.

The Grange movement recognises the fact that the world moves and its members are determined to move with it. In the Grange the farmers and their wives meet and the practical pursuit of their calling is discussed. There is no one, no matter how obtuse he may be, but can derive a great amount of benefit from the experiences there related by his neighbors and friends in regard to the practical pursuit of his calling. There is also its social aspect, where neighbours meet, and those kindly interchanges of thought and sentiment are expressed which tend to bind neighbors together in the bonds of unity and friendship, each feeling that he or she has an interest in the welfare and happiness of their neighbors.

P. FROST.

The Prevalence of Highway Robberies.

EDITOR CANADA FARMER.—I should be one of the last to advise farmers to resort to lynch law, but the present insecurity of life and property is becoming unbearable, and unless our Ontario Legislature at its next session can pass some effectual measures for driving the burglars, incendiaries and highwaymen out of the country, I fear the farmers will find it necessary to organize Vigilance Societies in their respective neighborhoods for self defence. Perhaps it would be sufficient if a law were passed allowing stipendiary magistrates to direct the police to arrest all suspicious characters and deal with them under the Vagrant Act. And if professional fortune tellers were included amongst the vagrants, as they are in England, no great harm would be done. Such a law, if strictly acted on, would frighten the criminal part of our population out of the country, as most of them, probably, are from the adjoining States.

In the meantime I would recommend farmers, when they have sold their load of produce in the market, to deposit their money in one of the banks, branches of which may be found in every city and town in the Province. They can make their payments as well by cheques as in cash, although if every one were provided with a revolver, and would take the trouble to acquire a little skill in the use of it, they might give a very efficient cheque to any one who might attempt to stop them on the road, or at least, if they are too nervous for that, they should be provided with heavy handled whips, and when possible, two or three teams should leave town together and keep within hearing of each other as long as possible, as few of the unprincipled scoundrels who now infest our roads will dare to attack two or three farmers in company, though they do not scruple to attack a solitary traveller.

SARAWAK.

Creature Comforts.

EDITOR CANADA FARMER.—As winter approaches, creature comforts should be thought of, so as to prepare in good time; and as many would like to have them if they could afford them, it may be well to point out a few things that are within most persons' reach.

At one period of my life I suffered much in health by riding against the wind in cold weather. Reflecting on the qualities of stout paper, I got a large sheet of paper from a grocer, and placed it over the front of my person inside my waistcoat and trousers. I found that it was impervious to the wind, and that being a bad conductor of heat, it prevented the natural warmth of my body from passing off, at the same time the insensible perspiration would pass through, and thus no inconvenience resulted from condensation of the moisture. I was delighted with the effects of my experiment, for it kept me as warm as an extra coat, and its weight was a mere nothing. When I got indoors, I took it off, wrapped it up, and put it in my pocket. It lasted for several weeks at the small cost of one penny. Of course paper may be applied to many similar uses, such as inside the linings of waistcoats, sleeves, etc. Old newspapers pasted together at the edges, and

placed between the sheet and the blanket, afford nearly as much warmth as an extra blanket. Try it.

Exeter, England.

J. F. W.

WE HAVE HAD THE GOOD FORTUNE, says the *Detroit Tribune*, to meet several of the graduates from the Michigan Agricultural College, and more practical, common sense young gentlemen we have found nowhere. The reason is that when a scientific truth is taught at that institution, the next thing done is to teach the student how to use it in some of the arts; and when the course is ended, the pupils are competent to engage at once in farming, gardening, engineering, or in mechanical trades.

Nobody is more interested than the farmer in the state of the weather, and to no one will the report of weather probabilities be more valuable when the laws which regulate that erratic functionary, the Clerk of the Weather, are more clearly understood. His clerkship is, even now, not the arbitrary despot that he used to be. Though we are almost as much in the dark as ever about the reasons that move him to send us so many changes of weather, we are getting much better acquainted with the probable character of the weather we are going to get. Of the warnings issued by John Bull's "Old Probabilities" in 1874, seventy-eight per cent. were justified by subsequent weather. Still, as the old saying goes, "It is a mighty poor prophet that can't guess right half the time."

AN ENGLISH VETERINARIAN, Mr. Henry Reece, says, that "carbolic acid, when mixed with all animal poisons, renders them inert. The venom of the rattlesnake, the poisonous saliva of the mad dog . . . are all harmless when mixed with carbolic acid." The statement is too sweeping, if not entirely incorrect. As respects the mad dog portion, it is known that hydrophobia does not follow in one case out of twenty even where the dog doing the biting is proved to be rabid. To prove Mr. Reece's statement, experiments would, therefore, have to be made on so large a scale as to be almost impracticable. And yet it would be the height of folly for a professional man to commit himself to such a statement unless he knew there was something in it. We hope, therefore, that Mr. Reece will make public his reasons for the declaration.

THE LOCATION OF FARM HOUSES was the subject of some remarks in the last number of the *CANADA FARMER*. We are not much in favor, for reasons before given, of the suggestion of some of our cotemporaries, that farmers should locate their homesteads near each other. One weighty reason in favor of near neighborhood, however, is given by the *Massachusetts Ploughman*; and that is, that if homesteads were nearer to each other, the great and increasing nuisance of tramps would be deprived of part of its terrors. We do not suppose that Canada has suffered so much as New England from this cause, but there are unmistakable signs that there is rapidly growing up amongst us a class of men who will not work but insist on eating their fill. We have hopes, however, that, on this side at least, some other and effective remedy will be found which will prove to the tramps that Canada is no country for lazy folks.

WHILE AT THE PROVINCIAL EXHIBITION AT OTTAWA we were somewhat amused at a remark made by an American visitor about the roots that were shown there. "Ain't them roots splendid, now? We can't grow such roots in Vermont." We assured him that if he would come to the Toronto Exhibition, the following week we would show him some of twice the size—and we have no doubt that some of the Toronto roots were actually double the weight of the first prize-winners at the Provincial. To satisfy our American friends as to the size to which roots can be grown in Canada, we give the weights of a few which Mr. Wm. Rennie of Toronto now has on exhibition. Three Long Red Mangels weigh 9½ lbs., the heaviest being 31 lbs. three Yellow Globe Mangels, 9½ lbs., heaviest 35 lbs; three white mangels, 18½ lbs., parsnips, 11 lbs., and Swede turnips, (Romaine's Purple-top) 15 and 19 lbs. each. The Swedes were checked in their youth by drought. Mr. Wm. Burgess of Mimico grew the whole of

them. We venture to state that none of our American cotemporaries can trot out a larger root story.

"MAUX CATS," that is, cats destitute of the caudal ornament proper to the genus *felis*, are, as often as not, merely ordinary mousers abbreviated some eight or ten inches. It seems too, that the manufacture of Galloway cattle is an industry that is assuming some importance in Scotland. Principal Walley of the Edinburgh Veterinary College, who was a short time ago prominently before the public as an opponent of the practice of "horning" cattle, says that Mr. Finnie, a farmer residing four miles from Edinburgh bought at that city twenty cattle, presumably Galloway. He did not examine them closely at the time of purchase. When the cattle arrived home, it was found that the horns of the whole lot had been sawn off close to the head, and the long hair of the poll had been so drawn over the wounds, and retained there by some tarry composition so closely as to preclude, without digital examination, the possibility of detection. The whole of the sinuses of the head, which were full of pus (escaping in large quantities when the head was turned to one side) were exposed; and a large, granulating, acutely painful surface was left behind. A case of more fiendish cruelty has rarely been reported—and all performed for the sake of a few shillings per head extra. Civilization is a failure, if the perpetrator of the barbarous act is not punished roundly.

A CORRESPONDENT OF THE *LONDON Agricultural Gazette* is writing a series of articles on farm life in Canada. The tenor of them is fair, as they neither magnify our advantages nor gloss over our disadvantages. He has a good word and a bad one for Canadian farmers' boys. "Boys in Canada, on the farm," he says, "no matter how low their origin, like to go to school. There is a great deal of ambition and emulation in Canadian boys: they are by no means willing to grow up without some education; they see other farmers' sons—whose fathers are struggling quite as hard as their own—regularly sent to school, and they are not satisfied unless they also are spared from the duties of the farm. Where this is not attended to, there will most certainly creep in some most unpleasant feelings between the father and sons, and this often ends in the sons leaving the father and hiring out to work elsewhere. This is one great evil in Canada, and yet it is a most natural consequence. A boy of 14 or 16 years of age can do almost as much work as a man, at ploughing, dragging, driving the team, and in many other kinds of farm work; and to the man who works instead of the boy you must pay at least 15 to 20 dollars a month for the four or five summer months, and board of the best kind additional; consequently a boy soon learns his own value, and unless his interests are well looked after, he will leave home and go elsewhere.

AS WELL AS CONVERTING HORNED CATTLE into the polled variety, alluded to elsewhere, the enlightened British farmer improves upon nature by knocking out the front teeth of his sheep, so that the poor animals can eat the tops off mangolds without being able to injure the roots themselves. So learns the *Agricultural Gazette* from a report from the Wisbeach district, and, says our contemporary, "the statement suggests painful reflections. We have heard of the practice in years gone by, but had hoped that it was numbered among the things of the past—that it had gone out with such things as yoking horses by their tails, or cutting out turkeys' tongues to make the meat white. As we understand, and as the report implies, it is not broken-mouthed sheep, but sheep "with teeth broken," that are put into the mangel fields to eat off the tops. The operation is performed—God knows with what uncouth surgery?—to prevent the unfortunate animals breaking into the roots, so that they may be intact for storing. Let any one try to imagine the sensation of having his teeth broken with pincers, and he will then, perhaps, feel for the poor sheep on which this barbaric practice is used. We are so hardhearted that we would condone ear-marking, and even forgive trimming a puppy's ears should the master have a fancy for so doing. But these we think are trivial matters compared to the wholesale torture inflicted on a flock of sheep by breaking their teeth in their jaws."

Agricultural Intelligence.

The New Brunswick Stock Importation.

The stock mentioned in our last issue as having been bought for the New Brunswick Government out of a grant appropriated for the purpose, was put up by auction according to the program. The sale was a most satisfactory one. Although the stock was of very high class and corresponding price, the sum realized was but little below that for which the animals were purchased. Upon the sheep and pigs a considerable profit was realized. The horses sold well and so generally did the cattle. The total amount for which the stock sold was \$15,858, the cost to the Government, including freight expenses and the cost of the commission having been \$21,000. The \$15,858 will now be invested in other stock, and the amount realized by its sale and farther appropriations will be again invested, and so on till the Province is well supplied with stock.

The Government of New Brunswick is entitled to great credit for the energy with which it has set about developing its agricultural resources. A more direct and effective mode than the improvement of the live stock could not be adopted. At the same time the manner in which it is done frees the grant from all suspicion of being pauperizing in its tendencies. The effects of this introduction of blooded stock will be both immediate and permanent, and at the same time the improvement will be so patent as to stimulate private enterprise in the same direction.

It will be observed from the annexed table that the stock has been thoroughly distributed. The table is a summary of the St. John Telegraph's account of the purchases by each County:

County.	Stock Bought
Albert	\$ 870
Carleton	3,496
Charlotte	1,281
Gloucester	767
Kings	285
Kent	661
Madawaska	501
Northumberland	1,071
Queen's	488
Restigouche	585
St. John	1,422
Sauvigny	1,624
Victoria	315
Westmoreland	472
York	1,458
	\$15,858

The Provincial Ploughing Matches.

The Provincial Ploughing Matches went off this year with unusual success, public interest being shown in them to a gratifying extent. These matches are held under the auspices of the Agricultural and Arts Association of Ontario. The Province is divided into four districts for the purpose of the matches. The sum of \$400 is granted to each district by the Association, and it is supplemented by such local donations and prizes as can be procured in the neighborhood.

The first match, that for the Eastern District, came off at Fairfield, Leeds Co., on Oct. 15. There was a large attendance of spectators. Thirty-nine competed. Judges, A. P. McGrant, Osgoode; Jos. Millar, Spencerville; Major Macpherson, Lancaster. The prize winners were:—

First-class senior, iron ploughs.—First prize, D. Macpherson, Lancaster; second prize, Stephen P. Young, Ramsay; third prize, R. McLennon, Lancaster; fourth prize, John McEwen, Russell; fifth prize, H. Gray, Leeds; sixth prize, D. Drummond, Ramsay; seventh prize, John Gray, Leeds; eighth prize, H. Young, Augusta.

Second-class senior, wooden ploughs.—First prize, P. McEwen, Russell; second prize, John McCallum, North Elmsley; third prize, Alexander Laidlaw, Augusta; fourth prize, D. Robinson, do.; fifth prize, James Robinson, do.; sixth prize, Geo. Dunbar, do.; seventh prize, George Witworth, do.; eighth prize, C. Lewis Dalgleish, do.

Third-class junior, iron ploughs, Boys between 15 and 21. First prize, D. McDougall, Russell; second prize, W. J. Heron, Gloucester; third prize, Alex. Robinson, Augusta; fourth prize, D. Bradford, Elizabethtown; fifth prize, N. R. Smith, do.; sixth prize, E. Johns, do.

Fourth-class junior, (under 15)—First prize, A. R. Bishop, Oxford; second prize, Thos. Dalgleish, Augusta; third prize, S. Pierson, do.

The match for the Central District occurred at Scarborough on Oct. 20, and was pronounced by the spectators to be the most successful of the many matches that have occurred in that home of good ploughmen. The weather was unexceptionable, the state of the ground excellent and the work magnificent. Two of the fifty-three competitors were prize-winners last year at the Scotch shows. Their work was really good, but not to be compared with that of the first-prize winners. The judges were:—For class 1—Messrs. Jas. Boreland, Darlington; Geo. Burke, Scarborough; John Weir, Scarborough. Class 2—Messrs. Wm. Foley, Darlington; James McCowan, Scarborough; James Weir, Scarborough. Classes 3, 4, and 5—Messrs. John Coxworth, Scarborough; Peter Bristol, Scarborough; Geo. Shaw, Darlington. The prizes were awarded as follows:—

Class 1. Open to all with any kind of plough. First prize, \$70, Andrew Hood, Scarborough; Second prize, \$40; Jno. Morgan, Scarborough; third prize, \$30, Jno. Tweedie, Whitby; fourth prize, \$20, Robert Pardon, Whitby; fifth prize, \$10, James G. Patterson, Scarborough.

Class 2. Open to all who have not taken a first prize.—First prize, \$40, Thos. Hood, Scarborough; second prize, \$34, Thos. Keat, Scarborough; third prize, \$28, Alex. Smith, Scarborough; fourth prize, \$22, Wesley Ormerod, Scarborough; fifth prize, \$16, Alexander Stewart, Scarborough; sixth prize, \$10, James Young, Markham.

Class 3. Open to all not using wrought-iron ploughs.—First prize, \$24, Adam Hood, Markham; second prize, \$20, George Minty, Whitby.

Class 4. Open to boys under 20 years of age.—First prize, \$21, Geo. Robb, Markham; second prize, \$20, A. H. Canning, Markham; third prize, \$16, John P. Mason, Scarborough; fourth prize, \$12, Joseph Thompson, Scarborough; fifth prize, \$8, Norman Malcolm, Scarborough; sixth prize, \$6, James Lynn, Whitby.

Class 5. Open to boys under 17 years of age.—First prize, \$24, Joseph L. Secor, Scarborough; second prize, \$20, Jos. Forrester, Markham; third prize, \$16, William Ormerod, Scarborough; fourth prize, \$13, William Ferguson, Scarborough; fifth prize, \$8, John Hall, Whitby; sixth prize, \$6, Archibald Patterson, Scarborough.

A special prize for the best crown, given by Mr. Wm. Reunie, Toronto, was won by Mr. Andrew Hood, Markham.

On the same day the match for the Third District was held at Guelph and was likewise successful. The entries were twenty-eight in number. The prize-takers were:—

First-class, men—iron ploughs.—First prize, R. Moore, Eramosa; second prize, G. Robinson, Erin; third prize, John Whitehead, Guelph; fourth prize, Alexander Moore, Eramosa.

Second-class, men—iron beam ploughs.—First prize, Thos. Pritchard, Pilkington; second prize, M. Lorce, Eramosa; third prize, John Cordiner, Pilkington; fourth prize, Jno. McDermott, Erin.

Third-class, men—wooden ploughs.—First prize, John Clark.

Fourth-class, boys iron ploughs.—First prize, A. G. Moir, Salem; second prize, A. Armstrong, Eramosa; third prize, A. Boulton, Eramosa; fourth prize, M. Cassidy, Arthur.

Fifth-class, boys—iron-beam ploughs.—First prize, J. Newstead, Guelph; second prize, G. Mundel, Guelph.

The sweepstakes prize in the men's class was taken by R. Moore, and in the boys' class by J. Newstead.

The match for No. 4 District was held at Clinton on Oct. 19. As at the other matches the attendance was very large, and the match successful in other particulars. Below is the prize-list:—

Class 1.—men with iron ploughs.—First prize, R. Moore, Eramosa, \$20, and sweepstakes, \$10; second prize, G. Robinson, Erin, \$15; third prize, Jno. Whitehead, Guelph, \$10; fourth prize, Alex. Moore, Eramosa, \$5.

Class 2.—men with iron beam ploughs.—First prize, Thos. Pritchard, Pilkington, \$20; second prize, M. Lorce, Eramosa, \$15; third prize, John Cordiner, Pilkington, \$10; fourth prize, John McDermott, Erin, \$5.

Class 3.—men with wooden ploughs.—First prize, John Clark, Puslinch, \$20.

Class 4.—boys under 15 years of age with iron plough.—First prize, A. G. Moir, Salem, \$18; second prize, Adam Armstrong, Eramosa, \$12; third prize, Amos Bolton, Eramosa, \$6; fourth prize, M. Cassidy, Arthur, \$4.

Class 5.—boys with iron-beam ploughs.—First prize, J. Newstead, Guelph Township, \$18; second prize, G. Mundie, Guelph, \$12.

"GARDENING FOR PLEASURE" is the title of a work written by Peter Henderson and published by the Orange Judd Company of New York, price \$1.50 American currency. The author is a recognized authority on all matters connected with gardening, and probably the best praise that the book could have would be to say that it is worthy of him, and it is so. The part on Window Gardening is especially valuable and interesting.

Meeting of the Dominion Grange.

The Dominion Grange held its second annual meeting in Toronto on Oct. 27, and following days. The attendance was good and the amount of business got through quite satisfactory. Master Hill, in his address congratulated the members on the progress of the Order, stating that now we had 274 Granges against 44 at the same time last year. He said that the Grange was a powerful instrument placed in their hands to strengthen their attachment to their profession. They would find persons opposed to them would try to stay their progress, and that others would seek to influence them for private ends. He alluded to the question of recognition by the National Grange of the United States. They acknowledged said Grange as the parent institution and would use all means for amicable and fraternal relations. As the Grange has been successful in binding more closely the agricultural interests of the country, so fraternal union of the two Granges might be instrumental in more closely uniting the well known dependent relations existing between two countries. He concluded by touching upon the dependence of each of us on others, assuring those who differ from the Patrons that the latter mean to wage no aggressive warfare on any interests.

The following officers were elected for the ensuing year:—

Worthy Master, S. W. Hill, Ridgeville; Overseer, H. Leet, Danville, Quebec; Lecturer, Stephen White, Chatham; Steward, D. Nixon, Grimsby; Assistant Steward, H. S. Lossee, Norwich; Chaplain, Wm. Cole, Sarnia; Treasurer, J. T. Ball, Downsview; Secretary, W. Pemberton Page, Fonthill; Gate-keeper, T. Duncan, Richmond Hill; Ceres, Mrs. T. W. Dyas, Toronto; Pomona, Miss Whitelaw, Meaford; Flora, Mrs. Philips, Schomberg; Lady Assistant Steward, Mrs. Lossee, Norwich. Executive Committee:—J. Manning, Schomberg; W. S. Campbell, Brantford; B. Payne, Delaware; J. Daly, Newburgh; A. Gifford, Meaford.

A pleasing episode during the meeting was the presentation of a handsome epergne to Mrs. Dyas, wife of Mr. T. W. Dyas of Toronto, retiring Secretary of the Grange, as mark of recognition of the great share Mr. Dyas has had in bringing the Grange in Canada to its present satisfactory basis. The presentation was made by Master Hill on behalf of the Grange.

MR. Wm. BROWN, of Oillia, has been appointed to lecture on Practical Agriculture to the students of the School of Agriculture at Guelph.

WE HAVE RECEIVED, through Mr. J. Perrault, Secretary-Treasurer of the Canadian Commission of the Centennial Exhibition, a splendidly executed chremo-lithograph of the Centennial Buildings.

THE ORELLIA Packet says in that section sheep are killed almost nightly by dogs. Other districts suffer almost as badly. The shot-gun is the best remedy we know of, but the offenders are hard to catch, *in flagrante delicto*, and identification of the assassins, otherwise, is almost impossible.

"THE HOME FLOREST" is the name of a valuable little work, profusely illustrated and giving practical and intelligible directions for the culture of flowers in and out of doors, issued by Long Bros., Buffalo, N. Y. The price is 60 cents. A great deal of information has been compressed into small space for the work.

THE GROWING OF RED CEDAR, *Juniperus Virginiana*, is being tried on a considerable scale in Bavaria, North Germany, and other parts of the continent. No other wood, except the still rarer *J. Bermudiana*, has been found equal to it for lead pencils, and as the consumption for that purpose is very large, some of the manufacturers have advised their Governments to attempt its cultivation.

A WORCESTERSHIRE FARMER puts it in this way in a letter to the *Agricultural Gazette*, London: "English laborers have become very discontented and unsettled ever since those unprincipled fellows calling themselves 'laborers' friends' appeared among them. They are beginning, however, I trust, to see their folly in supporting men of this class and breaking up their homes, when constant employment, comfortable cottages, and a good living are always readily obtained by willing hands." Which is all very fine. But it would be difficult to persuade the laborers that they are not appreciably better off since they commenced agitating.

THE BREEDERS' LATIN.—One of the great cattle breeders was recently visited by an old college friend, who frequently overtaxed his host's memory by using Latin quotations long forgotten by reason of disuse. One day the great cattle breeder got even with his pedantic guest. Pointing to an immense herd of fine young cattle in prime condition for the market, the visitor said, "You must have had good luck since you commenced this pursuit?" "Yes," replied the host. "It is due to my luck that I can say, 'Hinc ille lachrymæ,' in looking at my herds." "What do you mean?" asked the astonished guest. "Why, don't you see? 'Hence these steers.'"

The Coming Short-Horn Convention and their Succeeding Sales.

There is every reason to anticipate that the coming session in Toronto, December 1st and 2nd, of the Short-Horn Breeders' Association will at least equal its predecessors in interest. No pains should be spared on the part of the Canadian breeders to render the stay of our American friends as pleasant as possible, and in this our breeders will be but reciprocating the generous hospitality with which Canadian breeders on a similar errand have always been received in the United States.

As well as for attending the Convention, probably in many breeders from the United States and possibly from England also, will visit us for the purpose of being present at the important series of sales which will commence at the closing of the deliberations of the Association. We purpose, for their edification, to give them a few notes of the animals which will be submitted for sale.

On Dec. 3rd, Col. Taylor, Mr. J. R. Craig, Messrs. Sumner & Hilton and Hon. D. Christie will offer some very choice blood. Col. Taylor's offerings will be:—Tuberose 12th, one of the very fashionable Princess family. Her daughter sold lately for \$3,000. She is a roan.

Five Rose of Sharons, a family which is drawing much attention. They are beautifully bred and will probably some day sell with Renick's Rose of Sharons.

Two Barrington heifers in calf—a famous family in the best of repute on both continents.

Lord Ramsden, a splendid bull out of imp. Miss Ramsden 6th.

Mr. J. R. Craig, of Burahamthorpe, will offer:—Grace 4th, a Red Rose five year old cow, by the great Muscaton of Kentucky, out of Grace, by Airdrie, a full sister to Grace, lately exported by Lord Dunmore. Grace 4th, is red with little white, very short legged and compact solid body with a neat blood like head.

Rose of Cambridge, a five month old daughter of Grace 4th, by Thorndale Duke. She is one of the handsomest calves that can be imagined.

Two Kirklevingtons, both lately imported. K. Duchess 18th, and K. Duchess 5th, pure Bates. Bulls of this family have sold lately in Australia for \$9,700.

Seven Craggs, pure Bates, with the same foundation as the Kirklevingtons and bred in the same line. Mr. Groom has just sold a Craggs bull calf to Rev. Mr. Hughes, of Iowa, for \$5,000.

Six Seraphinas, a family which are rapidly rising in repute. They are mostly of a solid red color and of great symmetry. One of the Seraphinas has three Bates crosses, the last by the noted \$4,500 Duke of Hillhurst.

A Fennel Duchess, Duchess of Ruby, a very superior animal imported from England. She is by Royal Lancaster, has a splendid mossy coat, and a first-rate handler.

Five Isabells, of Booth foundation and mostly of Booth blood, well known and rising in favor—of such a family as a farmer might invest in who wants first-class stock, but does not want to pay for an ultra-fashionable pedigree.

Lady Lemore, a cow bred by Mr. Maynard of Yorkshire, by a Booth bull, her dam by a pure Duke, and has herself beaten the famous Royal winners Vivandiere and Mary Ann.

The rest of Mr. Craig's herd are principally the get of Prince Imperial, which bull is well enough known to need no further mention, and 2d Geneva Lad.

Messrs. Sumner & Hilton, of Woodstock, Conn., will offer:—

Three Gwynne cows, bred to Baron Hubback 2d; a branch of the highly-valued Princess family.

Miss Cambridge, Oxford Lad 5th, Sunrise, all well bred, mostly of Bates blood.

Two Constance cows bred by Baron Hubback 2d.

The bull Baron Hubback 2d, as well known on this continent as in England, both as a breeder and a getter; a splendid bull.

Alice Maud and Lady Frantic, both of Bates families.

Previous to the above sales, at 10 A. M. of the same day, a grand sale of horses will be held. There will be offered by Mr. J. Long of Lansing, near Toronto, and others, eight imported Clydesdale stallions, several Canadian bred horses and mares, and the celebrated Cleveland Bay carriage stallion Luck's All. The last mentioned horse is a splendid creature, full of grace and style, and with unexceptionable action. He has taken many first prizes including the first at the Provincial Show at Ottawa, and at the Toronto Exhibition this year. The Clydesdales include Prince of the West, a magnificent animal, the winner of thirty-two first prizes, North Lincoln, just imported, a very large horse of great power; Bald Buccleuch, well known in the prize ring; Forfar Chief, Sir Cohn, etc.

On Dec. 4th, Mr. M. J. Corkery will put up for sale his entire Short-horn herd (comprising the Stanton importation of last year) together with a selection from other herds of known repute. The animals to be offered are in first-class breeding order, and are just such animals as the farmer wants for the purpose of breeding beef. Other particulars of these sales are given in our advertising columns.

MR. TREHONNAIS, of France, has lately made some heavy purchases in England of Short-horns and Berkshires.

THE 24TH DUKE OF AIRDRIE recently exported from Kentucky to England by Mr. Geo. Fox is advertised for service.

MRS. FAWCETT of Sealeby has sold to Sir Curtis Lampson the Bates cow Kirklevington Duchess 5th for 1,100 guineas.

3D DUKE OF VINEWOOD has lately been sold by B. B. Groom, Kentucky, to Rev. D. L. Hughes, Vinton, Iowa, for \$5,000.

AT THE SHORT-HORN Sale of Messrs. Slater, Webster, Mass., 28 cows averaged \$180.54; 3 bulls averaged \$338.33; total \$6,070.

THE DUKE OF MANCHESTER'S 1810 guinea purchase, Third Marchioness of Oxford, has a calf to the 4,500 dollar bull Duke of Connaught.

DUKE OF ELMWOOD, a Rose of Sharon bull, has been sold by Brockways of Minnesota to H. D. Ayres, Kentucky, for \$850.

MR. J. W. WADSWORTH, Geneseo, N. Y., has sold his entire herd of 27 Short-horns, Princesses, to H. P. Thomson of Kentucky.

MR. CAMPBELL, of Batavia, Ill., announces that his herds of Short-horns will be offered for sale at West Liberty, Iowa, in April next.

LORD BEETIVE AND LORD DUNMORE have divided, the former taking four of the seven Red Roses purchased lately by the latter from Mr. Renick of Kentucky.

THE RED ROSE BULL CALF, Lord of the Forth, purchased at the recent Dunmore sale by Mr. Hope of Canada, has been sold to Mr. Lawrence, Thornhill.

MR. J. D. CHAFFEE, Morris, N. Y., has sold to John S. Goe, Brownsville, Pa., Short-horn cow Lady Oxford, \$1,500, Oxford Peers, \$1,500, and calf Oxford Bride for \$500.

At the sale of Mr. Rowland Burdon's Shorthorns at Castle Eden, Durham, England, lately, Lady Isabel was bought by Mr. John Kirby for 215 guineas, Sweetbriar, by the same, for 225 guineas.

MR. A. RENICK of Kentucky, recently sold eight Rose of Sharon bull calves by 4th Duke of Geneva, all to his neighbors in Kentucky, except one purchased by Mr. Powell of Missouri.

CANADIAN STOCK IN ENGLAND.—Messrs. John Bell & Sons, Glasgow, received 70 head of live oxen, in good condition, from Canada last week at Glasgow, making about 300 since July last.—*N. B. Agriculturist*.

MR. L. F. ALLEN writes us that he finds it impossible to close vol. 15 of the Herd Book so early as anticipated, and that the time for receiving bull pedigrees has been extended to December 1, and for receiving cow pedigrees up to December 25.

AT GUELPH, LATELY, the Short-horn herd of the late Mr. A. Hogge was sold at auction. Malvina was bought by John Pipe, \$260; Lady Dufferin, F. W. Stone, 300; Marie Stewart, Thos. Boak, \$215; Earl of Cambridge, John Bolton, \$185.

DUKE OF AOSTA, twice the first prize-taker at the Royal England, once first in Glasgow, and twice first at the Royal Irish, died lately of foot and mouth disease contracted during his last appearance in Ireland. He belonged to Mr. H. A. Brown.

THE ELEVEN MONTHS OLD Fifth Duke of Gloster has just been sold by Mr. Cheney for 2,500 guineas to Mr. W. H. Salt. The bull is son of Ninth Duke of Geneva, and Fourteenth Duchess of Airdrie, by Tenth Duke of Thornedale, and lineally descended from Duchess 5th.

The *Live Stock Record* thus summarizes the result of the two weeks' Kentucky sales:—The sixteen sales which have occurred here since Oct. 10th, have produced \$458,482, to accomplish which there were 1,094 animals sold at an average of a fraction over \$417, per head.

A SUFFOLK cow was sold at Bredfield, England, lately, which had six calves, in 20 months, all living. The first birth was three (all fine grown animals), then one, and just before the sale two more, which were brought into the ring in the arms of laborers, the cow being decorated with blue ribbon.

HANDSOME PROFIT ON A HIGH-PRICED CALF.—It is reported that Mr. Foster of Kilbow, Cumberland, has been offered, and refused \$1,000 guineas of profit on the Duke, bull calf, which he bought the other day from the breeder, Lord Skelmersdale, at 2,000 guineas.—*North British Agriculturist*.

OF THE 5TH DUKE OF HILLHURST purchased at Toronto last spring, his owners, Messrs. Noel, Cockrell & Gibson of Tennessee, write to the *Country Gentleman*: Our 5th Duke of Hillhurst has just arrived in fine condition, having been at Mr. John R. Craig's since the purchase in Toronto. We are vain enough to think him the best Duke of any age now living. After being on the cars ten days, at 5 months he weighed 520 lbs. He is remarkably robust—a Duke, a show Duke.

RED ROSE OF FINCASTER, recently bought by Lord Dunmore for 2,000 guineas, and since sold by him to Lord Beattie, gave birth to a calf by Duke of Connaught. The calf died soon after birth. Red Rose of the Isles, Lord Dunmore's 1,950 guinea cow, has had a calf to 6th Duke of Geneva, which is doing well.

J. H. KISSINGER & Co., of Missouri, have bought from Mr. J. Davidson, Balsam, Ont., the following Short-horns bred by Cruickshank of Sittytton: Autumn Lady and c. c.; Red Lady & c. c.; Orange Blossom, Aconite 2nd and b. c. Orange Bay. Also from Birrell & Johnston, Greenwood, the two-year-old heifer Priscilla.

ROBERT HOLLOWAY, Alexis, Ill., has purchased of Messrs. B. J. & C. M. Clay, jr., Paris, Ky., the yearling heifer Roan Duchess 10th, by Grand Duke of Hon. George Brown, Bow Park, Canada, yearling heifer Roan Duchess 7th, by Duke of Barmpton, and of Mr. A. W. Bedford, Paris, Kentucky, the heifer Geneva Duchess of Goodness.

ACCOUNTS HAVE BEEN PUBLISHED to Oct. 1st, of 51 Short-horn sales in the United States, since Jan. 1st, at which 2,400 animals averaged \$410 each—also of 10 Canadian sales, at which 270 animals averaged \$367 each, gold. The fact that the latter average is higher than the former is due to the great sale of Messrs. Beattie & Miller, and Hon. M. H. Cochrane, in June last.

HON. M. H. COCHRANE, Hillhurst, has sold the Short horn bull Royal Commander, to H. Aylmer, Esq., West Dereham Abbey, Norfolk, England, for 1,150 guineas. Royal Commander is seven years old. Also heifers Forget me-not, Anna Commens, Brenhilda, Vesta and Snow Queen, to A. H. Brown, Esq., Doxford, Northumberland, England; price 3,500 guineas.

OF ALL PLACES ON EARTH, the island of Borneo would be one of the last to be suspected of Short-horn tendencies. Yet the all pervading Durham is to exhibit his adaptability there. The Bates bull, Prince of Bannockburn, has just been purchased in Scotland for the Rajah of Sarawak. In connection with this we may also mention that a consignment of Short-horns and Berkshires have lately been sent out to the Canary Islands.

SALE OF 22ND DUCHESS OF AIRDRIE.—Messrs. J. H. Spears & Son, Tallula, Ill., have sold to Mr. George Fox, Harefield, Wilmslow, England, the roan heifer calf 22nd Duchess of Airdrie, calved June 30, 1875, by 24th Duke of Airdrie, 1725, out of 16th Duchess of Airdrie by 10th Duke of Thornedale (28458), for \$22,000. This is the calf that was bought by Messrs. Spears & Son at Messrs. B. B. Groom & Son's sale for \$17,500. She has changed hands in less than three months. Messrs. B. B. Groom & Son gave \$12,000, and sold her at a profit of \$5,500, and now Messrs. Spears & Son make \$4,500 on their recent purchase.—*Live Stock Record*.

MR. CHARLES WADSWORTH, Geneseo, N. Y., has published a "Princess Record" containing the pedigrees of all females known or presumed to be living in July 1875, descendants of the three Princess cows imported originally in 1849 and 1851, and constituting what is known as the Princess family in this country. These are the cows Red Rose 2d, Tuberose 2d and Lady Sale 2d, purchased from the herd of John Stephenson, Wolviston, England, and descended in a direct line from the Studley bull bred in 1737. The number of females now recorded is 179, indexed in the names of 84 different breeders or present owners. In a 2d part are given the pedigrees of sires mentioned in the ancestry of the cows.

OUR READERS WILL RECOLLECT the notice in these columns of the sale of the Mount Derrimut, Australia, Shorthorns, belonging to Mr. Richard Morton, a few months ago, at an average price of over \$2,100. Since then Mr. Morton has sold the remainder by private bargain to Messrs. Robertson Brothers, of Colac, Victoria. The herd consists of ten calves under twelve months old, thirty-six cows and heifers, and the fine imported bull Oxford Cherry Duke. Four of the cows are doubtful breeders. Oxford Cherry Duke was bred by Lord Penrhyn, and is a son of the Duke of Devonshire's (now Lord Skelmersdale's) Fourth Baron Oxford, from Cherry Duchess 13th by Third Duke of Wharfedale. The average for the forty-seven of all ages and conditions is £574 9s 4d.

HON. M. K. COCHRANE writes to the *Country Gentleman* announcing the safe arrival of Wild-Eyes Lassie, and Kirklevington 26th, for Hillhurst; also twelve cows and heifers, the joint property of himself and Mr. S. Beattie, a bull belonging to Mr. B., eleven animals imported by Mr. John Hope, four by Mr. Streator of Ohio, and two by Mr. Crane of Kansas; also some horses and sheep, all of which were landed in fine order, after a smooth and pleasant passage. Mr. Cochrane states that he, Mr. Beattie, and Mr. Hope will hold a joint sale at Toronto in the early summer, at which the above animals will be offered, together with Mr. Hope's and the remaining portion of Mr. Beattie's herd, and with the addition of from six to ten animals from Hillhurst, among which will be one Duchess, specimens of the Louan, Minna and other tribes, the Sixth Duke of Hillhurst, and possibly another young Duke.

Short-Horn Sales of the Month.

The transactions in Short-horns during the past month have been so numerous that we can necessarily give only a condensed account of them. The principal sales in England were the biennial sale by Mr. H. J. Sheldon of Warwickshire, and the sale by Mr. Bowman of Whitehaven. The best prices were:

Mr. Sheldon's Sale.

Table listing various short-horn breeds and their prices, including Czarina, J. W. Larking, Idalla, T. Jennings, Grand Duchess of Barrington, etc.

Summary.

Summary table for Mr. Sheldon's sale showing 23 cows averaged, 8 bulls averaged, and 31 head average.

Mr. Bowman, Whitehaven, England.

Table listing various short-horn breeds and their prices, including Lady Faithful, J. W. Cruickshank, Rosamund Gwynne, etc.

Summary.

Summary table for Mr. Bowman's sale showing 42 females average, 10 bulls, and 52 head average.

On this continent, a series of very important sales took place in Kentucky, and several detached sales came off in Illinois, Iowa and elsewhere. We give a condensed account of most of the sales.

B. B. Groom & Son, Winchester, Ky.

Large table listing various short-horn breeds and their prices, including 23d Duchess of Airlie, Kirklevington, etc.

Summary.

Summary table for B. B. Groom & Son's sale showing 63 cows and heifers average, 9 bulls and b. calves, and 72 head average.

By Families.

Table listing various families and their average and total values, including Kirklevingtons, Princesses, etc.

Lattimer and Holloway's Sale, Abingdon, Illinois

Table listing various short-horn breeds and their prices, including Clementina, Boston Beauty, etc.

Wesley Warnock, Lair's Station, Ky.

At the sale of Mr. Wesley Warnock's herd, Lair's Station, Oct. 13th, the attendance was much improved, and some of the prices paid were large and the general average good. We extract the following from the list:

Table listing various short-horn breeds and their prices, including Carrie Watson, Lady Onelda, etc.

Summary.

Summary table for Wesley Warnock's sale showing 75 females average, 7 bulls, and 82 animals average.

J. C. Jenkins, Lair's Station, Ky.

Table listing various short-horn breeds and their prices, including Mazurka, Blooming Heath, etc.

Summary.

Summary table for J. C. Jenkins' sale showing 15 females average and 13 animals average.

H. P. Thomson's Sale, Thomson's Station, Ky.

Table listing various short-horn breeds and their prices, including Lady Sale, Lady Sale of Moundale, etc.

Summary.

Summary table for H. P. Thomson's sale showing 57 cows and heifers average, 10 bulls and b. calves, and 97 head average.

North Elkhorn Importing Company's Sale, Elk Hill, Ky.

Table listing various short-horn breeds and their prices, including Una, Brunette, Seraphina, etc.

Table listing various short-horn breeds and their prices, including Sweetheart, Severn Princess, etc.

Summary.

Summary table for Sweetheart sale showing 71 cows and heifers average, 9 bulls and b. calves, and 80 head average.

Sudduth & Van Meter's Sale.

Table listing various short-horn breeds and their prices, including Calie Byron, White Wreath, etc.

Summary.

Summary table for Sudduth & Van Meter's sale showing 78 females average, 14 bulls, and 92 animals average.

B. P. Goff, Winchester, Ky.

Table listing various short-horn breeds and their prices, including Lady Blanche, Dora, Ellen Challenger, etc.

Summary.

Summary table for B. P. Goff's sale showing 45 females average, 12 bulls, and 60 head average.

J. A. Gano, Centerville, Ky.

Table listing various short-horn breeds and their prices, including Nell Gwynne, Nell Gwynne 2d, etc.

Summary.

Summary table for J. A. Gano's sale showing 32 females average, 5 bulls, and 37 animals average.

Ayres, McClintock & Pogue, Paris, Ky.

Table listing various short-horn breeds and their prices, including Red Rose, Red Rose 2d, etc.

Summary.

Summary table for Ayres, McClintock & Pogue's sale showing 51 females average, 14 bulls, and 95 animals average.

Corbin & Patterson, Paris, Ky.

Table listing various short-horn breeds and their prices, including 6th Loun of Glen Flora, Red Daisy, etc.

Summary.

Summary table for Corbin & Patterson's sale showing 55 females average, 4 bulls, and 55 animals average.

J. W. Prewitt's Sale.

Table listing various short-horn breeds and their prices, including Gentle Anne, Gentle Anne 19th, etc.

Summary.

Summary table for J. W. Prewitt's sale showing 54 females average, 12 bulls, and 63 animals average.

Redmon & Judy, Winchester, Ky.

Summary.

S. B. Redmon's average females	\$332	—	bulls	\$25
G. T. Redmon	159	..	77	
H. F. Judy	180	..		
Total of sale				\$18,725

Joseph Scott & Co, Paris, Ky

Summary.

93 females, average	\$209	—	Total	\$19,516
21 bulls,	164	..	8,450	
114				\$27,966

F J Barboe, Paris, Ky

Ra 1 Rose Stn, H. C. Ireland, Mooresville, Ky	\$10.00
Moss Rose 2d, M. Seer, Paris, Ky	6.00

Summary

20 females, average	\$385.50	—	Total	\$6,770
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J H Davis, Danville, Ky

Crevola 3d, B. D. Groom	\$1.75
Crevola, J. C. Payne, Ky	7.00
Lady Louise, W. Warnock	8.50
Oxford Mazurka, E. Cobb, Ill.	1,350

Summary

26 cows, average	\$267.31	—	Total	\$6,950
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Farra, Van Meter & Hearne, Ky

Summary

45 cows and heifers, average	\$119.58	—	Total	\$5,371
8 bulls and b. c.	55.50	..	440	
53 head, average	\$110.10	—	Total	\$5,850

Dr. J. J. Adair, Shawhan's Sta, Ky

Summary

24 cows and heifers, average	\$128.15	—	Total	\$6,312
9 bulls and b. calves, do	\$6.11	..	775	
35 head average	\$123.95	—	Total	\$1,000

J. Feather, Sunbeam, Illinois.

Summary.

27 females, average	\$270	—	Total	\$7,300
12 bulls	176	..	2,110	
				\$9,410

W. J. Neely, Ottawa, Illinois.

Summary.

19 females, average	\$171	—	Total	\$1,235
4 bulls,	52	..	330	
23				\$3,080

Mrs. J. S. Long, Iloa

Summary.

42 females, average	\$253.50	—	Total	\$10,576.00
21 bulls,	176.00	..	4,224.00	
				\$15,100.00

Greene & Morton, Cedar Rapids, Ioa.

Summary.

31 females, average	\$217	—	Total	\$6,730
12 bulls	154	..	1,850	
43	\$127	..	\$5,380	

New Granges.

Since our last issue, the following new Granges of Patrons of Husbandry have been organized in the Dominion.

Division Grange

21. Belmore.—Master, Henry Smith, Gorrie; Secretary, A. Drummond, Clifford.

Subordinate Granges.

239. Loyal.—John Thomas, Master, Frost Village; Andrew McIntosh, Secretary.

240. Thames.—David Swanson, Master, St. Mary's; Moses Sinclair, Secretary, St. Mary's.

241. Rogerville.—James Lang, Master, Rogerville; James Elder, Secretary, Rogerville.

242. Lenox.—Wm. Dellar, Master, Napanee; Thomas Anderson, Secretary, Napanee.

243. Tansley.—David Spence, Master, Whittington; James Spence, Secretary, Whittington.

244. Thorndale.—Robert McGreffer, Master, Thorndale; George K. Bryan, Secretary, Thorndale.

245. Mount Pleasant.—Henry Creans, Master, Napanee; Ira E. Grooms, Secretary, Napanee.

246. Union.—Henry Wilcox, Master, Selby; Ida Higgins, Secretary, Selby.

THE MARQUIS OF QUEENSBERRY is going to Australia to run a sheep-farm.

A LARGE PURCHASE of black-faced sheep was recently made in Scotland with the object of introducing that hardy breed into the far West.

THE PRIZE AYRSHIRE, Annie Laurie and b. c. have been sold by Messrs. Jarline, Hamilton, to Campbell & Son, Orangeville, for \$400.

MR. STUYVESANT'S AYRSHIRES were sold recently near Poughkeepsie, N. Y. Josephine brought \$200; Violet 3d, \$185; 2d Laird of Edgewood, \$155. Forty-one cows brought \$3,655; five bulls, \$290. Total \$3,975.

A BORDER LEICESTER SHEARLING, shown unsuccessfully at the late Glasgow show, when killed recently was found to weigh 185 lbs., dressed weight. He had nine inches of flesh and fat on his ribs.

MR. SIMON BEATTIE, of Canada, has purchased in Scotland several Clydesdale stallions, at high prices, for export to America, and we hear that Mr. Wm. Meikle, Indiana, Pa., has just returned from Scotland with eight Clydesdale stallions and one Shetland pony; one was lost in a gale on the passage.—*London Farmer.*

MESSRS. BERGIN, near Cornwall, have now in their stables Ringwood, the celebrated trotting stallion for which they recently refused \$10,000; the colt Medway nearly allied to Goldsmith Maid and Lady Thorne; a Messenger mare and one by Belmont; May Queen and Agnes, two-year-old fillies; and others of most valuable families.

MR. J. H. HOLDEN of Belleville has sold the Ayrshire cows Nelly 2d, Daisy, Dolly, Lady Jane, Bonnie Elsie and Lady Marion to Martin Bailey, Stockton N. Y.; the Ayrshire heifer, Lady Movia, to Horace White, Laona, N. Y.; the Ayrshire bull, Bonnie Scott to T. B. Devereux, Utica, N. Y.; and Ayrshire cow, Kate 3d, to W. O. Harrah, Cadiz, Ohio.

LIVE STOCK AT THE CENTENNIAL.—Some difficulty has been experienced at Philadelphia in procuring a location for the live stock department of the Centennial Exposition. The difficulty has been removed by the hiring of a piece of land now the drove-yards of the Pennsylvania Railroad Company. The ground is situated between Belmont Avenue and Forty-first Street adjoining the track. A depot with sidings and platforms will be erected, and every convenience provided. Special series of live-stock exhibitions have been provided for as follows: Horses, from September 1 to September 15, neat cattle, from September 20 to October 5; sheep, swine, dogs, from October 10 to October 25; poultry, from October 25 to November 10.

Seeds, &c.

Varieties of Wheat Grown in Britain.

The *Lark Farmer's Gazette* gives the following particulars about the varieties of wheat now grown in England and Scotland:—

The fine varieties of wheat, such as Chiddam, Talavera, or Pearl, are delicate growers, and yield least produce, although from their quality the grain of these wheats brings a high price. It is the farmer's interest to realize most money per acre, and he will better attain this by growing red wheats. Of these there are Kessingland, Hallet's, Browick's, and the Prolific Spalding, all belonging to the same class, and very large croppers; but the true Lammas red and Nursery red are by many considered preferable, the latter being a particularly saleable wheat, and by all judges considered equal to the finest white wheat for the baker.

In the best wheat growing districts of the south of England, a mixture of Lammas and Nursery is much grown. The straws being of different lengths, the ears have more room, and give the mixture the character of Fenton wheat, which is perhaps the most prolific and profitable white variety in cultivation. We may here observe in regard to sowing mixtures of wheat, that produce of the first mixture may assume quite a different character if sown again. The two varieties may hybridize and produce a new variety in a partial state of development. If mixtures are sown, it is safer to mix varieties which have been grown separate.

Wheat growers in East Lothian usually get a change of seed wheat from England every year. The extra cost is more than balanced by thinner sowing, to say nothing of the superiority of the crop, which is invariably better after English seed, and it has this further advantage, that the crop grown from English seed ripens at least a week earlier, which is of importance in the case of wheat sown late in the winter months.

Before concluding these remarks, we shall notice the special characteristics of two or three of the principal varieties mentioned above. The Nursery red, as we have stated, is much grown in the south of England, and its fine baking qualities make it a favorite in France. The grain is small, the straw very tall in soil adapted for it, and likewise stiff. This wheat, from the small size of the grain, should be sown thin. Lammas red has long been a favorite variety in East Lothian. It is a tall, stiff-strawed variety, producing a large weight of straw per acre. The grain produces fine flour, much esteemed by bakers. The Fenton is a white variety of wheat, and has long held a pre-eminent position in the opinion of East Lothian wheat-growers. The peculiarity of the Fenton wheat is the great dissimilarity in the length of the straw. A sheaf of this grain is cared down to the band. The straw is very stiff, and will stand much adverse weather.

A MICHIGAN POTATO-GROWER reports Eureka "equal in quality to Early Rose, and Snowflake a little better."

THE SNOWFLAKE POTATO.—Experiments published by Mr. Perkins of Iowa in the *New York Tribune*, go to prove that the Snowflake is a really valuable potato. With him it is a splendid cropper, very uniform in size, perfectly smooth, peels without waste, cooks through evenly, is very white and floury, and, in short, has no defect whatever. Other correspondents are forwarding similar reports as to the value of this new variety. The *London Garden* also, has a good word for the Snowflake.

BLUE-STEM WHEAT FROM BRITISH COLUMBIA.—W. G. R., Victoria, B. C., sends us by mail a sample of fall wheat that took first prize at the Agricultural Exhibition at Victoria on Oct. 7th. It was grown by Mr. William Smith of Swan Lakes, and is of the Blue-stem variety. The sample is a very large, bright, plump, thin-skinned grain; in fact may be called a magnificent sample. The wheat, our correspondent informs us, went 58 lbs. to the bushel. The Blue-stem variety is pretty well run out in Ontario, but evidently on the Pacific coast it is still in full vigor.

Correspondence.

WILD RICE WANTED.—Z. S. Hall, Halifax, N. S., wants to know where he can get the wild rice that grows in the Ontario Lakes.

A PROBABLE SWINDLE.—E. B. P., Brant, Ont.—We are afraid the party you enquire after is a dead-beat, as we can make out nothing about him.

SORREL.—C. B., Comox, British Columbia, asks "what is the best way to destroy sorrel out of land? Is a summer fallow the best method? Will some Ontario farmer answer?"

STEAMER.—Mr. Clinton, Ont.—One of the best steamers now in use is Prindle's Agricultural Steamer and Boiler which is made in four sizes and ranges in price from \$45 to \$115. It burns either coal or wood. Mr. W. Rennie, Toronto, can supply it.

SHELL MARL.—E. T., Grenfell, Ont.—The substance accompanying your note is "shell marl," the remains of fresh water shells. Probably the swamp in which you found it is underlaid with it. This you can ascertain by thrusting down a thin rod and noting whether the end is whitened when withdrawn.

SHEEP SHEARS—CATTLE FEEDER.—Mr. Nathan, Liberty, Mo.—The shears are an English invention not yet introduced here. We notice by our last English papers that the shears have been improved by making them to cut both by the opening and closing motion. The agents in the United States for the Yorkshire Cattle Feeder are the Detroit Seed Company, Detroit, Mich.

GRAPE-VINES IN VANCOUVER ISLAND.—Will some reader of the CANADA FARMER living on the Pacific coast answer the following questions:—Is it known as yet whether the hardy Grape Vines, such as Rogers, Concord, Delaware, &c., &c., will succeed in Vancouver Island or on the main land of British Columbia? Also if the Peach, Apricot, Nectarine and that class of fruit will flourish there? What is the price of good well-situated, wild, Government land in Vancouver?—C. M., Brantford, Ont.

TREES BURSTING THEIR BARK.—Can any reader of the CANADA FARMER inform me of the cause of and cure for fruit trees bursting the bark near the ground. I have been quite unfortunate, having had several dwarf as well as standard apple trees burst in this manner, and I am afraid they will die. The trees were in part planted last spring and grew rapidly, and were apparently doing well. The soil in which the trees grew is dry and moderately strong with plenty of limestone in it. The trees burst in the latter part of September.—X. F. P., Sebright.

SWAMP MUCK.—E. B., Oakville.—You will find in the last issue of the CANADA FARMER an article which answers nearly all the points raised. We do not think an analysis is necessary, nor would it be conclusive, as the value of the muck as a manure depends as much on the land to which it is applied as to its own components. If the deposit is muck alone, that is if it has not a considerable admixture of washings from the adjoining land, it is not of much good as manure, though good results follow from its application just as they would from any other mulch. When mixed with barnyard manure, chemical changes are made by which the acids are neutralized, and the muck is rendered available for plant food.

Miscellaneous.

The White Pine Weevil (*Pissodes Strobi*.—Peck).

Among what are usually termed "Snout Beetles" (*Corymbionidae*) there are many species destructive to plants such for instance, as the Plum Curculio (*Conotrachelus Nenuphar*) and the Apple Curculio (*Anthonomus Crataegi*), but there are others which attack and breed in the stems of herbaceous and woody plants. One of the most destructive of the latter is the well-known White Pine Weevil, which breeds in the young branches or leading shoots of the white pine and several other kinds of evergreens. This insect was described by Professor Peck many years ago, and a very minute description of its habits given, still we fear that few of those persons most interested in its operations would be able to recognize it from the many other closely-allied species.

This pest has probably been a denizen of our forest since pine trees came into existence, but it is only when it attacks our cultivated trees that we are likely to notice its depredations. In nurseries it is frequently very destructive, the female depositing her eggs on the terminal shoots during the spring and early summer, and the larvae, or grubs, penetrate the soft wood, working downward, the stems dying as they progress. Trees of six to eight years old will frequently be killed to the very ground in a single season, and we have to-day cut down and burned some twenty or more white pines, the stems of which were completely honey-combed by the larvae of this snout beetle.

The grubs and pupae can usually be found in the stems during the last of July and first of August in the latitude of New York City, the beetles commencing to appear the latter part of August, and continuing to come out through September. Whenever the leaves on leading shoots or branches of the White Pine, Norway Spruce, and closely allied evergreens begin to assume a yellow color during August, it is a pretty sure sign of the presence of this insect, and all such should be cut off and burned with their contents. The beetles hide away under old dead leaves and rubbish during the winter, coming out in spring ready for an attack upon our pines and spruce; hence it is quite necessary that all infected shoots should be removed and burned if this pest is to be kept in check. While this "borer" seldom kills the tree, like those which attack the main stem or more solid wood portions, still, by constantly destroying the leading shoot, trees become dwarfed and deformed, being rendered worthless for ornament or any practical purpose.

These pine weevils are more or less abundant throughout the country, and our nurserymen, as well as others who have infested evergreens upon their grounds, should not neglect to make a close examination of every dead shoot and branch to be found at this season. If the pine weevil is present, it will be found in or upon the dead shoots. It is a small, oblong, oval beetle, rather slender and of a brownish color, thickly punctured and variegated with small brown rust-colored and whitish scales. There are two whitish dots on the thorax and a white transverse band a little behind the middle of the wing covers. Its short, blunt snout projecting in front of the thorax will enable the novice to readily identify it as a member of the great *Curculio* or ground beetle family.—*Rural New Yorker*.

How Plants Feed.

The old idea that humus or vegetable matter is necessary for the aliment of plants seems to be untenable in the light of our present knowledge, which shows that plants feed on mineral matter. In a paper read at a recent meeting in England Dr. A. Voelcker said, in reference to this subject:

It is a very important question whether vegetable life is sustained by organic or mineral food. At one time humus, or the organic matter in soils, was regarded as the sole source of terrestrial food of plants, but the humus theory, which has done so much mischief in retarding agricultural progress, he thought, had received the final death-blow by the wonderfully clear and most conclusive argumentative writings of Baron Liebig, and he quite agreed with the great German chemist; but the luxuriant development of the crops usually grown on the farm depended mainly upon the available mineral food present in the soil, and not on its organic matter—indeed, he did not know a single fact which supported the view according to which plants live and grow vigorously upon the organic matters of the soil or manure, and not upon the mineral portion of the soil or the saline and mineral constituents of the manure. It had been established beyond controversy that the really essential elements of plant-food were mineral and not organic substances; and he was decidedly of opinion that the constituents of sewage had to become mineralized before they could benefit the growing crops. In porous and well-drained soils, and in land readily permeated by atmospheric air, the conversion of organic

animal refuse matters into purely mineral compounds proceeded with great rapidity; and this, by the way, was one of the causes why sewage farming succeeded better on light land resting on a porous subsoil than upon stiff clay soils upon imperfectly drained subsoils.

On stiff clay lands the decomposition of the animal refuse matter proceeded much more slowly than upon porous, light, and sandy soils. Hence it was that heavy clay land was generally manured in Autumn, while light land was more beneficially manured in Spring; for if ordinary farm-yard manure were applied to the land in Spring on stiff clay lands, there would not be sufficient time to convert the manure into mineral elements of plant-food, and a bad harvest would be the result. He would further state, in support of this view, that on soils not readily penetrated by air, organic matters were positively injurious, and the healthy and vigorous growth of all agricultural produce, and the destruction of organic matter, and the production of available mineral plant-food in porous soils, proceeded with great rapidity. He would quote in proof of this the interesting experiments of Boussingault and Lévy, who had shown that the air in a cultivated soil invariably contains less oxygen than the air above it. A portion of the oxygen, in fact, was consumed by the organic matter in the soil, and its place was taken by carbonic acid, resulting from the combination of the carbon of the organic matter with the oxygen of the air. According to the nature of the soil and the time of the year, and the way it had been treated as regards manure, the amount of carbonic acid in the air of the soil may increase to over eight per cent., and that of oxygen recede to less than twelve per cent., and invariably it is less than twenty-one per cent. by volume. For instance, on analyzing the air present in a light sandy soil, recently manured and after rain, Boussingault and Lévy found:

By Volume.		By Volume.	
Carbonic acid	9.74	Nitrogen	79.91
Oxygen	10.35		
Total	100.00		

In another sandy soil, unmanured, the air contained:

By Volume.		By Volume.	
Carbonic acid	0.93	Nitrogen	79.57
Oxygen	19.50		
Total	100.00		

These experiments show plainly that common dung and similar refuse matters are really burned up or oxidized in porous soils with great energy, and rapidly converted into mineral plant-food. In another experiment the same chemists found in the air in a stiff clay soil:

By Volume.		By Volume.	
Carbonic acid	0.61	Nitrogen	79.30
Oxygen	20.01		
Total	100.00		

Showing that here the combustion of the organic matters in the land proceeded more sluggishly, and, I may add, on such land the produce of our farm crops is generally more scanty than on a porous, well-aerated soil, plentifully supplied with mineral food, among which I include nitrates. He would make one other remark, and it was this: A large proportion of nitrogen in grass or other farm crops was not a sign of superior feeding quality, but the very reverse, as it indicated immaturity. Sewage grass was richer in nitrogen than the produce of permanent meadow land; but it was well known to all practical men that sewage grass was more watery, and although very useful as a food for milk cows, produced abundance of milk, but of a rather watery character.

USING HARD WATER FOR STEAM.—When boilers are ordinarily fed with hard water, it is worth while to save the drippings of the exhaust pipe, the condensation of the safety valve blow-off, and that from the cylinder, and use the water thus obtained to fill the boiler after blowing off. The result will be surprising in effect in loosening scale. So says the *Scientific American*.

A NEW SYSTEM OF PLASTERING.—Builders, owners and tenants of city houses will doubtless view with interest a new system of plastering, which is claimed to prevent the sudden and disastrous downfall of ceilings, so frequently occasioned by defects in the water pipes and consequent leakage and overflow. The invention consists of replacing the scratch coat and brown coat used in ordinary work by the combination of fibro-ligneous sheets with a cement composed of lime, sand and plaster. The sheets are of a fabric resembling coarse bagging which is secured to the lathing, and the cement is supplied in the ordinary way. A hard finish coating completes the work.

TYPHOID POISON IN WELLS.—The *Journal of Chemistry* warns the drinkers of water of wells near dwellings to beware of the typhoid poison, sure to be found sooner or later in those reservoirs, if any of the house drainage can percolate them. The gelatinous matter often found upon the stones of a well is a poison to the human system, probably causing by its spores a fermentation of the blood, with abnormal heat or fever. Wholesome untainted water is always free from all color and odor. To test it thoroughly, place half a pint in a clear bottle, with a few grains of lump sugar, and expose it, stoppered, to sunlight in a window. If, even after an exposure of eight or ten days, the water becomes turbid, be sure that the water has been contaminated by sewage of some kind. If it remains perfectly clear, it is pure and safe.

To Prevent Stacks from Leaning.

The usual way of keeping a stack from leaning is to thrust one end of a rail or pole against it and set the other end on the ground. This sometimes turns up the courses so as to conduct the rain toward the middle of a stack. To avoid all difficulty from this source, let it be braced by setting one end of a plank a few inches in the ground and the upper end pressed flatly against the bulge of the stack. This plank should stand perpendicularly, so as not to turn the courses of the sheaves up sidewise. The upright plank is kept in position by a rail or pole resting against a broad stake in the ground, while a cleat upon the plank prevents the other end from sliding. Several such braces may be fitted to a stack, which will hold it in correct position while settling. This manner of bracing a stack before it has settled, when there is danger that a high wind may blow it over, will often be found very convenient. When a stack is braced in this manner, the props can be removed at pleasure; whereas, when thrust against the side, it settles so heavily on them, that it is difficult to take them away if desirable, after it has settled firmly into place.

Stacks will sometimes lean to such a degree, that all above the bulge must be pitched off, and the stack re-topped. When most of the pitching is done on one side of a stack, the opposite side does not get pressed down so firmly, and it, therefore, settles more than the side where the material was pitched on. This causes the stack to lean; and by leaning, the courses will be turned up to such a degree that on one side it will be down hill toward the middle of the stack. Another reason why stacks lean is that the bulge is laid out further from the centre on one side than the other; and as the side that is laid out the furthest will settle most, the entire stack often leans so far as to fall over.

If the tops of the stacks lean, or if they are too flat, let a portion be pitched off and a new top built before long and heavy storms come on.—*New York Herald*.

TO BLEACH TALLOW.—In a copper boiler put half a gallon of water and one hundred pounds of rendered tallow; melt over a slow fire, and add, while stirring, one pound of oil of vitrol previously diluted with twelve pounds of water. Afterward add one-half pound of bichromate of potassa in powder, and lastly, thirteen pints of water, after which the fire is allowed to go down, when the tallow will collect on the surface of the dark green liquid from which it has separated. It is then of a fine white with a considerable degree of hardness.

WOODEN PAVING FOR FARM-YARDS.—For a wooden pavement, hemlock logs, sawed off in pieces five or six inches long, and these pieces squared to one or two uniform sizes so as to lay to advantage, are the best. They are to be placed on an end, the gravel or sand being first leveled carefully, and the joints all filled with sand or fine gravel. This will make a yard that any farmer may be proud of, and where hemlock timber is abundant, is the cheapest, easiest laid, and in every point, save durability, superior to stone. Other wood may be used, and almost any kind will be found durable enough to last a generation, if well laid at first, and extra blocks put aside to take the place of such as occasionally show signs of decay.

CONSUMPTION OF WATER BY CROPS.—In 1873, a series of experiments were made at the Observatory of Montsouris, France, for the purpose of ascertaining the quantity of water consumed by way of transpiration in producing a certain quantity of wheat. The result showed that for each pound of grain produced there was consumed from the germination of the seed up to the ripening of the grain, an average of 1,796 pounds of water. This is equivalent to the use of nearly 12 inches of water for a crop of twenty-five bushels per acre. By this it should be understood that a quantity of water equal to twelve inches in depth upon the surface of an acre of ground passes through the leaves of a wheat crop of twenty-five bushels, and is used in the process of maturing the grain and straw. This does not include the amount of water which evaporates or drains from the soil; nor does it include any portion of the rainfall which occurs between harvest and seed time.

HOW TO CATCH WOODCHUCKS.—A New York farmer gives the following plan for exterminating woodchucks:—1. Procure a good dog. 2. Get a water turtle small enough to enter the hole; bore a hole in his shell just above his tail; procure a piece of wire about six inches long, fasten to one end of this wire cotton wick saturated with kerosene oil. Fasten the other end of the wire to the turtle, place him in the hole, light the cotton wick and in a moment the turtle will enter the hole in double quick time, and will not stop until he reaches the end of that hole, and then he retraces his steps and appears in front again, ready for another march into another camp. You can imagine the surprise of the woodchuck on the entrance of such a blazing enemy; he leaves his "fort," only to meet death at his own door by the dog sentinel. I would remark that this effective plan is the invention of the Virginia negroes. I have seen it put in practice often, and never knew it to fail. It matters not what is in the hole—woodchuck, skunk or any other animal—he must leave on the approach of this formidable torchbearer.

Two Centuries Since.

This day two hundred years ago, The wild grapes by the river's side, And tasteless ground-nut trailing low, The table of the wood supplied.

Unknown, the apples red and gold, The blushing tint of peach and pear, The mirror of the water told No tale of orchards ripe and rare.

Wild as the fruits he scorned to till, These sales the idle Indian trod; Nor knew the glad creative skill, The joy of him who toils with God.

O Painter of the fruits and flowers; We thank Thee for Thy wise design, Whereby these human hands of ours In Nature's garden work with Thine.

And thanks that from our daily need The joy of simple faith is born; That he who smites the summer weed May trust Thee for the autumn corn.

Give fools their gold, and knives their power, Let fortune's bubbles rise and fall; Who sows a field, or trains a flower, Or plants a tree, is more than all.

For he who blesses most, is blest; And God and man shall own his worth Who toils to leave as his bequest An added beauty to the earth.

As soon or late to all that sow The time of harvest shall be given; The flower shall bloom, the fruit shall grow, If not on earth, at least in Heaven!

—JOHN G. WHITTIER.

TO PREVENT condensation in a steam pipe laid under ground, place it inside another larger pipe, filling the intervening spaces with pulverized charcoal. The outside pipe should be watertight.

A PERMANENT and handsome reddish color may be given to cherry or pear tree wood by a coat of a strong solution of permanganate of potash, left on a longer or shorter time, according to the shade required.

AN AGRICULTURAL ENGINE, with six legs, and weighing ten tons, is (so they say, we haven't seen it) at work on a railway in France. It has remarkable capacity for walking up hill with a heavy load, and can run or gallop on level ground at the rate of five to 12 1/2 miles per hour. —New York Tribune.

FISH-FLOUR.—A remarkable article called fish-flour has been brought forward the last few years. It is not as yet manufactured in any great quantity, as the article is still new in the market, and consequently there is no great demand for it. The flour is prepared from dried fish of the first quality; it is thoroughly deacidated, and then ground in a mill.

FERNS FOR MATTRESSES.—Every country neighborhood has woods which are full of ferns and brakes, which usually die and go to seed without doing any good, save as a gratification to the sense of sight. The softer parts, if stripped from the stems and dried in the sun, retain their toughness and elasticity for a long time, and are said to be superior to straw and husks, and even to "excelsior," for stuffing mattresses. The ticks, when filled, should be firmly stitched with a mattress needle, using strong, linen twine, and making the intervals between the stitches an eighth of a yard.

THE BARN-YARD.—The mere fencing off of a quarter of an acre next to the barn and sheds does not make a barn-yard. A good deal more is necessary to be done in order to fit such a lot for the uses to which it is appropriated. As soon as it is put to use, especially if the soil is retentive, and the water from the roofs around is allowed to flow into it, it becomes a loathsome quagmire, and remains so ever after, except in some exceptionally dry season. From one side or another it is sure to overflow in a rainy time, and in that overflow the farmer's money goes to waste most fearfully. The manure is trod into the soil by the stock, and is dug out again with much labor, and if all that is valuable is secured, the yard becomes a hole in the ground, that must be filled up with straw or muck or left worse than before for all practical uses.

THE PRODUCTIVE POWERS OF A GRAIN OF WHEAT.—A Nottinghamshire farmer, writing to a local paper, says:—"In September of last year, whilst sowing some seeds in my garden, I accidentally dropped a grain of corn amongst them; at least so I surmise, for I soon observed a blade of wheat spring up, and as I noticed that it grew very rapidly, I had the curiosity to protect it, and gave it every chance of coming to perfection. The result was as follows:—The number of ears on the root was 63 (40 very large), and though some grains were picked away by one of my hens, the number of grains left when counted was 3,044. I have the root of corn which I dug up, and am fully convinced that all was the production of one grain. I leave your readers to make their own calculations, supposing every grain of wheat could be made equally productive. I have often had the curiosity to notice the production of one root of wheat when growing in my fields, but never found more than 25 ears to one root."

LAST YEAR the United Kingdom had 2,874,200 acres of root crops (not including potatoes), and this year, it is believed, 33 per cent. more, and worth according to estimate, fully \$153,000,000 in gold.

COLORING PINE FLOORS.—An oaken color can be given to new pine floors and tables by washing them in a solution of copperas dissolved in strong lye, a pound of the former to a gallon of the latter. When dry, this should be oiled, and it will look well for a year or two; then renew the oiling.

BRAIN WORRY.—Many of us pray to be delivered from sudden death, and do we not worry ourselves into it? And if we do, can we not help it?

"Men do not really die of heart disease as often as it is supposed, but of apoplexy, or congestion of the lungs, so they do not die of brain work but Brain Worry." Scott died of it, Southey, Swift, Horace Greeley, and probably Thackeray."—London Times.

As Brain Worry induces premature dissolution by its depressing influence upon the general nervous health, by eating the brain faster than the waste is repaired, and as the means of sustaining and increasing nervous health is no longer impossible, those who suffer the debilitating influence of mental anguish or extreme mental fatigue, need only resort to the preparation of Hypophosphites invented by Mr. Fellows, as that will conduct the subject safely over the rapids of despair, and create in him strength to grapple with every difficulty.

This is no idle assertion, but an established fact.

TANNING FUR AND OTHER SKINS.—Remove the legs and useless parts, soak the skin soft, and then remove the fleshy substances, and soak it in warm water one hour. Now take for each skin, borax, saltpetro and Glaubersalt, of each one half ounce, and dissolve or wet with soft water sufficient to allow it to be spread on the flesh side of the skin. Put it on with a brush thickest in the centre or thickest part of the skin, and double the skin together, flesh side in; keeping it in a cool place for twenty-four hours, not allowing it to freeze. Then wash the skin clean, and take sal-soda, one ounce; borax, one-half ounce; refined soap, two ounces; melt them slowly together, being careful not to allow them to boil, and apply the mixture to the flesh side as at first. Boil up again and keep it in a warm place for twenty-four hours; then wash the skin clean again, as above, and have saleratus, two ounces, dissolved in hot rain water sufficient to well saturate the skin take alum, four ounces, salt eight ounces; and dissolve also in hot rain water: when sufficiently cool to allow the handling of it without scalding, put in the skin for twelve hours; then wring out the water and hang up for twelve hours more to dry. Repeat this last soaking and drying two or three times, according to the desired softness of the skin when finished. Lastly finish, by pulling and working, and finally rubbing with a piece of pumice-stone and fine sand paper. This works like a charm on sheep-skins, fur-skins, dog, wolf, bear-skins, etc.

EPPS'S COCOA.—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavored beverage which may save us many heavy doctor's bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack, wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—Civil Service Gazette. Made simply with boiling water or milk.—Each packet is labelled—JAMES EPPS & Co., Homœopathic Chemists, 43 Threadneedle Street, and 170 Piccadilly; Works, Euston Road and Camden Town, London.

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

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