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The Field.

The Potato Disease—Experience of Scotland.

The Royal Agricultural Society of England has been instituting an inquiry into the cultivation of the potato, with special reference to the disease. For this purpose, a schedule of questions was issued to various growers in England, Scotland and Ireland, by Mr. Jenkins, F. G. S., the secretary of the Society, and that gentleman's report has just appeared. The results of experience have been sought for in the North of Scotland, and replies from Lieut.-Col. Ogilvy, describing the experience of Mr. James McGregor, tenant of the farm of Carmichael's, Longforgan, Perthshire, and from Mr. T. Yool, Coulard Bank, Elgin, have been received.

Mr. McGregor has grown about 25 acres of potatoes annually, at an interval of five, six or seven years from the last potato crop on the same land, according as the seeds in the following course have been left for one, two or three years:—Oats after grass, potatoes, wheat, turneps, barley and seeds left for one or more years as just stated. Mr. Yool grows annually from 100 to 110 acres of potatoes, at an interval of six or seven years, the course being on clay loams, the same as that given above, the seeds being left one year only; on the lighter loams the seeds are left two years, and followed by oats, then potatoes, etc., and on the lightest land potatoes follow the second year seeds, oats being omitted from the rotation.

At Millhill farm, Col. Ogilvy grows, from diseased uncut seed, in a drill 110 yards in length, manured with farmyard dung at the rate of 12 tons to the imperial acre, 342 lbs., of which 107 were diseased; with sound seed, grown under similar conditions, 413 lbs. were got, of which 146 lbs. were diseased, from which it would appear there was a larger proportion of diseased potatoes from the sound seed than from the unsound. Mr. James Skirving, of Luffness, Mains, Drom, in the Lothians, sums up his experience as follows:—It is his firm belief that until we can control the elements we must just fight the disease as experience suggests. His experience leads him to adopt the following rules:—1, Don't manure excessively; 2, change your seed every second year at least; 3, what are early lifted, sell at once; 4, those for late sale allow to reach full maturity before they are raised, and never touch them after being stored until they are dressed for sale.

The replies of the Lothian growers are generally in harmony with those rules, but Mr. S. D. Sharreff, of Saltcoates, Drom, as to Mr. J. Skirving's rule 1, favors heavy manuring, thus:—He says farmers had better limit their acreage of potatoes if they cannot apply as much as 30 tons of farmyard manure, 4 cwt. of guano, 3 cwt. of mineral phosphate, and 1 cwt. of potash per acre, besides a top-dressing of 1 cwt. of nitrate of soda, and 2 cwt. of phosphates before earthing up. The prevailing opinion, however, is that high manuring renders the potato crop more liable to disease. In the south-west of Scotland the rotation consists of oats after lea, then potatoes, followed by wheat sown out with seeds, which remain one or two years. As to manure, Mr. G. Richmond, of Scotstown, Mains, Patrick, Glasgow, last year used no artificial manure, and had less disease. Large sized setts are most in favor. On the whole, the Scotch growers appear to be no nearer a solution of the phenomenon than their English brethren. Mr. Myatt, of Offenham, Evesham, Worcestershire, and Mr. Knowles, of East Plain, Cark-in-Cartmel, Lancashire, have experienced singular immunity from the disease, although the circumstances of soil, locality, and climate are different, and the details of cultivation are also dissimilar, excepting in the particular that both drill 36 inches apart.

Mr. Jenkins, in concluding his interesting report, after narrating the rotation of crops, says:—“The question sug-

gests itself—Is it possible that the preceding crop, whether clover, wheat or oats, or roots, beans, peas, &c., can produce any effect, whether prejudicial or beneficial, on the succeeding potato crop, as regards the potato disease? And if it can produce any effect, in what manner is it done, and what is the rationale of the process? There are some indications that the first question may eventually be answered in the affirmative; and although at present they are slight, I am very hopeful that they point in the right direction.” Assuming that the potato fungus may find a home on clover and straw, and, under a combination of circumstances favorable to its development, may even germinate there; or if it be that the potato fungus has two stages of existence, one of which it passes on the potato plant and the other on clover or straw—then, says Mr. Jenkins, in either case it will be seen at once that the systems of cultivation of the potato which are dominant in the United Kingdom appear almost designed to produce the maximum amount of injury to the crops; but this is mere assumption, for it must be frankly “admitted that at present we have no proof of the identity” of the potato fungus, the clover fungus, and the straw fungus, the one with the other.

Many growers attach great importance to early planting as a remedial measure. Much stress is also laid on the importance of effectually earthing up the plants, with a sharp ridge close to the haulm. It is also generally admitted that potatoes required for keeping should be harvested when the land is dry, if possible.

The inquiry thus instituted by the Royal Agricultural Society, and ably conducted by Mr. Jenkins, will not be altogether in vain. Certainly, in the interests of both growers and consumers, it would be highly desirable to arrive at such data as would enable growers to reduce to a minimum, if not altogether evade, the ill effects of this perplexing disease.

Concentrated Manures.

It is generally admitted that about 85 per cent. of fresh stable manure is pure water, and therefore comparatively useless as a fertilizer, in fact as much so as ordinary rain-water. It is further pretty widely understood that for every 100 lbs. of dry, active fertilizing matter gained, about 550 lbs. of manure so-called have to be handled. The result, from almost any business point of view, is not as profitable as it should be. Of course the principle is in a sense much like that followed in the extraction of precious metals; hundreds of tons of ore have sometimes to be overhauled to obtain but a few ounces of gold or silver as the case may be; but the analogy, although in many respects similar, dwindles into comparative insignificance when we contrast the precious rhino on the one hand with the droppings of quadrupeds on the other. Concentration of manure, therefore, in other words the elimination from the wet compost of those elements which neither in themselves nor yet in combination with other matters are of any essential use, must be a very important consideration, and, to begin with the elimination of water from common stable manure by evaporation or otherwise, will be an initiatory step in the right direction.

In England a custom, or rather process, has for some time prevailed of drying animal excrements in what are termed “earth closets,” and with such good effect that 200 lbs. of such excrements, when dried, have repeatedly proved equal to twenty tons weight of wet stable manure. The saving in handling and transportation alone in this instance is very material. The deodorization of stable manure by the free use of dry pulverized clay, loam or charcoal has proved successful in every case in which it has as yet been adopted. One hundred pounds of hay and oats consumed by a horse in 24 hours returns to nature more than half their carbon, hydrogen and oxygen, in the forms of carbonic acid and watery vapor, leaving less than half the weight consumed

in the shape of dung and urine, and from this fact the *Rural New Yorker* wisely deduces the following lessons:

“The atmosphere receives from the respiration of all animals a vast amount of carbon and vapor, elements of manure in one form and of crops in another, which the air can return to growing plants, therefore their presence in the dung heap is not essential to its fertilizing power. The same lint is still further enforced by the fact that decaying plants and animals give to an ever-moving atmosphere a still larger share of their organic elements as gases. Our most valuable fertilizers, such as the nitrate of potash and soda, the sulphate of magnesia and lime, the phosphate of lime and other bases, may be characterized in a general way as concentrated manures with carbon and the elements of water organized, happily left out. By natural fermentation and rottings, stable manure parts with much carbon, oxygen, hydrogen and nitrogen. The residue, thoroughly dried, is very porous, and will fix and hold a good deal of volatile carbon and nitrogen in their usual gaseous state. Dry stable manure, concentrated, will deodorize with Peruvian guano and dry privy manure to a considerable extent. Hence, it is practicable to make an odorless yet powerful manure for all agricultural and commercial purposes.”

Repeated experiments in the United States have proved that in hog-feeding from 3 to 3½ lbs. of corn-meal will make a pound of pork. In most irrigated districts corn can be raised in sufficient quantity to pay well at 1 cent per lb. for the meal. This would make the cost of pork from 3 to 3½ cents per lb., whilst it is usually sold at from 8 to 10 cents per lb. Now it has been shown in addition to these facts that in the feeding process corn does not really part with one-fourth of its bone-earth, nitrogen and magnesia; hence corn manure, with its oil and starch removed, is allowed to be equal to the best cotton seed or flax-seed cake as a fertilizer.

Following out these ideas Mr. Lee in the *Rural* says:—“To extract alcohol in whiskey from corn does not impair its value as a manure. To fatten grown cattle or hogs on still slops does not materially lessen its value as a dry commercial fertilizer. It is important that the farmer studies all the changes that grain undergoes in the beer tub and in the digestive and respiratory organs of farm stock. Practically considered, 50 lbs. of corn meal should make about 14 lbs. of good meal pork, and 10 pounds of superior manure.

“One advantage in fermenting and rotting stable manure is, that the active chemical action in the mass enables one to dissolve bones ground fine and buried in the manure cheaper than to use sulphuric acid for that purpose. Oil of vitriol, far in the interior, is a very expensive article to use as a manure. Hence, I have sought for a cheaper solvent of bone phosphates. Rather hot carbonic acid in decomposing stable manure appears to act similar to sulphuric acid, in forming a soluble phosphate of lime. Whatever may be the chemical action or reaction bone-dust rots fast in rotting manure. I have not tried hot vinegar on bone dust, but I have a theory that this organic acid may be made very cheap from sorghum syrup, and then used to dissolve bones.

“What nature does in a slow way may often be done rapidly by simply concentrating her forces, as when wood is burnt by bringing the sun's rays to a focus through a common lens. Cheap hot acids made at home may give us potash from fine granite and phosphoric acid from fossil bones and apatite much cheaper than commerce now supplies them. About 75 per cent. of the ash of wheat is the phosphate of potash.”

The Action of Drains.

In my travels among farmers, and especially among those who believe in drains and their attendant improvements, I am surprised that many do not properly understand the manner, or rather position in which the water enters the drain. It is of course understood that a drain only removes the surplus water, and hence a common barrel filled with earth may be taken as the representative of the undrained soil. If into this barrel we pour water until the earth becomes saturated, the surplus will run over the top and our barrel represents a soil too wet for cropping. If, previous to putting in the water, we make holes in the side of the barrel at different distances from the bottom, they will represent so many drains laid at different depths. If

wenow pour in the water we will find that it will first sink to the bottom of the barrel, until all the soil is saturated, and then the surplus will rise and run out at the lowest opening; if this affords it vent as fast as poured in at the top, it will rise no higher, but if the supply exceeds the ability of the opening the level will rise until it does find escape even though this be over the top. So it is with the open soil. All soils have a point at which the water permanently stands; in some places on high land this point is far below the surface, and in low lands too near the surface for successful farming. When rain falls, it sinks into the soil until it meets this water level, and raises it in exact proportion to the amount of rain; if deeper openings are not found the low ground is overflowed, but if properly constructed drains are laid, the surplus escapes before approaching sufficiently near the surface to interfere with the crops. Even where the drain is too small to immediately give vent to all the surplus water, no harm ensues, because the action of the drain is kept up to its full extent after the rain ceases to fall, and until the level is reduced to that of the bottom of the drain. We may then assume that water enters the drain from the bottom, and that on soft ground drains are often closed by the soft mud, or quicksand, being forced up from below, and very seldom, if ever, from material from above; hence on this kind of bottom it is safest to use narrow boards under the tile. Theoretically, this water level should be at the bottom of the tile all over the drained land, but practically, it is found to rise between the drains to a height which varies with the nature of the nature of the soil and the distance of the drains apart. This is chargeable to the capillary action of the soil, raising the water like a sponge.—T. J. E.—Cor. Country Gentleman.

Puccinea, or Blight in Grain.

The following is from an essay read by John Feast, florist, of Baltimore, before the Academy of Science

This, from the earliest ages, has been and proved to be a source of much trouble and loss in crops, and not confined in one section of the globe, but all over the world; it is a word of obscure meaning, possibly derived from the Greek word *cuxa*, (closely packed), in allusion to the crowded manner in which the little plants are placed. Puccinea-graminis is a plant too well known to farmers under the name of blight. It attacks the stem and leaves of all kinds of grain, at the first having the appearance of orange colored streaks, which afterwards assume a deep chocolate brown color. The little plants chiefly attack the parenchyma immediately below the stomata with which the cuticle abounds, each individual is so small, that any stoma on a straw will produce from twenty to forty fungi, and every one of them will, no doubt, produce at least one hundred reproductive particles, so that the progeny from a single stoma will be enough to infect a whole plant. The period of germination is supposed not to exceed more than a week, and as the reproductive particles are exceedingly light, they are wafted aloft in the air, which is thus loaded with clouds of animated dust, ready upon the first favorable occasion to carry blight and disease into all the neighborhood, and upon examination a piece of infected wheat stem, highly magnified, will show the disease as stated.

Agriculturists may examine not only their crops, but the origin and advances also of all those obstacles which nature has opposed to the success of agricultural labor, as if to awaken the energy of reason and to reward the farmer for the exertions of his intellectual faculties by the satisfaction of surmounting them.

Botanists have long known that the blight in grain is occasioned by the growth of a minute parasitic fungus on the leaves, stems, and glumes of the living plant. Felice Fontana published in the year 1767 an elaborate account of this destructive pest so injurious to grain, and since that time modern Botanists have given figures both of grain and grass affected by it, using high magnifying powers in their researches, which have been of much benefit to the farmer and the world at large.

In order, however, to render explanation more easy to be understood, it is necessary to premise that the striped appearance of the surface of the straw, which may be seen by the naked eye, is caused by alternate longitudinal partitions of the bark, the one imperforate, and the other furnished with one or two rows of pores or mouths, shut in dry, open in wet weather, and well calculated to imbibe fluid whenever the straw is damp. Pores or mouths similar to these are placed by nature on the surface of the leaves, stems and branches of all perfect plants, a provision intended, no doubt, to compensate in some measure the want of locomotion in vegetables. A plant cannot, when thirsty, go to the brook and drink, but it can open innumerable orifices for the reception of every degree of moisture, which either falls in the shape of rain and dew, or is separated from the mass of fluid always held in solution by the atmosphere; it seldom happens in the driest season that the night does not afford some refreshment of this kind to restore the moisture that has been exhausted by the heat of the preceding day. By these pores, which exist also on the leaves and glumes, it is presumed that the seeds of the fungus gain admission, and at the bottom of the hollows to which they lead they germinate and push their minute

roots. No doubt, they may be traced into the cellular texture beyond the bark, where they draw their nourishment by intercepting the sap that was intended by nature for the nutriment of the grain; the grain, of course, becomes shrivelled in proportion as the fungi are more or less numerous on the plant, and as the kernel only is extracted from the grain, while the cortical part remains undiminished. The proportion of flour to bran in blighted grain is always reduced in the same degree as the grain is made light. Some will not yield sixteen lbs. of flour to two bushels of grain, and it is not impossible where the grain has been so completely robbed of its flour by the fungus, that if the farmer choose to incur the expense of threshing and grinding it, bran would be the produce, with scarcely an atom of flour for each grain.

Every variety of grain is subject to this disease, but it is observable that the spring sown is not so liable to be damaged as when sown in the fall, and rye less than wheat, probably because it is ripe and cut down before the fungus has had time to increase in any large degree. Some kinds of wheat are affected more than others, like the bearded wheat, which has its straw full of pith, is less subject to blight than the beardless kinds; also, it has long been admitted by some farmers, though scarcely credited by Botanists, that wheat in the neighborhood of a barberry bush seldom escapes the blight. Some observing men have of late attributed this very perplexing effect to the farina of the flowers of the barberry, which is in truth yellow, and resembles in some degree the appearance of the rust, or what is presumed to be the blight in its early state. It is, however, known to Botanists that the leaves of the barberry are very subject to the attack of a yellow Parasitic fungus, larger, but not otherwise different from the rust in grain.

It is believed by some of the best writers on the subject, that the yellow and dark colored blight are different species of fungi to begin early in spring, and first to appear on the leaves on wheat in the form of rust, or orange colored powder; at this season the fungus will, in all probability, require as many weeks for its progress from infancy to puberty as it does days during the heats of autumn; but a very few plants of wheat thus infected are quite sufficient, if the fungus is permitted to ripen its seed, to spread the malady over a field, or indeed over a large space of country. The chocolate colored blight is little observed till the grain is approaching to ripeness; it appears then in the field in spots, which increase very rapidly in size, and are in calm weather somewhat circular, as if the disease took its origin from a central position. It may happen that the fungus is brought into the field in a few stalks of infected straw, uncorrupted among the mass of dung laid on the ground, previous to the sowing of the seed, and if experience shall prove that uncorrupted straw can carry the disease with it into the field, it will cost the farmer but little precaution to prevent any mixture of fresh straw from being carried out with his rotten dung to the field; also, to search diligently in the spring for young plants of wheat infected with the disease, and carefully to extirpate, as well as all grasses, for several are subject to this or a similar malady, and needs but care, industry and perseverance in some measure to check the ravages so destructive to the crops in all countries.

SORREL—The presence of sorrel indicates acidity in the soil. A clean summer fallow with frequent ploughing is a good way to eradicate it. Lime and salt is a good application, especially where the washings from salt-works can be cheaply procured. Slake the lime with a strong solution of this salt, and apply twenty to thirty bushels to the acre in the spring.

MANURE FOR WHEAT—The *Delaware State Journal* says: Wherever organic matter abounds in the soil a free use of bones and potash will speedily restore it to its original fertility. In sandy soils organic matter in the form of peat, muck, or leaf mould should be combined with the bones and potash. The finer the bones are ground the more speedy their action. If the bones are ground in a raw state, that is, without steaming or burning, and ground very fine and mixed with three times their weight of fine muck or peat, or leaf mould, and kept moist for three weeks before being used, they will generate all the ammonia necessary to the rapid growth of wheat or other growing crops, without the addition of other substances.

SELLING HAY—E. B. Jackson asks whether it is possible to sell all the hay and straw off the farm and still keep up or even improve its fertility. In a general way, I would answer, yes. In Bucks county nothing is more common than this plan. All the hay and straw except enough to support and feed the teams and cows, is hauled off and sold in Philadelphia, and stable manure hauled back by return waggons. This plan is of course only available within certain distances from the manure supply, for such a bulky article will not bear too long a haul nor too heavy freight bills. When winter carriage can be resorted to, it will bear a much greater distance. Can the fertility of the farm be kept up under such circumstances by the use of commercial fertilizers? I think it can if an occasional crop of clover is turned under to furnish the needed supply of decayed and decaying vegetable matter. Most of our commercial manures contain all the elements of plant food, except vegetable matter, and this may be furnished by turning under second crop clover.—Cor. Country Gentleman.

Action of Plaster.

I have used plaster for ten years on my place, and have received most benefit from it on grass lands and on corn. From pretty close observation, I have found its effect most obvious in wet seasons and have repeatedly observed no benefit in a very dry season. I am no chemist, but am only a reader of what the chemists tell. No ammonia being present in the ordinary atmosphere, but inasmuch as it has been detected in rain water, my theory is that rain water coming in contact with the sulphate of lime, or plaster, two new combinations are formed. The carbonate of ammonia—a volatile salt, is decomposed. The sulphate of ammonia, a non-volatile salt and valuable fertilizer, is formed on the one hand, and on the other a carbonate of lime, also desirable on many soils. I think I secure the benefit of plaster, if its action is as described, by sowing it in the fall, during winter, or very early in the spring. The rains and snows, necessary for its active benefit, are thus secured, while if sown, as many of my neighbors do, late in the spring, the money which it cost is, in my opinion, very often thrown away, if a dry season occurs. One bushel and a half to the acre is the proper quantity, no more, no less.—Cor. Practical Farmer.

THE SOIL found on the slopes of Vesuvius is said to be an antidote to the potato disease and other fungoid diseases of plants.

A HARNESS kept soft and pliable with good neat's foot oil will last almost a lifetime. It is stronger, because slightly elastic, and will seldom wear off the hair.

SOME ONE wrote to Horace Greeley inquiring if guano was good to put on potatoes. He said it might do for those whose tastes had become vitiated with tobacco and rum, but he preferred gravy and butter.

TESTING SEEDS.—It is said that they test the vitality of grass seeds in Northern Europe by placing a quantity of them on a knife-blade and heating it over a lighted candle. The seeds which are alive will crackle, while the dead seeds will char on the blade.

A FOOL and a lazy man stand a worse chance to succeed as a farmer than in any other department of life. To be a good farmer, a man must have good common sense, and he must reduce the facts that nature reveals to him to practice. He must follow nature, not force her. He must be obedient to her mandates.

A CORRESPONDENT of the *Kansas Farmer*, says a large hog breeder in Illinois informs him that he has produced eleven pounds of pork from a bushel of corn and seventeen pounds from a bushel of wheat. He grinds the wheat, pours boiling water over it and allows it to stand some hours.

PLOUGHING UNDER COVER.—One of the latest patents is an umbrella attachment for ploughs. An adjustable socket and a crank will enable the kid-gloved farmer to pursue his studies without regard to the heat of the sun or the beating of the rain. We think a rocking chair towed behind, in which the learned agriculturist of the future can recline at ease, would complete the arrangement.

AT THE RECENT FAIR of the Warwickshire Agricultural and Horticultural Society, among the prizes offered was one of \$50 to the best ploughman to plough not less than one acre 5 inches deep; \$20 to the female servant who had longest resided in the same family, and \$15 for the male servant ditto. Also, to the shepherd who had reared the greatest number of lambs in proportion to the number of ewes, and to the laborer who had supported a family, not less than five children, the greatest number of years without assistance except in sickness, premiums amounting to \$100.

TO BREAK A HALTER-PULLING HORSE.—We give, for what it is worth, a plan which a correspondent furnishes to a contemporary, for breaking a halter-pulling horse. We doubt the advisability of it, though it might probably be successful in its object:—"Get a piece of bed-cord four times the length of the horse; then double the cord in the middle. Then put the horse's tail through the loop thus formed. Then cross the cord on the horse's back. Then pass both ends through the halter ring under the horse's chin, and then tie him with both ends of the cord. When the horse pulls, all the strain comes on the root of the tail, which will cause him to step forward at the first pull. Put this halter on every time you tie him."

THE N. Y. *World* says of charcoal: The stimulating power carbon has upon seeds is noticed by Liebig in his chemical explanation of the effect of charcoal as a fertilizer. He stated that the carbon of the charcoal forms the base of the carbonic acid, which acts beneficially on plants, by a gradual combination with oxygen, but he admits that the beneficial effects of charcoal as a fertilizer depends upon the presence of other substances besides carbon. He says that plants thrive in powdered charcoal and may be made to blossom and bear fruit if exposed to the influence of rain and the atmosphere. Rain-water must therefore contain one of the essentials of vegetable life, and this is ammonia.

Grasses and Forage Plants.

Grasses and their Importance.

Grass is the sheet-anchor of agriculture. One-sixth of the whole vegetable growths may properly be classed as grasses. The grains are grasses, and the clovers generally but improperly are called. The clothes on our backs, the shoes on our feet, the hats upon our heads, the beds we sleep upon, the meat we dine upon—what are they but grass, transmuted in the laboratory of the sheep's and ox's stomachs? Grass is the most important crop grown on the earth, without it the world could not exist. Where there is no grass there is a desert.

The varieties of grass are almost infinite. Botanists have described, classified and named some 6,000 species. Two hundred are capable of cultivation. A single sod may contain fifty distinct varieties.

A wise provision of nature has been made for the universal diffusion of grasses. Of some varieties the seeds are capable of being carried hundreds of miles in the stomach, unassimilated; in others, the seeds have hooks with which they cling to the hair of animals; some have wings with which they float upon the air and are borne hundreds of miles, perhaps across oceans or deserts. Others again have creeping roots, as well as seeds, with which to reproduce themselves. Even the very cutting off which destroys most plants does not injure the grasses, but, instead, incites to renewed and more vigorous growth.

The grasses are not only the most valuable part of the vegetable creation, but they are the most widely diffused. While the fruits and most other of vegetable products are confined to narrow belts, the grasses are universal. The tropical jungle, the rigorous arctic zone, the temperate climate, are each adorned with their verdure. They furnish food alike for the birds of the air, the beasts of the field, yea, and for lordly man himself—for what are corn, wheat and the rest of them but grasses?

What can be done with grass may be illustrated by a few figures comparing the products of England and France. In France 53 per cent of the cultivated land is under cereals, in England but 25 per cent. France produces five and a half bushels per head for her 35,000,000 people; England produces five and one-ninth bushels for each of her 22,000,000. This immense disparity in the produce of each acre is due to the manure furnished by the English grass lands for the cereal crops. In England there are three acres of grass to furnish manure for every one acre of grain; in France less than one acre of grass to make manure for one acre of grain.

The whole grass question, and a great many other questions, are summed up in the pithy aphorism put in the mouth of an old farmer:—"No grass, no cattle; no cattle, no manure; no manure, no crops; no crops, no farmers; no farmers, no nothing."

Sowing Clover—Spring Harrowing of Wheat.

(To the Editor of the CANADA FARMER.)

SIR:—Please state the best time to sow clover seed, and if wheat is benefited by harrowing in the spring; and if so what kind of harrow is used, and if the harrow teeth should incline backwards.

ONIDA, Ont. SUBSCRIBER.

The latter part of summer or in the beginning of September is the best time to sow clover seed. When sown in the spring, there is a difficulty in a dry season in getting sufficient root so as to withstand the heat and dry weather. The seeds being exceedingly minute, they should be harrowed in with a very light harrow, or, better, should be planked in with an instrument that will just scrape the surface. The seeds should not be buried more than a quarter of an inch deep.

Harrowing wheat in spring is beneficial. The harrowing may be repeated two or three times, at intervals of a few days, until the wheat is twelve inches high. The smoothing harrow, with the teeth inclined backwards, should be used. This implement does not injure the plants, while it pulverizes the soil effectually. Broadcast or drilled wheat may be harrowed equally easy, and drilled wheat as easy across as with the rows.

Timothy, or Herd's Grass.

Timothy or Herd's grass, (otherwise Cat's-tail,) *Phleum pratense*, is now thoroughly naturalized on this continent. It was introduced here from Europe, and from here re-introduced into England. This is our most extensively cultivated grass, but singularly little is known of it. It grows to an average height of from two to three feet; but specimens have been seen five and six feet high. It is not a good pasture grass, and though valuable for hay, is of small account for feeding, except in conjunction with other grasses. Timothy should not be shaved close, nor should sheep be pastured on it when the bite is not ample. It is found with two kinds of roots, fibrous and bulbous. If the bulbous-rooted stems are cut below the first joint before the tuber is mature, the grass will die assuredly. So if sheep or horses nip it down close, it will perish. It should be cut when about half the blossoms have turned brown and the upper part of the spike is purple, and when the first dry spot shows above the first joint.

The Culture of Meadows.

E. Kolbery, of Vaiden, Miss., contributes to *Phillip's Southern Farmer* a valuable essay on the culture of meadows, etc., from which essay we extract the following, which is applicable elsewhere as well as to the Southern States, for which it was written:—

To improve these marshy old pastures small ditches should first be cut in order to drain off the stagnant water, which will cause the marsh plants to die out, and will also remove the sour taste from the grass. After this is done, the brars, burrs, willows and thistles must be extirpated: then the sink-holes are to be filled up by throwing in the dirt from higher places, thereby levelling the surface for the use of the mower. But the old turf must be saved; it must be removed from the elevation, replaced and pressed tightly by tramping on it after the ground is sufficiently level, and the same idea must be observed when sinks are to be raised more than two inches—the grasses grow through a covering of two inches. The use of this old turf is particularly necessary on those places where the fertile soil has been removed, leaving a hard, sterile surface devoid of humus earth, so essential to the growing grass.

On places where turf is scarce, sow from four to seven pounds of grass seed per acre, covering them with the harrow, rake and roller. Observe that seeds be sown which are adapted to the particular kind of ground, as it will require a variety for poor, dry soil, widely different from that which is suitable to wet, fertile land. The newly laid sod must be finished by the use of the rake and roller, as the harrow would damage the sods, and prove more damaging than beneficial. When the ground is so rough that the proposed plan for levelling would be too expensive, or where weeds are too troublesome, it will be necessary to "break up" the ground and cultivate it until the weeds are destroyed and the surface is sufficiently even, and then sow grass on these places. A practical farmer will easily decide the preferable way. The hoe is the most efficient instrument to abolish the weeds; cultivating small grain with the plough and harrow will not fulfil the object. A large portion of the weeds will expire where meadows are mown before the weeds drop their seeds, and the grasses will in time gain the ascendancy.

Here the question arises as to whether it is necessary to delay mowing until the grass seeds have fallen out, in order to secure and preserve a compact turf. This is practicable only in cases where, after removing the hay, the meadow is immediately harrowed and rolled; without which labor the seeding is worse than useless. Most old meadow farmers of experience affirm that meadows improve by annual mowing and pasturing in spring and fall. When in the spring the ground is so soft that the cattle make visible tracks in the sod, they should not be permitted to graze upon the meadow, but sheep may pasture it with impunity. Spring pasturage is not generally considered detrimental to the following hay crop, because stock only crop the young and tender blades which are exposed to night frosts, but when frosts cease and the rank growth of grass begins, the pasturage must immediately be discontinued.

In the manner above described, a farmer is enabled to readily convert an old field into a fine meadow; and by giving it some attention each winter, by manuring poor places, the production of hay and grass will annually augment and he will be enabled to winter a large amount of stock at comparatively no expense. This meadow should be divided into two fields; one should be devoted to permanent pasture, the other to the production of hay. The fields should be connected by a lane with the stock yard, and the stock will return each evening, and, in the course of the year, depose an immense quantity of precious manure.

A MISSOURI FARMER, while admitting the value of other grasses and clover, thinks red top is the best grass for summer pasturage. He claims for it that it will stand drouth better than blue grass, is well adapted to tenacious clay soils, and will thrive on wet land better than most varieties.

Millet.

This grass ought to be cultivated a great deal more than it is. It yields largely, being of rank growth, and makes excellent food for milch cows. A correspondent of the *Rural New Yorker*, in his account of the proceedings of the Herkimer County Farmers' Club, gives the following remarks, made by Mr. Whitman, on the properties and cultivation of Millet:—

Mr. Whitman said, from what experiments he had made in raising this crop, he was satisfied it was a valuable one. Millet produced a good yield of rich food. In feeding it to domestic animals, he had not found it objectionable in any case, except when used for horses. The seed was too rich and oily for this purpose, and, as he thought, was the occasion of horses passing too much urine.

The seed may be sown in June, after the time for planting corn—or, indeed, that for any other crop except buckwheat. It produces an excellent yield, both of stalk and grain, and cattle like it better than hay. The seed is particularly relished by fowls, and it was a profitable crop to grow for this purpose alone. He said we have occasion many times to break up lands late in the season. Corn and other grain crops are not unfrequently destroyed at a time when it would be too late to replant. In such cases Millet could be used as a late crop with the best results. He found the average yield to be at the rate of twenty to twenty-five bushels of seed to the acre, and one and a half tons of straw, after the seed was taken out.

He always made a point of cutting Millet while the stalk is green, and when harvested in this way cattle prefer it to hay. It grows to good height, reaching the shoulder, and may be cradled and bound like grain. Mr. W. said he had not been very particular in taking all the seed from the straw; he did not care to do that. His usual course was to throw the bundles on the floor, beating out the seed that would shell readily with the flail. The straw with the remaining seed was given to his cows, and it produced the very best results.

Hungarian Grass.

There seems to be considerable difference of opinion among farmers as to the value of this forage plant. Some hold it in high esteem, while others think it but little preferable to straw. In most cases in which a poor opinion is entertained of it, we imagine it will be found that it is allowed to get over ripe before cutting. It must be mowed before the seed matures, or it will be coarse, reedy and un-nutritious. The fodder and seed crops must be treated on separate systems. A correspondent of the *N. Y. Times* details his method of growing this grass, which is, we think, about right. He says:

I write for the benefit of those who may be in doubt as to the practicability of growing in our climate Hungarian grass as fodder for stock. The favorable result attending an effort which I made last summer induces me to furnish the numerous readers of *The Times* with a brief delineation of my method. I sowed, on July 9, 1874, one bushel, or forty-eight pounds, of Hungarian grass-seed on one and a half acres of ground, taking pains to distribute it evenly, in which I succeeded very well. It came up as well and grew as rapidly as any crop that I ever grew, and was ready to cut for fodder the 26th of August, when I cut all except twenty-one rods, which I saved for seed, making the crop in forty-eight days. The estimated crop was three tons of good fodder and four bushels of seed. Of the quality of the hay as food for stock, I am of the opinion that it is fully equal to herd's-grass. I am feeding it to my stock. They eat it with a relish, and do well. I do not hesitate to recommend it as one of the best crops that a farmer can raise to help out the supply of good nutritious food for his stock.

IN EUROPE about thirty sorts of grasses are sown together. Here we do not use above half that number; we might increase the number to advantage. Only those varieties that ripen together should be sown together for meadows. For pastures we want varieties that will ripen in succession. The soil should be prepared in the most thorough manner. To grow grass with complete success, underdraining is necessary. On drained land, the grass will stand drouth and frost to a greater degree. The seeds being very small they should only be just covered. Experiments have shown that only half of the seeds germinate when covered an inch deep, while nearly all will germinate if covered only a quarter of an inch deep or so.

TO SOW LIGHT GRASS SEED.—A correspondent of the *Practical Farmer* has not found a machine capable of properly distributing the lighter and more chaffy grass seeds, such as blue grass. He therefore, still clings to hand sowing, and he does it as follows: The course which I now pursue is thoroughly to mix one part of the seed with one part of coarse, sharp sand, or fine gravel, (the sharper the better,) and moisten the mass, carefully manipulating it until the seeds and chaff are well separated and caused to adhere to the rough particles of sand. The weighty sand thus becomes an effective vehicle with which to distribute the buoyant seed, which by moisture is made to adhere to the sand.

Implements.

Nuts for Inventors to Crack.

Many persons, probably, think that, in this latter fourth of the nineteenth century, we have attained the acme of perfection as respects farm implements. The advance, in the recollection of persons still in middle age, has been so wonderful that doubts are pardonable as to whether the same rate of progress can be maintained much longer—in fact, it looks sometimes as though there were nothing left to invent. A little consideration of the subject will show that there is much to be achieved before we can dispense with inventors.

To begin—We have not as yet got a really efficient potato-digger. There are several machines in use, some moderately good, some unendurably bad. None of them will work in damp, tenacious soils; and the laborious work of gathering potatoes is still almost universally done by hand. The last year has seen a great advance in self-binding reapers, but the perfect machine is yet in futuro. Ditching and draining ploughs are yet very imperfect affairs. We want a plough that will cut a deep narrow ditch for drain pipes. There is room, too, for a machine that will gather stones into wind-rows; one that will dig or bore post holes; a post-driver, a steam traction engine whose cost is not prohibitory—one that can be used for ploughing, all kinds of farm hauling, road-grading, etc.; a flax-pulling machine; a small and cheap windmill for doing feed cutting, pumping, and a host of things. Corn-husking machines do not amount to much as yet. Some laughable but no valuable device for milking cows automatically have been proposed—one, we recollect, where the poor animal carried slung under her a tin pail; a tube was inserted into her teats; as the milk was secreted it flowed, drop by drop into the pail. In sheep-shearing, something efficient will be produced some day. A good cultivator fit for all soils would be useful. Sun shade attachments for ploughs are a late, and though somewhat looking, sensible invention.

We have given a few things which will furnish inventors with nuts to crack for a long time yet. Till all these wants are filled, and some of them are really pressing, it cannot be said that we are much nearer to perfection than we were twenty years ago.

Preserving Tools and Implements.

THE CANADA FARMER has said much on this subject already, but it is a subject upon which much can be said. There is no greater source of loss to our farmers than that from neglect and carelessness in taking care of their tools. As additional to what we have said, we reproduce a sermon from the *Western Rural* on this topic:—

The depreciation of tools from being weather worn, thus subjecting the wood work to premature decay, and the iron and steel parts to rust and consequent quick deterioration, probably costs the farmers of the West, on an average, fully five or six times the expense naturally occurring from wear and tear, when implements are properly housed and cared for. The cost of lost motion and increased friction for want of care in itself is enormous in the aggregate, and when to this is added the various kinds of neglect, these losses are in themselves sufficient to eat into the profits of the farm so seriously as in many cases to leave but little margin for profit. All that is necessary to obviate this loss is to carefully house all machinery when not in use, to give the wood-work a coat of good paint, once in, say, three years, except in the case of such implements as wagons, which should have a coat of paint every year, especially the wheels and box.

Many farmers are deterred from the proper care of farm machinery from a supposed difficulty in taking apart and again putting them together. This really is no excuse, since any intelligent man may, by a very little study, come to understand the relative connection of parts even of the more intricate farm machines, as threshers, reapers and mowers. Indeed he must do so in order to be able properly to operate them, and therefore it should be his first business to properly understand them.

In placing machines and implements away for the season every iron or steel part liable to rust should be coated with a mixture of kerosene and lamp black, which we have found to perfectly protect them, and when again wanted for use it is easily wiped off. All iron parts of the machine, not liable to friction when in use, should be painted, and so also should all wooden parts, or so often as they may need them.

Thus there will be, comparatively, but little wear, and machines that now cost their original value for repairs in three years, and which too often are practically useless at the end of that time, should be good at the end of ten years.

There is another thing more neglected than the keeping of tools in repair, and that is properly marking all tools with the initials of the owner. To do this a branding iron of suitable size should be procured and the various wood parts of machines should be branded where the letters may be seen, and yet where it may not weaken the parts. Marking iron parts is quite as easy with the steel tools now easily procured every where. Steel is not so easily thus marked, but easy enough in another way. All that is necessary is to warm the steel so that wax or hard tallow may be smoothly coated over the surface to be marked. Let it cool; when entirely hard, mark the name through the coating with a graver, then apply nitric acid. At the end of a few minutes, or when the acid has eaten into the steel sufficiently to etch the name in, wash most thoroughly with cold water to remove the acid, and then with warm water remove the wax or tallow and rub dry with a woollen cloth. All this care, which may be done in the winter in a suitable shop, which every farmer ought to have if possible, will be found to be one of the best little investments on the farm.

The Marker as a Farm Tool.

As the marker is one of the very few tools that the farmer makes for himself, it is rather a disgrace to him to furnish himself with so poor an implement as he generally does. It is necessary to have a good tool to mark out a corn or potato field with, straight and true enough to insure close and nice work in cultivating the crop. The best set of markers I have seen was a set of shafts and handles, made and ironed together, so that any sized marker-head could be bolted on for use as it was wanted, and after using could as easily be taken apart and both put under shelter. The three gauges I prefer for field use are 4 feet 1½ inches, 3 feet 3-5 inches, and 2 feet 9 inches, the first giving just four rows to the rod, the second five rows, and the third six rows in width, so that by marking with either of these I can easily count up the number of acres in a piece and the yield per acre. Now it is a fact that one-half the farmers do not know the exact size of the fields they are working year after year, but by using a marker of either of these gauges when planting his corn or beans or potatoes, if his lot is of an equal width, and of an equal length, he has only to count up the number of rows each way, when he will readily reduce the whole to acres. But if the lot be wedge shape, or of whatever shape, if the sides are straight, then, by counting up the middle rows each way, he can, by multiplying these together, arrive at the same result, and have the exact number of acres parcelled. I call attention to this way of measuring a field because it is so easily done. To do good marking of a field it is not safe to depend on the straight side of a field to make the first mark by, but set some stakes a few feet in from the side of the field to go by, the first time marking across, then with a good four-tooth marker, each time crossing the field running the first tooth in the last mark, he will space off the field in that way with one gauge; but it is often best in practice to mark a field with a narrower gauge one way than it is the other, because nicer and more thorough work with the cultivator can be done in the narrow gauge than in the broad one. For instance, planting corn in the three feet 3-5 inch gauge gives twenty-five hills to the square rod, which is about the right amount on the ground; but I prefer to use instead for north and south rows the 4 feet 1½ inch space, which will let in the sun, and also will give room to cultivate once or twice after the corn is to large to go through, if planted nearer together. Then crossing these with a 2 feet 9 inch marker, giving twenty-four hills to the rod, I can do the best work with the cultivator to prepare for hoeing in this narrow-gauge. But, in marking so for potatoes, it is quite necessary to go the way of the broad-gauge, the last time plowing them out, which will leave them a broad seed-bed as a hill for the potatoes to grow in. As it is now coming the time of year for the thrifty farmer to overhaul his farm tools—seeing that they are put in repair for the next season's work—I would call his attention to the marker, and if he has not got one of the best, ask him to make himself one, for I claim that the man that uses a tool is the one above all others to make one for his own use.—*Cor. New York Times.*

REMOVING DRY PUTTY.—Hard putty can be removed from a window-sash by simply applying a piece of heated metal, such as a soldering-iron or other similar implement. When heated (not red hot), the iron is to be passed slowly over the putty, which is thereby rendered so soft that it will part from the wood without difficulty.

An Improved Harrow.

The *Pacific Rural Press* says that Mr. Donohue, a Californian, has recently patented an improved harrow. It is so constructed that by its natural hanging and draft, without extra weights, the outer edges will keep down to their work and preserve as nearly as possible a uniform level and penetration of the teeth. It is usual to employ a weight on each wing of a sectional harrow to keep the edges from buckling upward, but by the improvement of Mr. Donohue the harrow is so constructed that the edges will keep down without a weight.

Two hinged sections of a double harrow are made, each being rhomboidal in shape and consisting of as many parallel timbers as desired to hold the teeth. These timbers are united together by a transverse timber near each end. At one end of each section a partial parallel timber is secured, so that when two rhomboidal sections are placed together in the usual way of uniting the two sections of a harrow, the two partial timbers of the two sections will stand in the same line, and will, in effect, be a divided timber in the middle of the harrow. The hinge straps or plates are secured upon the parallel timbers so that the hinges at the opposite ends of the harrow will come on opposite sides of the divided timbers. If a line should be drawn through the two hinges it would cut the harrow into two trapezoidal figures, thus causing the weight of the corners to be nearly at right angles to the breaking line or joints of the two hinges, so that their superior leverage, owing to their greater distance from the hinges, will cause them to keep closely down to the ground when the harrow is working.

The double-tree is attached to the harrow so that its middle will be in a line with the two hinges, and in order to accommodate it to the harrow, the inventor constructs it in two parts and hinges them together as shown. The draft will, therefore, be in a direct line with the hinges, and consequently the sections will have equal rise and fall, and as the diagonal corners are further away from the line of draft than any other portion of the harrow, they will keep close to the ground.

Gang and Sulky Ploughs.

In answer to an inquiry, Mr. Dunlap communicates to the *Chicago Tribune* the following:

It is doubtful if a jury of farmers would agree as to the very best plough, when so many very superior makes of ploughs are on the market. I have ploughed from nearly all the large manufacturers, and I find one better in some respects than another, but, when all their virtues are summed up, to say which is really the best is too complex a question.

I have yet to see any value in the gang plough, and yet they appear to gain in popularity. As a general rule, two horses are enough for one man to manage; and for these a 14-inch plough is sufficient. There are a few farmers and farm hands who can manage four horses and a gang of two ploughs, and such men ought to have the gang ploughs; but the average farmer, farm hand, or boy, should be excused from using them. But the single, sulky plough is an implement that ought to come into general use. I have had a Skinner sulky for nearly ten years, and could not well do without it or a similar one. The past fall I used a Hapgood sulky for ploughing out potatoes, and it proved the best thing for that purpose that I have seen. There was no dodging of the hills. A neighbor, who had a twenty-five dollar potato-digger, also gave it a trial, and pronounced it better than the digger, as it did better work. For all but the most able-bodied men the sulky plough is of inestimable value. I know a soldier who lost a leg and an arm, who does all his ploughing with a sulky plough, drives his planter, and does his cultivating with a sulky cultivator. Without these he could do little of his farm work, but, with them, is enabled to grow fine crops, with a small amount of help.

At the Sidney trial, last year, a large number of sulky and gang ploughs were present. Only a few of the latter were sold, while orders for the former were lively. One agent told me that he had taken orders for seventy. The most, if not all, of the sulky ploughs are made too heavy, and no doubt this defect will be corrected. The cost of a sulky plough is the most serious objection against them; but I have no doubt that a good one will be put on the market at \$30 to \$35, against \$60 to \$70, as at present. In the first place, they will be cheapened by using less material; and, in the second place, by the manufacture in greater numbers.

SMALL THINGS.—Every farmer should have a small room, tight and warm, which he can lock and where he can keep his small tools. Then he wants a good solid work bench, with an iron vice on one side, and a wooden one on the other. For iron working, he wants a solid piece of iron for an anvil, a seven pound steel-face hammer, a riveting hammer, one large and one small cold chisel, two or three punches from one-fourth to three-eighths inch, a rimmer and countersink, to be used with bit-stock; a screw plate that will cut a screw from one-fourth to three-eighths inch; then with round iron of the various sizes, and ready-made nuts he can make any bolt he wishes. For carpenter work, he wants a square, a shaving horse, drawing knife, a set of planes, auger from one-half to two inches, a fine hand saw, with coarse cross-cut and rip saw, large cross-cut and rip saw, large cross-cut saw for logs, and a grind-stone.—*American Agriculturist.*

Horticulture.

THE ORCHARD.

Grafting the Plum.

(To the Editor of the CANADA FARMER)

Sir,—Would you or some of your readers inform me of the proper time to graft the plum? Is it done earlier or later than the apple?
Whittington, Ont.

D. J.

The grafting of stone fruits, as the plum, cherry, peach, etc., should be done before that of the pippin fruits, apples and pears. The right time is just when the buds of the trees to be grafted are swelling. It may be done, however, when the foliage has appeared, if the grafts have been kept dormant.

Peterborough Horticultural Society.

The annual meeting of the above society was held in the town hall, Peterborough, on Tuesday the 19th January—the President, Rev V. Clementi, in the chair. After the reading and confirming of minutes, and an appropriate address from the President, the following statistical report was read by the Secretary,—

Members on the Roll.....	62
No. of Entries, July Exhibition.....	154
No. of Entries, September Exhibition.....	374
Prizes awarded, July Exhibition.....	\$ 91 00
Prizes awarded, September Exhibition.....	163 00
Funds in hand.....	376 00

Messrs. T. B. Clementi and Jas. Edwards having been appointed Auditors, the Treasurer's account, showing a balance in hand of \$376.00, was submitted to them, found correct, and adopted.

The following officers were elected for the current year:—Mr. George Barlow, *President*, Mr. John McClelland, *Vice-President*, Mr. Robert Brown, *Sec. Treasurer*.

Committee.—Messrs. C. Ormond, A. W. Kempt, D. W. Dumble, James Edwards, John Burnham, James Best, —Harris, C. F. Henderson, and Edg. Walton.

The Rev. V. Clementi was appointed Delegate to the Provincial Exhibition, which will be held this year in the City of Ottawa.

Injury to Forest Trees by Wild Animals and Birds.

At a recent meeting of the Scottish Arboricultural Society, a very interesting discussion took place on the above subject. The portion we subjoin bears practically upon many of the grievances to which the Canadian farmer is frequently subjected:

Mr. McCorquodale said, the experience of every extensive planter was that where game was numerous there was very great difficulty in getting up young plantations. Rabbits, hares, deer, and squirrels were relatively the most destructive to trees, and the best remedy was shooting down the game, although few proprietors would allow that to be done. The outline fence of plantations should be made proof against game, and for this purpose he used wire netting, with 1½ mesh, 3 feet high. Rabbits, however, sometimes climbed over such a fence, and it was absolutely necessary to keep a sharp look-out for burrows, and fill them up to prevent the rabbits and hares getting into the wood below the fence.

Mr. Dunn, Dalkeith Palace Gardens, said that if proprietors really knew the great amount of injury done by game to young plantations, and the immense loss sustained, they would not be so fond of keeping up a large stock of game. Rabbits did more injury to plantations than all other animals put together, though destruction was caused by hares, squirrels, deer, rats and mice (especially the short-tailed mouse), and moles. He then proceeded to read a very interesting paper on the injury done to young trees by birds. He showed the crops of capercaillie, which he reckoned the chief offenders, containing no fewer than 266 shoots and buds. Where these buds were taken off by birds, he explained, the effect was to stop the growth of the tree for that year. Black game, wood pigeons, the tom tit, and the bulfinch were also very destructive to young trees.

Mr. James Rait, Castle Forbes, said that in Aberdeenshire foresters were much troubled with rabbits and roe deer. He saw lately a wood of 42 acres which had been all destroyed except 2 acres; another of 1300 acres, a large proportion of which had been destroyed by hares, rabbits and roe-deer; and another of 300 acres, almost entirely spoiled. He maintained that it was far more to the interest of proprietors of hill lands to plant them than to stock them with game, for by planting them they would give a return of £1 per acre, if not more. As an illustration of this, he instanced a wood of 300 acres which had lately been sold for £17,000, whereas if the land had been let for shootings, it would during the whole time not have brought in more than £500. He was anxious that the Society should take up this subject in thorough earnest.

Mr. Lorraine, The Riding Mill, Northumberland, said that if they shot down the birds they would have a plague of insects which would destroy every thing.

Mr. Maxwell, of Munchos, said that birds did damage, but to a very small extent. It was the rabbits and roe-deer that made the greatest havoc with young plantations, and it would be one of the greatest blessings to the country if the rabbits could be exterminated.

Mr. McCorquodale said that plantations returned £1 per acre for every year, and he illustrated this by a wood of eighty-five years' growth, which he had lately sold at £132 per acre, and another of forty-five years' growth, which realised £70 per acre clear profit.

Mr. Franco recommended that the rabbits should be shot down in the summer when young.

The Chairman, in closing the discussion, said that many interesting facts had been elicited, and pointed out that the effects of such meetings would be to extend useful arboricultural knowledge all over the country.

Fruits at the Toronto Electoral Division Society.

Referring to the subject of fruit at the above meeting, the Directors' Report read as follows:

Your Directors beg to draw your particular attention to the great improvement which has taken place in fruit culture of late years, and more particularly in pears and hardy grapes. Ten years ago few people would have believed that Canada could produce such fine specimens of these fruits as were shown at the late Provincial Exhibition held in this city—many of them grown in the vicinity of Toronto, and of a quality that would do credit to any country. The exhibition referred to was held too early to show orchard fruit in perfection; the local shows, however, held later in the season, were well supplied with large collections of apples, pears, and hardy grapes in perfection.

Amongst the apples were splendid specimens of the Rhode Island greening, Golden Russet, Northern Spy, Baldwin, Yellow Bellflower, Dutch Mignonne, Swarzie Pomme Gris, and Blenheim Orange.

Amongst the pears were the Bartlett, Belle Lucrative, Beurro Diel, Louise Bonne de Jersey, Swan's Orange, Baron de Mello, Clapp's Favorite, Edmund's, Vicar of Winkfield, Napoleon, Easter Beurro, Duchessa d'Angoulme, Doyenne Siouille, Beurro d'Anjou, Beurro Clairegaut, Sheldon, Beurro Gris d'Novor, Noveau, Lawrence, Winter Nels and Flemish Beauty, which were all very fair.

In the display of plums there was a great advance on former years, and fine specimens of the following varieties were shown in the several collections, viz. Roo's Autumn Gage, Bradshaw, Bryanstone Gage, Blecker's Gage, Coo's Golden Drop, Denison's Superb, Duane's purple, German Fruite, Green Gage, Jefferson, Lombard, Magnum Bonum, (yellow and red), Smith's Orleans, McLaughlin, Pond's Seedling, Reine Claude de Bayay, and Washington. All of these were grown in and around Toronto.

The hot-house grapes indicated no particular improvement on those of former years, but good specimens were shown in all the leading varieties. There were none of the lately introduced new varieties exhibited, although fine specimens of the White Lady Downes, Madresfield Court Muscat, Foster's White, Golden Champion, and Mrs. Pince's black Muscat have been grown to great perfection at one or two private establishments in this city. Nearly all the varieties thought worthy of cultivation in Europe have been introduced here, and are now extensively cultivated in cold vineries in Toronto and neighborhood. The success which has attended the cultivation of hardy grapes has been beyond the expectation of those who have ventured to plant for profit. There are hundreds of acres of land in this neighborhood well adapted to the growth of the vine, and some thousands of gallons of good wine have been made from the produce of vineyards not two miles from this city, and very large quantities of vines have been

planted during the past season, within the city limits. The varieties considered the most worthy of notice are the Concord, Crovelling, Delaware, Rogers' Hybride, Nos. 3, 4, 7, 9, 15, and 18, and Salem, Iowa, and Israella. These have all ripened their fruit in perfection, and can be recommended as worthy of cultivation in this section of country.

Peaches and nectarines do not generally succeed well here in the open air; but in some favorable situations good specimens have been grown. That the peach does not succeed well here is generally owing to the importation of American trees, which are mostly budded on the seedling peach, as a stock. On this stock the tree grows too luxuriantly, and does not ripen its wood early enough to stand the winter; consequently the tree is short lived, and gives but little satisfaction. Peach trees for Canada should be grown on plum stock, and the best variety for this purpose is the common English blue plum. In orchard houses, peaches and nectarines can be grown to great perfection, and the great superiority of Rivers' new English varieties is here particularly noticed. The following varieties have fruited here during the past season, viz.—Peaches—Lord Palmerston, Early Beatrice, Early Albert, Early Alfred, Early Victoria, Lady Palmerston, Rivers' Early York Victoria, Noblesse, and Violet Native; and of Nectarines, the Rivers' Orange, Prince of Wales, Hardwick Seedling, Red Roman, and Early Newington.

Blackwood on Pruning.

If any man could be so ungrateful to the Giver of all good things, he was not to be found in the land of Kent, but must be sought in some northern county, where they grow sour gooseberries. Master Martin Lovejoy had, in the month of October 1812, as fine a crop of pears as ever made a fountain of a tree.

For the growers did not understand the pruning of trees as we do now. They were a benighted lot altogether, proceeding only by rule of thumb, and the practice of their grandfathers, never lopping the roots of a tree, nor wiring it, nor dislocating its joints; and yet they grow as good fruit as we do. They had no right to do so; but the thing is beyond denial, therefore, one might see a pear tree rising in its natural form, tall and straight, and goodly, hanging its taper branches like a chandelier with lustrous weight, tier upon tier, the rich fruit glistening with the ruddy sunstreaks, or with russet veinage mellowing. Hard thereby, the Golden Noble, globular and stainless, or the conical King Pinvin, pencilled on its orange fullness with a crimson glow, or the great bulk of Dutch Codlin, oblong, ribbed and overbearing. Here was the place and the time for a man to sit in the midst of his garden and feel that the year was not gone in vain, nor his date of life lessened fruitlessly, and, looking round, with right good will, thank the Lord and remember his father.—From the Story of Alice of Lorraine.

BUDS FOR PROPAGATION.—In selecting buds for propagating the peach, I would not give much preference to single, double, or triple buds, believing that the single buds start the soonest in the spring, the double buds the surest. And in budding from yearly trees there is not much but single buds, unless we use very large buds. I prefer to have bud sticks just a little smaller than the stocks, without regard to whether the buds be single or otherwise. In propagating from bearing trees, I find it best to use triplicate buds, as then there is always wood as well as fruit buds. For a budder that can tell fruit and wood buds apart, it will make no practical difference, so far as my observations extend.—*Cor. Gardener's Monthly.*

LARGE CHESTNUT AND ASH TREES.—I send the measure of some fine Spanish Chestnut trees in Oak Park, Tralee, Ireland. The largest, a splendid tree, is still in full vigour; its stem measures 17 feet 3 inches in girth at 3 feet from the ground, and 13 feet 9 inches at 12 feet. The second tree measures 11 feet 4 inches at 3 feet from ground. The third 11 feet 10 inches at 3 feet; and the fourth, blown down, measures 13 feet at 3 feet from the soil, and 10 feet 10 inches at 11 feet. They all have the appearance of being perfectly sound. There is also close to them a common Ash with enormous spreading head; its trunk measures at 4 feet from the ground 13 feet in girth.—*H. Vine, Gardener.*

ASHES FOR ORCHARDS.—The *Scientific American* sensibly says: "The point to which we now call attention is, that our farmers and fruit-growers have ignored, or rather have been ignorant of, the importance of wood ashes as a vegetable stimulant and as the leading constituent of plants. Even coal ashes, now thrown away as useless, have been shown both by experiment and analysis to possess a fair share of alkaline value. We will relate only one experiment: Some twenty-five years ago we treated an old hollow pippin apple tree as follows: The hollow, to the height of eight feet, was filled and rammed with a compost of wood ashes, garden mold, and a little waste lime (carbonate). The filling was securely fastened in by boards. The next year the crop of sound fruit was sixteen bushels from an old shell of a tree that had borne nothing of any account for some time, and for seventeen years after filling the old pippin tree continued to flourish and bear well."

THE FRUIT GARDEN.

Culture of the Gooseberry.

The extremely variable nature of the growth of the different varieties of gooseberry, and the difficulty often experienced in getting at the fruit on some of the strong-spined, close-growing sorts, has led me to believe that a few remarks on an improved mode of culture which, although by no means new, is not often adopted, may be acceptable to amateur growers, to whom also any system which economises space, as this purposes to do, will, no doubt, be acceptable.

To all such I recommend the adoption of the Espalier mode of growth, as in every respect far more suitable for their purpose than the common mode of bush training, as it has a very neat and pleasing appearance, and the trees are far more easily manipulated and pruned than when sprawling over the ground. The system of pruning also is so very much simplified, that the veriest trower could hardly make a mistake when the trees are fairly started on the right system.

We often find, in the common mode of bush-culture, that it is a difficult matter to prevent many sorts, such as the Warrington, for example, from growing as it were downwards, almost like weeping-trees: and being thickly set with spines, pointing mostly inwards, the operations of thinning-out the young fruit and gathering the ripe fruit are thereby rendered rather unpleasant; besides which, the weight of fruit often bends down the branches so much, that on the occurrence of heavy rains all that on the lower branches is rendered comparatively useless for delicate purposes. By the system of training to Espaliers, all these troublesome matters are reduced to a minimum. Of course, there are ways and means of circumventing these and other inconveniences, even on the bush system of training, as for instance, by securing much longer stems free of wood, and systematically thinning out the branches, as only good practical hands know how, but these are more complicated in their management, and I claim for the Espalier system a perfect simplicity of management, and therefore, hold it to be the best adapted for the purposes of the amateur, to whom also it should further recommend itself as leaving a greater space for cultural operations, as well as from its general neatness of appearance.

The amateur may obtain at the Nurseries young bushes fit to commence training at once, but if he prefers it, and time is not an object, he will do well to prepare his own plants, by selecting in October the strongest shoots he can obtain of such varieties as he may prefer (of which a list for guidance will be hereafter given), shortening them to six inches, and removing carefully every bud except the two at the top. The reason for this is to prevent the future tree from throwing up suckers, which are very detrimental. The bottom of the cuttings should be cut through horizontally close to the joint, and they should then be planted in an open space, in good ground, inserting four inches of the cutting, and leaving the two buds well above the surface. The object to be aimed at is to get a good stout stem a clear foot above the surface, and therefore, as soon as the shoots show signs of vitality, and probable growth in the spring, the healthiest shoot from the two buds must be retained and encouraged to grow up straight and strong, by training it to a stake as it advances in growth. With erect-growing sorts this is not much trouble, but with varieties of a drooping habit, constant care must be taken to fasten them to the stake whilst the shoots are young and pliable. This is all the care they will require the first year.

At any time during the dormant season these shoots should be shortened, so as to form a good stem one foot from the ground, at which point the future head, for training purposes, will start. Most of the buds, except four or five at the top, may be rubbed off. In the spring, as soon as growth commences, preparation must at once be made for training, but as they will not make any very great growth the first year, a few straight stakes, from two to three feet in length, will be all that will be necessary to keep the young shoots in position.

There are two methods or forms of training, either of which may be adopted with advantage. One is to train up a strong centre stem, and from this lead out the side-shoots horizontally at equal distances. The other is to train out two strong shoots horizontally, one each way, from the centre, but no centre shoot, these two side shoots being trained Cordon fashion, about one foot from the ground, and the bearing shoots trained upright from these to the top of the trellis at equal distances, so as to cover the whole of it. The shoots may also be trained in the shape of a fan, that is, diverging in all directions from a common centre; but I do not recommend this as the most economical mode of training, the growth being more unmanageable from the tendency, which all fruit-trees trained in that manner have, to concentrate the growth in the centre of the tree.—*Cor. Florist.*

PLASTER FOR GRAPE-LEAF BLIGHT.—F. R. Elliott writes to the *Michigan Farmer*: "I have tried plaster alone, sulphur alone, tobacco as a snuff and as a water decoction—alone each, lime, copperas and salt—but from no one alone have I gained. With the use of say four parts plaster, three parts copperas, and two parts salt, thoroughly mixed or ground together fine before using, I have found that the benefit of it was great, but that the first dusting must be as soon as the blossoms show, then again immediately after the setting of the grape, and then continued on from week to week until the seed of the grape has been fully formed."

THE FLOWER GARDEN.

New Double-Flowered Zinnia.

Zinnias must be familiar to all our aged readers, for as far back as we can recollect, the old single variety was grown under the name of youth and old age in almost every garden. The Double Zinnia we may call a new flower, for it has been introduced but a few years, and has found it self so well adapted to our climate that the double Zinnias in America seem a different and better flower than the Zinnias we see growing in Europe. The plant usually grows two feet in height, at least seventy-five per cent give flowers almost as beautiful and quite as double as the Dahlia. A plant that commences flowering in June will grow larger and handsomer, and the flowers better every day until destroyed by frost. Tie a string around the stem of a flower, or mark one in any other way, and that flower will be found perfect in six weeks from the time it was



marked. Having taken particular pains in improving the Zinnia, I think my strain is excellent; indeed, my Zinnias have been pronounced by florists from England, France and Germany, the best in the world. Seed will do well sown under glass, but must not have much heat, and plenty of air. Seed will, however, grow well in a bed in the garden, and transplant as safely as a Cabbage plant, and this should be done as early as possible, and when the plants are small; cold, rough weather will do them good. The plants begin to blossom when quite young, and the first flower is not usually good. Set them about eighteen inches apart.—The largest flowers are sometimes nearly six inches across. The Zinnias are coarse plants, and we do not suppose every one will be pleased with them, but we must remember that there are always places in the garden where large, and even coarse, plants look well, and those that are more delicate are useless.—*Vick's Floral Guide.*

Colors of Flowers.

As a gardener not deeply versed in matters scientific, I have often been struck with the marvellous beauty, as well as diversity of colors to be found in flowers. To thoroughly understand the blending of colors, and how the fertilization of flowers possessing certain hues is pretty sure to produce others of a specific color, one must needs be an artist. To suppose that a brilliantly colored flower has a special attraction for insects is no new idea, but to put forward the notion that rich colours are necessary in order to attract insects for purposes of fertilization, seems to me to be a mistake. Take, for instance, Mignonette; though its flowers are devoid of color, yet bees will hover over them in myriads. In this case not color but fragrance seems to be the attraction, the latter giving intimation to the bees that the food of which they are in search exists here in abundance. The remarks which you have quoted in reference to this matter seem powerful obstacles to the progress of the idea that color is necessary in order to attract insects

for purposes of fertilization, and the conclusion seems obvious that brilliant colors have little to do with the matter. Indeed, if we were to follow the theory out to its fullest extent, it is obvious that none but brilliantly-colored flowers could exist, inasmuch as no others would be fertilized. Where, amongst wild flowers, is there to be found a variety of more brilliant and attractive hue than the scarlet field Poppy, and yet it is not so common as Charlock or Groundsell, or even Shepherd-Purse, none of which have flowers in any way very attractive? Perhaps, on further enquiry, it will be found that insects, after all, do not play such an important part in regard to the fertilization of flowers as has been imagined, and that, in our haste to ascribe to them such virtues, the existence of self-fertilizing powers in plants may have been, to some extent, overlooked. There is another point to which attention should be directed. The pollen taken from a flower will only be effective on the pistils of others of the same species; and as the insects in their rambles proceed upon no definite plan, but alight on one species and then on another, mixing all kinds of pollen together, it seems difficult to imagine that under such conditions fertilizing properties will be retained. Nature says that autumn tints in leaves and fruits are often as rich as those existing in flowers, so also are the hues of the foliage of many plants, both tender and hardy, at all times. Of what use, therefore, are such rich hues in foliage, the normal color of which should be green? What one would like to understand better is this—Why is it that plants wholly of the same species, and, in all other respects, alike in growth, in foliage, in habit, in period of blooming, growing in the same soil, and existing under exactly the same conditions, should yet produce flowers of such wondrously diverse hues of color? In garden varieties of plants, most of this diversity is due to hybridisation, but the efforts of the hybridist in this direction differ from those of insects, inasmuch as, whilst theirs have no aim beyond the maintenance of life, the efforts of the hybridist are directed by intelligence towards securing a specific object. Of course, with such efforts have been combined the ennobling influences of cultivation, and what these alone have done in the way of improving the size, quality, and color of flowers, no pen can adequately describe. High cultivation also effects other changes in plants, into the character of which it is unnecessary now to enter.—A. D. in *The Garden.*

Plants and Flowers at the Toronto Electoral Division Society.

The following is that portion of the Directors' Report, read on Wednesday the 20th ult., referring to the above subject:—

Of the plants and flowers, the following is a list of new or rare kinds, not before exhibited in Toronto:—*Euonymus Aurea*; variegated, a hardy plant, admirably adapted for the climate, with glossy, golden leaves, deeply margined with dark green; *Achyranthus*, Mrs. Harvey, superior to *Gilsonii*, leaves bright carmine, and stems bright pink; *Adiantum Parleyense*, a very fine variety of Maiden Hair Fern, the best yet introduced; *Croton Irregularis*, a warm greenhouse plant, with long green leaves, spotted with gray; *Croton Interruptum*, similar to the foregoing; *Caladium*, Dr. Lindley, very fine; this belongs to a very ornamental class of stove plants, useful for decorative purposes; *Clematis*, a very rapid climbing plant for greenhouse or outdoor cultivation, flowering very freely in the summer. Amongst the finest were *Clematis Jackmanii*, the flowers deep rich purple; and *Lanuginosa*, pale lilac; *Coleus Chameleon*, one of the prettiest of this class of plants yet introduced, owing to the many different colors in the leaf. *Fuchsia* (Golden Tri-color). Sunray—very fine, with distinct foliage. *Fuchsia*, Miss Arthur—Petals pinkish white, corolla rich carmine. *Gloxinas*, a very interesting class of plants, with erect and drooping bell-shaped flowers, of which *Gloxinia Alice* is very good, with flowers carmine and white. *Geraniums*, double white. *Aline Sisley*—the best of the double white yet introduced; also the *Princess Teck*, double, very fine scarlet, of free habit; the *Jewel*, a very fine double of the nosegay section, with miniature foliage, flowering very freely, bright scarlet, and the *La Nigra*—habits similar to the last mentioned, flowers deep and purple, and quite distinct in color from any other variety. Of single geraniums there were shown the *Cyclops*, *Duchess de Montford*, *Iago*, *Dr. Murret*, *La Pero* *Hyanthe*, *Masterpiece*, and *Louis Vallot*.

Of Palms—a very interesting and handsome class of plants, for table and conservatory decorations, there were shown the *Areca Latuensis*, *Corypha Australis*, and *Lantana Borbonica*, also, *Retinospora Plumosa*—a very ornamental shrub, and, *Retinospora Plumosa Aurea*, similar to the above, the leaves tipped with gold.

In addition to the foregoing new plants exhibited, a number of others have been introduced into the city, which will doubtless be shown at the exhibitions of the present year, and amongst which we may name, *Accubia Japonica*, *Begonia Foliata*, *Begonia Spiculata*, *Begonia Richardsonii*, *Begonia Fuschoides Alba*, *Begonia Wiltoniensis Alba*, *Begonia Pernelli*, and *Begonia Marquese* of Nedailac. Also *Guaphalium Aureum*, variegated; *Glacium Corniculatum*, and Double *Lobelia Pumela Grandiflora*.

THE VEGETABLE GARDEN.

Rhubarb.

Rhubarb was first introduced into cultivation in 1735. It came originally from China. The root, used medicinally, came to be called Turkey Rhubarb, because it got into Europe through the hands of Turkish merchants who purchased from the Chinese, among whom it has been used for many centuries. The first attempts at cultivating it were made in 1763. The London Society of Arts and Sciences awarded its gold medal to Sir William Fordyce for raising 300 plants of it in 1791. In 1793, the medal was awarded to Mr. Thomas Jones; in 1794 to Mr. William Hayward, for propagating rhubarb by offsets taken from the crowns of large plants.

Rhubarb is among the most wholesome and most palatable of our garden vegetables, and it is raised so cheaply and easily as sometimes to become a drug on the market. It should have a place in every kitchen garden. The soil cannot be too well prepared for rhubarb. It should be deepened or trenched to at least eighteen to twenty-four inches. The land should be well drained. A good dark loam is the best. At the bottom of the trenches dig any vegetable refuse, weeds or leaves, and plenty of well-rotted stable manure. The soil can scarcely be made too rich.

As soon as the frost is well out of the ground, the crowns may be planted in rows, three feet apart every way; in large varieties more space should be given. The crown should be planted near the surface level, and should not be covered more than an inch.

No stalks should be cut during the first year, but the plants should be allowed to get well established. In the spring or fall a good dressing of manure will be necessary.

If grown from seed, drill in the seed eighteen inches apart, and cover one inch. Thin the plants to six inches apart. When the plants are one year old, proceed as described above. The roots may be taken up in spring and divided.

A favorite variety is the *Lancens*, which is one of the least acid sorts, tender and of excellent flavor, early and very productive. It was originated by Mr. Myatt.

The Mammoth Victoria is another favorite, which has some imperfections, being thick-skinned, acid, and later than some kinds, but it is of large size and great productiveness.

Carrots.

In Belgium and other continental countries, the carrot has been grown as a field crop for a longer time, and to a much greater extent, than in Britain. In the year 1763, the attention of the Society for the Encouragement of Arts, etc., was directed to this branch of husbandry, and, in consequence, an account of the culture of carrots and the uses to which they may be applied, was published by Robert Billing, a farmer in Norfolk, who states that he obtained, from twenty and a half acres, five hundred and ten loads of this root, which he found equal in use and effect to a thousand loads of turnips, or three hundred loads of hay. Some of them measured two feet in length, and from twelve to fourteen inches round. Horses are remarkably fond of carrots, and when mixed with oats they form very good food for them. The efficacy of these roots in preserving and restoring the wind of horses, it is said, been partially known in Suffolk, where carrots were administered as a secret specific for the complaint long previously to their being commonly applied as food for that animal. Carrots are equally beneficial as nourishment for cows, sheep and swine. It was stated, some year since, that at Purlington, in Yorkshire, the stock of a farm, consisting of twenty working horses, four bullocks, and six milch cows, were fed from the end of September to the beginning of May on the carrots produced from three acres of land. The animals, during the whole of that period, lived on these roots, with the addition of only a very small quantity of hay.

Carrots contain a large amount of water—eighty-six parts in one hundred pounds. Their most distinguished dietical substance is sugar, of which they possess nearly six and a half per cent. Starch is also found in small quantities, with a small portion of albumen. The ancients used the seed both of the wild and cultivated carrot as an internal medicine against the bite of serpents. They also gave it to animals that had been stung by them.

Dr. James says that carrots strengthen and fatten the body, and are very proper food for consumptive persons. The root of the garden carrot is much used as a poultice for cancers, on account of its antiseptic qualities. In some parts of Europe a spirit is distilled from this vegetable. The abundance of sugar contained in the roots is readily converted into alcohol. About one hundred and sixty pounds of the crushed roots are required to yield one gallon of spirit. Sugar has been obtained from them; but, notwithstanding the large amount existing in them, the manufacture has been found profitable. In Germany a substitute for coffee has been made of the roots chopped up into small pieces and partially carbonized by roasting. A dye similar to wood has been obtained from them.

The above we find in the *Scientific American*, and the following practical experience of a correspondent of *The Husbandman*, is equally interesting:

My early experience in raising carrots was of such a discouraging nature that for a long time I regarded raising that vegetable in any but a favorable light. The recollection of that experience is vivid. I will tell how that was done, as it will show how not to do it. After the ground was selected it was ploughed and harrowed once, and then marked out by going backward, dragging a hoe handle pressed into the ground, which made a faint mark, into which the seed was scattered by hand, and then covered by dragging the hoe handle back again along by the side of the drill mark, which left the surface perfectly flat, and long before the rows of carrots could be seen the weeds covered the ground completely, so that weeding out a quarter of an acre was work enough for all hands, especially the boys, for some time. This was on the old farm, when I was a boy. Labor was cheap in those days, and by perseverance the piece was finally ready to harvest, which was done by prying them out with a spade. They were then thrown into a wagon and hauled into an out-house, tops and all, and here we had fun every night cutting off the tops till 10 o'clock.

But since becoming familiar with the approved method of to-day, a change "came o'er the spirit of my dream." I no longer regard raising that vegetable in the light of former days. In fact, I think it among the best crops a farmer can raise—enough for the horses by all means.

This is the way to do it. Prepare your ground thoroughly by ploughing and harrowing as many times as necessary to make it fine and mellow to the depth of eighteen inches. A subsoil plough can be used. Loosen the subsoil, thus keeping the good soil on top. When ready, commence on one side, draw a straight furrow the length of the piece; returning throw another to the first, which leaves a high ridge. Continue until the whole piece is served the same way, leaving the tops of the ridges about three feet apart. With a hand-rake rake the tops fine and flatten them a little, then with a garden-drill drill in the seed. Treated in this way, a cultivator or carrot-weeder can be started between the rows even before the carrots are up. The weeds are kept down, the hand-weeding and hoeing is quickly done, and mostly as they are trimmed out. In harvesting, cut the tops first with a hoe, then run a plough along side of the row, throwing the earth away from the carrots. This loosens them, and they can be easily picked out.

Blanching Celery.

Some time since, a correspondent of the *German Town Telegraph* gave an account of how he preserved celery during the winter by standing it in spring-water under a shed. The editor of that journal thus comments upon the plan:

Few persons will have the chance to preserve celery in this way, nor is it perhaps desirable that they should, as there are many ways of preserving it which answer just as well, and which allow of the celery being just to hand, which it is not likely to be by any plan such as that proposed, as it is rare indeed that a spring would be close to one's house, or that one would be willing to put a spring to that use if it was. But for all this the hint of our correspondent is a good one not so much for what it teaches as for what it suggests.

We know of one whose celery did not grow very well last season on account of the drought. At digging time it was what he termed "poor and small," and hardly worth preserving; but taking the water hint of our correspondent, he concluded that by packing the roots in wet earth and keeping them in a cellar the vital principle would be sustained and perhaps the whole become white. The experiment was a complete success, and he has had an abundance of white crisp celery all winter. Large boxes were obtained and a few inches thick of earth placed on the bottom and made as wet as possible. The plants were then packed upright, side by side, as close as they could stand, until the boxes were full. The upper leaves were of course exposed, and attempting to grow a little by the encouragement given to the roots by the wet earth, caused growth enough to go on to blanch the whole.

There is an advantage in this plan besides that of blanching a mass of matter usually stored away green, and which never after becomes white, and is therefore wasted, and that is the crispy freshness which it retains. Those who

keep celery by various devices in the open ground and in similar ways have no trouble from this source; but those who keep celery in cellars often complain of it either rotting or withering. In the way described there is just what is needed to keep it fresh and nothing more.

We give this simply as one plan which may suit some one person in an emergency, and not as the best plan. What is best for one is very often not the best for another, and it never does any harm to know lots of them, and especially one which, like this, gives us a principle which may be applied to many plans.

Useful Tools in Market Gardening.

After procuring most of the new horse hoes and cultivators, and finding each valuable for some especial purpose, we find most use for the common one-horse double-shovel corn plough, so well known throughout the West. The use of these may be greatly increased if the plough be made adjustable, so as to throw dirt to or from as desired, like the two-horse cultivator. Any smith can quickly do it. For garden use another feature should be borrowed from the two-horse cultivator—the shield. By lengthening and bending the arm of one of the sheet iron shields, it can be adjusted on the plant side of the one-horse cultivator, so that no dirt shall be thrown to the plant; or by raising it a little dirt will be thrown only around the bottom, while the top is protected perfectly. For garden use no high-priced machine can equal the common double-shovel cultivator with these unpatented improvements.

For shallow tillage a drag-tooth spreading cultivator is excellent. Better "grip" is given and better work done if the points of the teeth be flattened and bent forward. It is a tool easily made by any mechanic.

On any clean garden soil, and especially our prairie soils, the hand-rake can be largely dispensed with by the use of a simple home-made tool, which, for want of a better name, we will call a "planker." It is made of two pieces of heavy plank, eight or ten feet long, nailed together side by side with cleats, placed at an angle of 45°, so as to meet in front of the centre. After being stoutly nailed at their crossing, a hole is made for the clevis by which the horse is attached. The line of draft raises the front of it enough for it to slide upon the lumps, and the weight of the driver, with the rolling motion given them, combine to crush them nicely. If not fine enough, harrow and plank again until it is as smooth as a floor. We use a hand-rake only for occasional spots, where trash or coarse manure has clogged the planker. A gardener to whom I described it several years ago, wrote me recently: "Your planker grows better every year, still I keep a hand-rake and roller only because they are on the place already." It is also excellent in fitting any farm land for crops, especially for corn.—*Root's Garden Manual.*

MILDEW ON LETTUCE.—When first seen, it is a fine white mould on the under side of the outer leaves which lie upon the ground. The leaves affected with it soon turn yellow and rot away, and the mildew spreads on to the new growth, sometimes nearly destroying the plant, and always injuring it more or less. If sulphur is applied immediately when it first appears, the mildew will be checked, and the plant will generally outgrow it; in fact it often outgrows it without any sulphur, if the weather is clear and dry. The chief trouble is in the dark and damp weather of winter.—*Cor. Country Gentleman.*

TAN FOR MULCHING.—There is a great difference of opinion as to the value of tan as a mulch. A recent writer in *Revue Horticole* cites several instances in which upon fruits and vegetables its effects were disastrous. Several market gardeners near Paris lost all their winter lettuce by covering the beds with tan. Any ill result must be due to the fact that the bark was not thoroughly exhausted. When the soluble matter is all extracted from it, the effect of the tan can only be a mechanical one. Where there are such different experiences it will be safe to expose the tan to the action of rains for some months before using it.

GROWING PARSLEY IN BEDS OF MANURE.—In many places parsley is difficult to cultivate. In some situations the seed will not germinate, and in others the young seedlings wither and die immediately they come above ground. This used to be the way in which it behaved in the kitchen garden at Drumlanrig, and for years parsley there was scarce. Mr. Thomson has, however, entirely overcome the difficulty. After trying it in various ways and positions, he now grows it in beds made up wholly of rotten leaves and strong manure. Thus circumstanced, it grows to perfection, and I lately saw there a large plantation of it in excellent condition. The roots ramify freely in the manure, and the plants become so strong and vigorous as to defy all attacks of insects, which formerly proved so destructive to it. The manure too does not soon become exhausted or need renewing; but if it did, the fine crops obtained from it would soon repay all trouble bestowed in that direction.—*Cor. Garden.*

The Breeder and Breeder.

Sheep Clotting Their Wool.

(To the Editor of the CANADA FARMER.)

SIR,—Can you give the cure of sheep clotting their wool, and the cause and prevention of it? It is a very common occurrence and decreases the price of wool.

Wolfe Island, Ont. J. P. C.

The trouble complained of is the effect of disease or neglect or bad management in some shape probably of overfeeding and starvation alternately. No animal stands that kind of treatment so badly as does the sheep. Neglect shows itself at once in its effect upon the fleece, rendering it uneven in quality. Excessively nutritive food excites the wool producing organs and enlarges the fibre; insufficient food contracts these organs, and a smaller fibre and a disorganized state of the constitution is produced.

The way to prevent this is to remove the cause. Keep the sheep growing evenly. Let them have access at all times to salt. They will take very little if they can always get it, but will make hogs of themselves if salt be given to them only at intervals. A little flowers of sulphur would be beneficial. Observe cleanliness in their management. Keep the animals dry, especially under foot, and let them be well sheltered.

A Thoroughbred Bull for Thoroughbred Heifers.

To the Editor of the CANADA FARMER.

SIR—Allow me to ask your advice as to my management of a pair of Short-horn heifers lately purchased by me from one of our leading breeders. I am very desirous that they should be served by a pure bred bull next season, and as there is nothing of the kind in this county, I can think of no other plan than to ship them to some stock breeder who has a good bull, as I cannot afford to buy one for myself. I then there is the expense and risk of shipping, and do you think it would pay? I am myself in favor of breeding to the best bull in the country, costly as it may be, but my friends and neighbors do not think I would be warranted in such expense, and advise me to breed to the best in the neighborhood. I am but a novice in stock breeding, and will be guided by your advice, which if you will kindly give in next issue, you will much oblige.

CONSTANT READER.

The use of a thoroughbred Short-horn bull for the improvement of even the common or "scrub" stock of the country is now regarded as one of the best investments a farmer can make. The increased quantity and finer quality of the beef thus produced, apart altogether from the admittedly improved milking qualities of the offspring of such a union, make the proposition one of the most important that can possibly engage the attention of the agriculturist; and if an infusion of thoroughbred blood into the common stock of the country produces such admirable effects, how very important it is that stock already pure blooded should be still further improved. The offspring of a pedigreed and properly registered sire and dam will always command prices which a grade, however slight the impure cross may be, can never hope to reach, and the same may be said of full bred or symmetrical the bull may be which our correspondent proposes to use, the offspring will rank as grades, and be valued accordingly. Another important consideration is, to what extent the use of such a bull may influence the succeeding progeny—a question we have not at present time to discuss.

We have no hesitation whatever in giving advice on this point. Let our correspondent weigh the matter carefully, and he will become more convinced than ever of the folly of putting thoroughbred heifers to other than a thoroughbred bull, and that the very best bred thoroughbred he can obtain.

"Can't Afford it"

There is not a farmer in Canada who has had the opportunity of visiting the cattle sheds at our Provincial or Central Exhibitions, or who has attended the various sales of thoroughbred stock that have taken place within the past few years, but must feel fully convinced that the improvement of the live stock of the farm is one of the most important questions that can possibly engage his attention. Many farmers, however, who admit the desirability of improving their stock, fail to take action in the matter, on the ill plea of "Can't afford it." "Speak to

such a farmer about the desirability of breeding draft horses," says *The Western Rural*, "and he will tell you that Mr. Murray paid \$5,000 for the stallion Donald Dinnie; mention the demand for good driving horses and you will be told that the trotting stallion Smuggler sold for \$10,000; suggest the improvement that a well-bred bull would effect in the herd, and the sale of the 2d. Duke of Hilturst at \$14,000, or of the famous \$10,000 will be recalled; refer to the good qualities of certain breeds of sheep or swine and it will be said that common farmers cannot afford to pay \$100 or \$1,000 for a ram or boar. With a good deal of force it will be reasoned that such prices are merely "fancy," and that tested by intrinsic value the animals commanding them are not worth nearly so much.

"But what has this to do with the case in hand? No one claims that the average farmer can afford or should be expected to pay any such prices as those referred to, and fortunately there is no need that he should. Leaving, for the present, the question whether any animal is worth, for breeding purposes, ten, twenty or one hundred times its value for the butcher, it certainly is true that a well-bred animal of individual excellence is worth, in many cases, much more than its value judged by the butcher's standard. It is equally true, that, of every popular breed, good specimens can be obtained at prices which an average farmer, or at least a club of farmers, can well afford to pay.

Take cattle as an illustration. Short Horns command the highest prices, and it is certain that a farmer cannot afford to pay from \$1,000 to \$5,000 for a bull, but he can afford to pay from \$100 to \$150 for a good bull of this kind, for these prices good ones can be purchased. It is a safe estimate that calves sired by a good Short Horn bull are worth five dollars each more on an average than calves sired by a scrub bull, so that the prices last named a bull can be made to pay for himself in one year. Good young boars of any of the popular breeds can be bought at from ten to twenty five dollars each, often for less than twice their value for pork. So of runs of either fine or combining wood breeds.

"When farmers consider that by the use of well bred males for three or four generations, a stock can be reared nearly equal, for all practical purposes to pure bred, and that good grades of any desirable breed will naturally produce more meat or other product for a given amount of food, and will sell for more in the open markets because of superior quality, than will "common" or unimproved stock, they will be prompted to secure these desirable results for themselves, and will not neglect to do so because some have paid prices higher than they can afford."

The "Horning" and "Knobbing" of Cattle.

A controversy is going forward in the columns of the English agricultural press as to the practice of "horning"—that is un-horning cattle, or depriving them of their horns. One set of contestants say that it does not hurt cattle much to saw off their horns—that, in fact, cattle rather prefer to have them sawn off—and that, anyhow, it is much more humane to saw them off than to let cattle wear them off by goring each other.

On the other hand, it is urged that the practice is a most inhuman and brutal one, giving the poor animals the most exquisite torture. An "Extensive Feeder" writes to the *North British Agriculturist* that "horning" is a very cruel operation, and he mentions a case which came before a court of justice lately. He says:—

The horns were cut by shears or some such instrument, and then immediately after this painful operation, and with the wounds fresh, the animals were driven along the road and trucked at a railway station, their sore heads coming freely in contact with one another, thus adding to the pain. I have seen animals days after their horns were cut, on their heads coming in contact with anything, spring round about, showing the most manifest symptoms of pain. Generally, whatever is said to the contrary, aged cattle with strong horns do little good for a month at least after the horns are cut; they often sicken to some extent, and although it is quite true what some say, that numbers of them chew the cud and begin to eat shortly after the operation, they eat very little for at least a week. Some die altogether, and others swell so much in the head that they are unseemly animals as long as they live.

This correspondent would not object to "horning" so much, were it only calves and yearlings that were operated upon, the animals carefully thrown and secured, and a very sharp, small-toothed saw used, the animals allowed plenty room in a warm sheltered place, and undisturbed for at least a fortnight afterwards; but the fact is that cattle of all ages are "horned" in a very cruel manner by tying the animals to loaded carts, pillars, &c., and then using such clumsy instruments as a shears with long handles, causing a rough wound, besides stunning the animal, and afterwards huddling them together in close confined quarters where they cannot but have the sores

come in contact with. But the whole practice, says the correspondent, is unnecessary, and the only way he recommends "horning" cattle is by crossing the cows with an Angus bull. The result will generally be hornless cattle.

Principal Walley, of the Royal College of Veterinary Surgeons, of London, also says that the practice of "horning" is unnecessary and cruel. He prefers "knobbing," as he saw it practised on the farm of Mr. Thyne, near Longmiddy. He describes the *modus operandi* thus:

The knobs used are large wooden ones (ash, beech, or elm), a specimen I forward for your inspection, through which are drilled two holes; one large and conical to fit upon the horn, one small for the passage of the nail (a specimen of which I also forward, which is used to secure the knob in its place. The nails are of wrought iron of the necessary ductility, with large, round, flattened heads and flattened points. The cost of the knob and nail, especially if obtained in tolerable quantities, is about 1½d or 2d. The *modus operandi* is as follows.—The animal is caught by a man, who should grasp one horn and the lower jaw, fix his back against the animal's shoulder, and curve the head towards himself, another man grasping the opposite horn and aiding his fellow. Mr. Thyne uses a rope round the horns. This I do not consider necessary. A hole is now bored through the horn with an ordinary gimlet. The point at which the hole should be bored will depend upon the age of the animal and the length of the horn. In young calves with short vascular horns half an inch from the tip is sufficient, in other animals, or those with longer horns the holes may be bored one or even two or three inches down the horn. A very simple procedure will decide the matter, i.e., the tapping of the horn with the handle of the gimlet, and noticing the difference in the sound. After the hole is bored the knob is affixed, the nail passed through and clenched. Twelve cattle, or sixteen, if a better gimlet for the purpose were invented, can be operated upon in an hour without the infliction of the slightest pain, and without having recourse to any more or even as much restraint as that necessitated by the operation of horning. If in the boring of the holes the sensitive structures are impinged upon, the animal at once evinces the fact by restlessness and struggling, and blood is seen to ooze from the hole. In these cases the gimlet should be at once withdrawn, and the hole bored a little closer to the tip.

Principal Walley then reads a lecture upon the structure of the horn to Mr. Cowie, one of the gentlemen who think "horning" advisable.

Is Mr. Cowie aware, he asks, that the vascular structure of the horn is a continuation of the true skin, the horn being the analogue of the hair and the false skin; that the skin is one of the most sensitive structures of the body; that the slightest tap on the horn—a fact well known to the drover—gives rise to acute pain, and a heavy blow nearly stuns; that an animal with a broken horn does all in its power to prevent its coming in contact with any hard substance, and if the horn is struck evinces intense pain, that a very slight injury to the nail on the finger or toe of man induces unbearable suffering—the structure of the nail and the horn is identical—that cutting through the scalp in order to expose the brain produces pain; and that in the healing of even a small wound great soreness and inflammation are concomitants.

The practice of "horning cattle" is summed up by Mr. Walley as belonging to the same class of operations as the cutting of dog's ears and tails, the cutting out the haw from the eye of the dog, the cutting of cock's combs, the netting and over-stocking of cows udders, and the forcible extraction of the foal teeth of the horse; the same end is in view in each case—viz., the attainment of an imaginary benefit or the pandering to a barbarous and cruel custom. In conclusion, he wants to have six cattle "knobbed," and six "horned," and then the rapidity of their development compared.

It was announced that a Bill was to be introduced into Parliament by Messrs. Barclay, Fordyce and McCombie, to put down "horning." The Strathearn Farmers' Club decided to oppose the measure. Since then, Mr. Barclay has announced that he never had any intention to introduce such a measure, and that he is of opinion that, in the circumstances in which, so far as he is aware, it is done, the "horning" of cattle is a disagreeable necessity. It is also stated that the other members mentioned do not intend moving in the matter. And that is how the subject stands at present.

On Breeding Horses.

An old breeder of Tennessee, George T. Allman, in the *Rural Sun*, gives his ideas of improving stock. He says:—"I beg and urge each and all to patronize only pure bred males, and never a mongrel. 'Blood will tell' in everything, from a chicken to a man. If you propose to breed trotters, or mules, you want a dash of blood to give the

produce the staying quantities desirable on the farm or on the turf.

I prefer early foals, especially if thorough-bred. A few weeks' difference tells on the race-course or in the fair ring. They go through the first winter much better than late ones.

Fillics which have never produced should be bred so as to drop their foals middle of April or first of May. The trouble with all young dams is to give milk enough for their off-spring, hence the necessity of having the produce drop when there is plenty of luxuriant grass. I hold that our true policy is to breed only the best—have them well cared for. The days of pay or pleasure in handling inferior stock are numbered among the things that were. So of half-fed and poor accommodations for the comfort of your stock. A few good ones, well cared for, afford more pleasure and profit than a host of inferior ones, fed on shucks and promises. I find grass the cheapest food I can grow for stock, and a meadow to pay the best of any land on the farm."

Principles of Breeding.

At the convention of Short-horn breeders held at Springfield, Ill., Dec. 2, 1874, W. R. Duncan, of Towanda, Ill., read the following interesting paper on the principles of breeding:—

The principles of breeding are somewhat difficult to define as we understand them ourselves, for the reason that they can be varied in many instances without injury, owing to the great variety of constitutions we find domestic animals possessed of. In fact, they can only be defined on general principles, allowing every breeder the exercise of his own judgment as to their application. The breeder of Short-horns, even at this day, after so much has been done for their improvement, finds quite a variety of formations in his females, very few of them approximating a perfect model. Defects in constitution and formation cannot be remedied by the use of a male possessing similar ones, however desirable his pedigree. In deciding what male in your herd, or within your reach, you will use on a certain female, you should depend to some extent on the blood of each, but mainly on their constitution and formation. While I would not advise the use of a sire of a different family for every generation, I would recommend the use of one of the most robust constitution and most perfect formation, with such an amount of fresh blood as would insure the breeder against loss, either in constitution, size or form. While I know that the breeding of consanguineous animals together does not always result in such loss, yet it often does, and when once sustained, the breeder has lost both time and position. Blood is the most desirable thing for the breeder to purchase in order to the further improvement of his herd (the investment by such means always adding value), provided individuality is what it should be; otherwise the use of the most popular blood may prove injurious. It is to be regretted that the individual character of certain men has enhanced the value of the blood of animals that are descendants of their herds, not otherwise more meritorious than others, to such an extent as to lead breeders far from correct principles, and cause them to pay largely enhanced prices for the descendants of their herds, on the principle that the notoriety of the original breeder will assist in perfecting the form of the offspring, and so improve the flavor of the beefsteak as to pander to the refined tastes of the epicure.

Blood, constitution and form are what should cost money, and they alone, as they will give value received, without the assistance of any man's character. Like produces like. Defective formation in each parent, where the constitution is about the same, will most likely increase the defect; if one parent has more constitution than the other, characteristics will be most generally influenced by the parent with the most constitution. For this reason, as the male is generally the most athletic, he should be as perfect in form as possible, and free from constitutional taint. This should be the case whether you are breeding in the line, as it is called, or not. Breeding together consanguineous animals, or in the family, to the extent it has been done by some breeders in England and by some others in this country, I do not favor, for the reason that it impairs constitution and shortens life. It can have no other effect than this same system has upon our own race. It may be not so immediate as their organization is not so highly wrought, but it is just as certain; and when the result is produced the remedy is just as difficult to apply, and can only be applied in the same way. Results have demonstrated this fact in our race, until common sense forbids it, science condemns it, and the laws of our country are against it. Gentlemen say "It is just the thing; Booth did it; Bates did it; the earlier breeders did it; to some extent it is popular; it is the way to make them sell high, and for that reason I do it." Men of the prejudices and ambition of Bates and Booth were likely to do anything, and anything they did or said in their day would influence many breeders to-day, even in opposition to their own experience and judgment, if they could make money by it. The earlier breeders did it from necessity, as did our first parents, without then understanding much of the principles of breeding. It is popular because it is fashionable, in some localities, but fashions change in this country—the true principles of breeding never will.

Many Short-horns in this country die at an early age, with many others the procreative period is very short, while very few of the whole number bred are first-class animals in formation. The reason for this is an interesting source of inquiry to the breeder, and must be answered intelligently and certainly, or we fail to make progress in one of the most important and honorable enterprises in which man was ever engaged. There must, in my judgment, be a more general blending of the blood of good families than there has been in this country for years, or we must spend more time and money than we are doing in getting animals of the same family from other countries, where the climate, food and water have had the effect to so change the whole system as to make the blood amount to fresh blood to us. This has been done throughout the world's history with our own race as well as with animals. The men who do this with the most judgment and pay the strictest attention to individuality, will receive the largest amount of benefit.

The sexes should not be coupled at too early an age or too often. As I have given my views on this point in a different article, I will not particularize here, but state in general terms that by proper treatment the male should continue to produce as long as he can serve, and the female until she is from 15 to 20 years of age, if in proper health, varying time according to the operations of nature. The use of the male may commence at 14 or 15 months old, and be continued without any apparent injury, provided it is done with care and judgment for the first year, using him just as seldom as possible. It would be best for the animal and his produce that he should not be used for the first two years of his life beyond the few times necessary to test his procreative powers. Every male is a preferable sire after he is three years old, provided he has only been moderately used previous to that time, and only kept in the best condition as a sire. Many males are virtually destroyed as sires before they arrive at the period of the greatest usefulness, while much time is often lost with the female by being coupled at too young an age with a male much larger and older than herself, which would not be the case if the male was of the same age or younger. I would recommend that the first coupling be with a male not older than the female, and of the most desirable blood, color and form.

Nature's laws are such that the first act of copulation, or the one resulting in the first pregnancy, the appearance of the male used at the time, and during the period, the color with the general appearance of the first offspring, are likely to influence to some extent the second and third, and it may be the whole of the offspring, although by different sires.

Why such laws exist, or what the extent of their influence, I will not attempt to define. Science in connection with the practical observation of the student of nature's laws assert their influence in such a direction, it is therefore but the part of wisdom for the breeder to regard them with care.

If a male much larger and older than the female is used, the service is quite likely to result in such an injury as to set up inflammation at the mouth of the womb, which will most certainly prevent conception, not only at the time, but during the period of its existence. The repeated use of the male during such condition greatly prolongs the time of unfruitfulness, as the inflammation is increased by each service. It can only be removed and fruitfulness restored by a depletion of the system to some extent by the use of the lancet, or by reducing the quantity and quality of the food, and the quiet of the parts disturbed. This can easily be done in a few months, when one service by a male younger than the female (or if from one older and larger a slight one) will most generally result in the accomplishment of the breeder's object.

During the period of pregnancy the female should have quiet, or be reasonably free from sudden exertion or excitement, and allowed such an amount of good healthy food as will keep her improving in flesh (or at any rate it is best that she should improve in order rather than decline) up to the time of giving birth to the calf. Should anything occur during the period likely in the judgment of the breeder to disturb the organs containing the fetus and giving it nourishment, such a course of treatment should immediately be resorted to as will restore quiet to the whole system, but especially to those organs in order that they may again properly perform their functions. The coupling of animals with judgment in order to the improvement of the herd is an important lesson to be learned by the young breeder, but by no means the only one necessary to success.

The laws of nature must be understood, and we must learn to govern them to such an extent as to restore order and harmony when disorder and conflict exist. The consideration of any such principles as those that govern intelligent breeders of domestic animals cannot fail to be a source of interesting discussion in such an organization as this.

They are to be seen from different standpoints. Man's natural organization is different, while it is not to be supposed that the experience of every breeder is the same, in fact it cannot be; as some have much more generally practised one system than another, or have been governed in their practice by different opinions as to the operation of nature's laws.

In submitting this paper to the consideration and criticism of the convention, I do so trusting in the generous for-

bearance of this intelligent body, as well as others who may deem it worthy of a reading, hoping that it may elicit the views and experiences of others, in order that its author may be assisted in correcting any errors it contains upon the subject of which it treats, or his own practice as a breeder.

The Value of High Priced Stock.

The extraordinary prices realized within the past year or two for high-bred animals of any kind, has naturally enough attracted the attention of others besides those more particularly interested, and it is not to be wondered at, if amidst a torrent of unmeaning criticism at the hands of certain agricultural journalists, the unsuspecting objects of such distinction should come in for a considerable share of abuse. The *North British Agriculturist*, one of the soundest and best informed of our European exchanges, in its rebuttal of certain statements advanced by the *Agricultural Gazette*, says:—

Those high-bred and high-priced Short-horns which have of late come in for so much abuse at the hands of certain agricultural journalists, cost perhaps too much money, but that can't be helped; but to say that breeding entirely from certain strains is a mistake, is open to question. Take two representative bulls, the Duke of Devonshire's Duchess bull, and Lord Erwin, say nothing about pedigree, the latter may in a sense be the best beast, but there is no man half a judge, not to speak of pedigree, would prefer him to the Duchess bull.

Lord Polwarth's rams are the Bates of the Border Leicester sheep. Look what they make every year! There is no man who has done anything in the show-yard in Border Leicesters but has drawn more or less from Lord Polwarth's stock. Are they themselves show-yard sheep? Why does a practical hard-working farmer give Lord Polwarth 195 guineas for a tup? He could buy one at 20 guineas that would beat him in a show-yard. The latter would beat the former in a show-yard; but the practical farmer knows that that his stock would not, and that makes all the difference. It is well known that Lord Polwarth has bred from the best of his own stock for a great number of years. They are close bred, but improve the stock wherever used. If he were to follow the advice of the writers in the *Agricultural Gazette* he would not stick to high-bred ones, but would select a thick-fleshed, well-wooled sheep from "A pains-taking breeder," and would, I have no doubt, spoil his own flock, and thereby also injure the breed of Border Leicesters throughout the country.

So it is with Bates and Booth cattle of high descent. The big prices are the very thing that keeps the stream pure and helps to fertilize the whole Short-horn world. There is a certain potency in a small quantity of this high-bred blood—latent it may have been in the original—but when mixed with that of more plebeian origin it finds its way into those thick-fleshed animals which "pains-taking breeders" like to see.

Grade Short-Horns for Beef.

I have just sold a pair of two-year-old heifers, a little more than one-half blood Short-horn, to one of our village butchers. They weighed respectively 1,130 and 1,190 pounds. I sold them at the low price of four and one-half cents per pound, amounting to \$104.40. The expense account is as follows:—

FIRST SEASON.	
Sour milk and feed.....	\$ 5 00
Winter feed, 2/3 corn meal, 1/3 bran, nine bushels.....	4 50
Winter hay, 1,500 pounds.....	6 00
	\$15 50
SECOND SEASON.	
Pasture.....	\$3 50
Winter feed, nine bushels meal and bran.....	4 50
One ton hay.....	8 00
	\$16 00
THIRD SEASON.	
Pasture.....	\$5 20
Forty days feed before selling.....	3 00
Total for an animal.....	\$39 70
Total for two.....	79 40

This deducted from \$104.40 leaves \$25 net. The manure remains on the farm. The above is a transaction that can be duplicated by any farmer if he likes. There is nothing fancy about it. The cattle brought just what they were worth to cut up in a country village. One of these heifers gained ninety pounds in one month.—*Cor. Western Rural.*

ORIGIN OF COTSWOLD SHEEP.—Mr. Smith, a prominent handler of sheep, at Westend, England, has this opinion of the origin of this now famous breed: The Cotswold sheep are supposed to derive their names from the "cuts" or sheds from which they were fed in winter, and from the "wolds" or open hilly grounds on which they were pastured in summer. I believe them to be the original breed of the long-wool sheep, as they are continually spoken of from the earliest times, when no other sheep are noticed.

Veterinary.

Diseases of the Osseous System in Horses.

Bony Spavin.

Bony spavin is very common amongst the horses of this country. It is a disease confined to the hind extremity and to the hock joint. No less than ten bones enter into the formation of the hock joint. These are held together by ligaments, and, viewing it altogether, it forms a beautiful, though complicated structure. From the situation of the hock, it also receives a greater amount of strain than do any of the other joints of the hind limb.

Spavin may be defined to be a bony growth or enlargement (exostosis) situated on the antero internal part of the hock, and may, or may not, be accompanied by caries (decay of bone) of the internal parts. We believe that spavin may occasionally result from inflammation set up in the fibrous coverings of the bone, (periosteum,) but, in the greater number of cases, the disease commences internally, inflammation is set up within the small bones, the nutrition is arrested, and decay of bone (caries) is the result; the cartilage covering the bone becomes destroyed, and finally the matter is thrown out.

The enlargement is often confined to the lower part of the joint, and, by some writers, this has been designated the low spavin, and, when involving the bones higher, it has been called the high spavin, the latter condition being the more serious of the two.

The reason that spavin appears on the inside of the joint is owing to the great weight that is naturally thrown upon that part, being near the centre of gravity of a line taken from the haunch to the foot, and also, from the arrangement of the cuneiform bones, the inner metatarsal bone receives more forcible weight than the outer.

In many cases, the bony deposit is thrown out around the greater part of the joint, and very often between the articulations, producing ankylosis (union of two or more bones); and, according to the parts affected, it is likely to prove a serious detriment to the animal. When situated well back on a well-formed hock, it seldom causes very great inconvenience, but, when occurring in a narrow weak hock, it usually interferes materially with the integrity of the joint.

The causes of this disease may be said to be predisposing and exciting; the former may be either constitutional or local—as local by a faulty conformation, whilst in some there may be said to exist an ossific diathesis; for it is a well-known fact that certain breeds of horses are very liable to disease of the osseous system, as spavins, ring-bones, etc., the infirmities of the sire and dam being frequently transmitted to their progeny. The exciting causes are hard work, sprains, and other injuries to the joint, which may occur, as in galloping, leaping, or from being forcibly backed when attached to a heavy load.

Spavins are frequently noticed in very young animals, long before they reach maturity, or before they have been subjected to work. These cases are generally the result of hereditary predisposition, but sometimes may result from the concussions set up within the bones of the hock, resulting from the injurious practice of permitting the foal to run along with the mother when she is at work, as is often done in many parts of this country, and even travelling miles, day after day, upon a hard road.

Symptoms:—When the exostosis is large, it is easily detected; when small, it of course requires a more careful examination. It is also of great importance that the examiner should know the natural appearance of the joint. The casual observer may possibly mistake some of the natural irregularities of the joint for an abnormal condition. When examining the hock, the horse should be made to stand firmly upon the leg that is being examined; and the examiner should stand about two or three feet from the horse's shoulder, and carefully scan the hock, from the prominence on the inner part of the tibia downwards. Then examine with the hand, and any unnatural prominence can be felt, and if hard and not movable, it is a spavin. It is also advisable to compare the suspected limb with the sound one.

When inflammation is present, there is heat in the part, and when the animal is standing, he flexes or bends the joint.

The lameness is most distinct when the horse is taken out of his stable in the morning, or after standing an hour or two. As the animal warms up to his work, it may become less distinct, and in many cases the lameness almost disappears. The lameness is usually best noticed in the trot, and, when the disease is of long standing, the muscles of the haunch and limb waste or atrophy to a great extent owing to the impaired action of the limb. This condition is very apt to mislead the ordinary observer, as to the seat of the horse's lameness, the effect often being mistaken for the cause.

Another symptom is the action of the horse in his stall, when moved from the one side to the other. Whenever the weight comes upon the diseased limb, he at once evinces pain. Lameness may exist for a long time with very little external enlargement; and again, many cases are noticed when the enlargement is well marked, and the animal only slightly lame. The pain and irritation which produces the lameness are due to the extensive osseous disease going on within the joint, and, therefore, the external enlargement cannot always be taken as a correct guide as to the extent of the internal disease.

From the complexity of the parts affected, the treatment of spavin must necessarily be tedious, and very often unsatisfactory, as it is frequently a difficult matter to give the patient the amount of rest required for successful treatment. One great desideratum, therefore, in the treatment of spavins is to give the patient perfect rest, and it is preferable to place the animal in a loose box or stall, than to turn him out to pasture, or into the barnyard. It is also advisable to allow a fair supply of nutritious food. It is altogether a mistaken idea that a horse, whilst under treatment for spavin, should be half-starved, or only fed on a coarse description of food. In the most of cases, it is also desirable to remove the shoe from the foot of the affected limb, but there are occasionally cases met with, when a shoe with a moderately high heel tends to take the tension off the hock.

As to the local remedies, it is generally necessary to use counter irritants, as blisters, setons, or the firing iron, the latter being the most potent and best remedy where the disease is extensive. A very good blister for cases of spavin is biniodide of mercury, one drachm; lard, four drachms; to be well rubbed in around the joint, the hair of course being first removed. The blister should be washed off about the third day, and repeated in the course of ten or fourteen days. If a seton is inserted, it should be kept in for about twenty days, and a blister applied after its removal.

Counter irritants are used with the view of hastening on the process of osseous deposit, arresting the decay of bone, or of producing ankylosis; it is only by the latter means in long-standing cases that a cure can be effected.

Properly speaking a complete cure of spavin can never be effected, in so far as restoring the parts to their natural condition; but, if the lameness is got rid of in a practical point of view, a cure may be said to have been effected. Many nostrums and recipes are recommended as warranted to kill a spavin or take it off in a few days. Most of these so-called specifics are composed of some of the mineral acids or other severe caustic, and, in very many cases, do more harm than good, frequently setting up such a degree of irritation as to permanently injure the joint and render the animal useless.

Frequently the farming community is imposed upon by a class of itinerant practitioners who go around selling prescriptions, warranted to perform miraculous cures. Generally, however, the vendors of these so-called specifics do not remain sufficiently long in one district to see the results of their remedies; but after imposing upon a few credulous individuals, they vanish as quickly as they came. THE CANADA FARMER lately heard of a young man in the township of Zephyr being victimised to the extent of one hundred dollars by one of these impostors.

HAY TEA FOR CALVES.—A farmer who had a calf of value and no milk to give it was advised to give it hay tea. He did so, and the calf is reported as doing finely though it has neither received hay nor meal since he got it. He cuts the best and finest hay he has, about two inches long, and pours boiling water over it; lets it stand until cooled to about the heat of milk from the cow, when the tea is given to the calf and the hay to the cow. Both calf and cow thrive on this feed. We have fed a great deal of hay tea to calves, with good results.

Cattle with Foul in the Foot.

In answer to a correspondent seeking advice about cattle affected with foul in the foot, the *National Live Stock Journal* prescribes, first the removal of any cause of irritation there may be, such as dirt, etc., thoroughly well cleansing the foot, and then enveloping it in a linseed or bran poultice—the former is preferable.

The next step will be to restore a sound and healthy condition to the soft parts of the foot between the clays, and for this purpose a mild caustic may be applied, such as the following liniment: powdered sulphate of copper, one part; treacle, four parts (mix and simmer over the fire in a pipkin till the mixture assumes a reddish appearance, and set aside to cool). A pledget of tow, or some oakum, soaked in this should be kept between the clays. A change of caustic will be required after this liniment has been applied for a few days, and for this purpose the butter of antimony may be substituted, applied with a feather; or even a little pure nitric acid in severe cases. If convenient, the animal should be kept up, and placed upon clean straw.

In cases where the granulations have assumed a fungoid form, the knife should be unsparingly used, and they should be pared down level, after which the raw surface may be touched with the butter of antimony or nitric acid. A healthy surface being once secured, caustics should be abandoned, and mild astringents substituted, as tincture of myrrh or a weak solution of sulphate of zinc. Diseased animals should be separated from sound ones, and be kept in a dry place and on dry litter.

REMEDY FOR SCOURS IN PIGS AND CALVES.—A perfectly reliable remedy is said to be by mixing yellow clay in the water trough or vessels from which the animals drink.

"WHAT ALES MINE HORSES?"—A cotemporary has had the following case submitted to its veterinary editor for advice by a subscriber:—"The horses is got something ails them and don't know what ails them they get down and can't get up they look around to their back pleases acer this." To which exceedingly lucid statement, the editor replies in an equally clear strain:—"Vell, vat you dinks?—Not von mans in a hoodert vas so kapable to do some things mit you, and gif some dreatmoudts dot you doud like pooly well. Peoples make me agravation mid dhere remarkable obxpressions of tings dot vos seriousness. Vot for you doud dot? Go and shudgo of yourself vonce. Aind it?"

KIDNEY WORMS IN SWINE.—The *Prairie Farmer* says kidney worm is not a common disease in hogs. Occasionally one or two in a number of hogs suffer from the presence of one or more worms in the kidneys; but the ailment is not often fatal, and becomes so only after a long time of suffering and consequent disease or degeneration of one or both kidneys. In a strong pig two drams of turpentine may be given in four ounces of linseed oil and a little gruel. Great care should be exercised in not killing the pig by drenching it improperly. Besides this the pigs should have a sour food, or a little brine of herrings mixed in the food. When in season, sourkrout, radishes, unripe fruit, cucumbers, celery tops, and especially acorns. Wood ashes should occasionally be mixed in the food. Hogs should have access to clean and fresh drinking water.

QUIDDING HORSE.—The habit of "quidding," or dropping the food after chewing it, is due to several reasons. The horse may suffer from a sore throat or difficulty of swallowing from other causes; some of the teeth may be carious or diseased, or they may be worn sharp upon their edges and cut the mouth. It will be necessary to examine the mouth and throat as far as possible, both by sight and by pressure. If there is a hollow or diseased tooth it should be extracted; if any are sharp upon their edges they should be filed down with a flat file, if the throat is sore or any part of the mouth, a wash of chlorate of potash should be used with a sponge fastened to a piece of whalebone or rattan; or embrocations of mustard should be applied to the throat outwardly. It might be well to cut the feed fine and scald it, feeding it when only slightly warm.—*N. Y. Tribune*.

HOG CHOLERA.—In one of his lectures to the Maine State College, Prof. James Law, says of hog cholera:—"The period of incubation is from 7 to 14 days, but is less in a hot climate. Causes:—Contagion, privation, starvation, confinement, filth, &c. Symptoms:—General ill health, shivering, fever, great dullness, prostrate fever, hides under litter, lies on belly, weakness of hind limbs, and later of the fore limbs; rapid, weak pulse; dry snout, covered by blood-stained spots, which also cover the skin, eyes, &c.; often a hard cough, little or no appetite; intense thirst, tender abdomen. After death, blood staining, infiltrations into lungs and bowels; ulcers on bowels. Treatment:—Give cooling acid drinks, buttermilk, sulphuric acid, &c.; feed soft, mucilaginous food, such as oil cake. Administer 20 drops of perchloride of iron twice a day. Blister the abdomen by means of mustard and turpentine; stimulate if very prostrate. Prevention:—Avoid all debilitating conditions, poor or spoiled food; keep animals constantly thriving. Feed charcoal or ashes, also tar or carbolic acid. Avoid contact with disease. Burn infested piggeries and remove to a new place.

The Apiary.

Wintering Bees.

Sir Robert Peel was accustomed to say, "Ireland is my difficulty." In like manner, the bee-keeper in this climate, may say with truth, "Winter is my difficulty."

We have found a remedy for most other difficulties, but it is not so much to say, that this one remains unconquered. The serious losses of the past two or three seasons, indeed feelings of uncertainty and apprehension, now that another winter is upon us.

Until recently, the common custom was to winter bees on their summer stands. During a moderate season, this was found to answer very well, but long-continued severe weather, and especially the prevalence of bitterly cold winds, caused great mortality and heavy losses, even with double-walled and so-called frost-proof hives.

In-door wintering too, has been tried and found wanting. Sometimes it works well, and on the whole, it has been more successful than the other method. But there have been many failures. These have been variously explained. Lack of warmth, insufficient ventilation, too great warmth, close confinement, damp, impurity or thinness of honey, death-brood of the bees, extreme quietude, artificial feeding, and the want of it, are among the most prominent theories that have been put forward to account for the failure of in-door wintering.

Mischiefs usually develop in the form of dysentery, and the explanations above enumerated, relate to the cause of this trouble. In a state of confinement, the excrementitious matter is retained in the body of the bee. Its habit is to discharge its feces when on the wing. If bees cannot fly, the feces are undischarged, unless distension and discomfort compel them to defecate the hive. Under favorable conditions, in which but little honey is consumed, and the bees get into a state of semi-torpor, this retention of feces may continue a long period. Bees have been known to remain five months in winter quarters without a discharge, and yet come out vigorous and well. A warm day is chosen to release them from confinement, so that when set out of doors they can at once enjoy a cleansing flight. It is not always possible however to secure the conditions necessary to enable stocks to endure a whole winter's imprisonment. If they are too warm they become active. Excessive appetite, appetite leads to a larger consumption of food, the digestive organs become over-crowded, and death must befall. When once a hive becomes foul with excrementitious voluings, it is unwholesome, and things go on from bad to worse. If there is not proper escape for the moisture of the hive, or if the winter quarters are damp, mould is developed and the fatal dysentery sets in. As already stated, other causes lead to the same lamentable result.

To prevent the over-accumulation of feces, means have been adopted to give the bees a mid-winter flight. The hive has been taken into a warm, well-lighted room, and opened, so that the inmates might sally forth, and relieve themselves. Or a box covered with wire-cloth has been fitted to the top of the hive, and the bees have been permitted to have a little liberty in it, once or twice in the course of the winter. In some cases these expedients have been successful. But they are attended with considerable trouble, and with a large apiary, they are well nigh impracticable.

An intelligent bee-keeper has recently profounded the theory that the cause of all the trouble is want of water. He argues that bees are well known to be large consumers of water during the active season. They cannot manufacture honey or rear brood without it. All animals require more or less water, and cannot sustain life for any length of time without it. In proportion to its size, the bee consumes more water than the horse or the cow. Why then should the bee be expected to do without water all winter, any more than larger stock?

The theorist referred to contends that dysentery is caused by a feverish condition of the system, with a high state of local inflammation in the stomach and intestines, and an oval condition of the humors or juices of the system, accompanied by inflammatory action. In this corrupt condition, these humors have actually become a disease, oc-

cupping the whole system of the honey bee, and being so diseased, the physical system of the bee attempts to expel the offensive matter, by sending it to the intestines, where it is thrown out in the form of dysentery, and death follows, as there is no supply of water to replenish these juices, which are as essential to life as the breath. Water would have prevented all this, by keeping up a supply of these juices, and maintaining an equilibrium throughout the system; but dry food cannot replenish the juices without the aid of water.

There is certainly an air of reasonableness about this theory. We do not know whether its author has experimented upon it, so as to be able to sustain it by facts. But it is worthy of attention by bee-keepers generally. When bees are wintered out of doors, they have occasional opportunities for flight, and at such times, can obtain a supply of water, as it is only when the sun has power enough to thaw ice and snow, that bees venture to fly in winter. It may also be the case, that in those well authenticated instances of in-door wintering which are on record, there was enough moisture generated in the hive to supply the bees with moisture, and yet not render the hive damp and mouldy.

It seems to us that experiments are greatly needed just now in three directions, with regard to this matter of wintering.

1. To get, if possible, a hive for out-door wintering which shall be impervious to frost, and yet not so close as to keep the bees too warm. Keyes & Finn, of Clyde, Jasper County, Iowa, advertise in the *American Bee Journal*, that they have a hive which meets these conditions. It is double walled and has a chaff ventilator and feed box. They state that the past three winters have established the fact that their hive "winters bees safely every time on their summer stands." Quite an array of testimony from bee-keepers of good standing sustains their advertisement. We have not tried the hive in question. In fact, our first knowledge of it was derived from an advertisement in the December number of the *American Bee Journal*.

2. The plan of giving bees one or two cleansing flights in winter is deserving of further trial. Though difficult of adoption with a considerable number of colonies, and as we have said, well nigh impracticable with large apiaries, beekeepers who have only a few stocks might practice it to advantage.

3. The water theory should also be thoroughly experimented upon.

Serious as the winter difficulty confessedly is, it ought not to be regarded as insurmountable. Surely it can be overcome by patient investigation and persevering experiment. He who shall tell us how to winter our bees with unflinching success, will certainly deserve well of his fellow-beekeepers, and of mankind at large, for it is here that, just now, we most of all need enlightenment.

Bee Works and Bee-Keeping.

To the Editor of the CANADA FARMER.)

SIR:—What are the best works on bee-keeping? What is the price of a good hive with a colony of bees, and where could I purchase them? Do you think Orillia too far north for them to succeed? I know nothing of the management of bees and I wish to learn, so I come to you for advice, seeing the many good answers you have given to your correspondents for this year. I come to you, therefore, as the good book says when it commands us to "go and do likewise."

Orillia, Ont.

W. T. Y. L.

There are several good and exhaustive works on bee-keeping; among them—"Langstroth on the Honey-Bee," price, \$2.00; Quinby's "Mysteries of Bee-Keeping," price, \$1.50; also works by Kidder and H. A. King, of which we do not know the price. Apply to Mrs. Tupper, Des Moines, Iowa., for information about price of hives, etc. Of course, the price varies with the breed, etc. Orillia is not too far north for success.

In the CANADA FARMER, from time to time, you will see articles on bee-keeping in their proper department. By reading them, you will be able to keep posted. When you get in full swing, a few details of your experience in taking up bee-keeping will be valuable to your brother-farmers, and we trust you will send them to us for publication.

The Poultry Yard.

Cost of Poultry Work.

(To the Editor of the CANADA FARMER.)

SIR:—What is the cost of Wright's "Practical Poultry-Keeper" delivered in Halifax? Mahone Bay, N.S. C. B. H.

Wright's "Practical Poultry-Keeper" should cost, free by mail from the United States, \$2.00 in American currency.

Feed for Poultry.

(To the Editor of the CANADA FARMER.)

SIR:—Will you kindly tell a young beginner whether poultry will thrive on boiled parsnips, carrots and pumpkins, mixed with fine shorts and fed to them warm in the morning, with an afternoon feed of corn and buckwheat? F. SMITH.

Leave out the pumpkins; the parsnips and carrots, mixed and given as described, will answer very well. Let it be sufficiently dry to prevent it sticking to the fowl's bills. Buckwheat is excellent for the afternoon food. Indian corn is fattening, and should therefore be given sparingly. With a comfortable roosting place, your fowls should lay all winter, that is if they are not too old. A little fresh meat once a week would be of benefit. Hang up in the corner of your yard, by its roots, a cabbage head, a convenient distance from the ground to allow your fowls to pick it. They require green food occasionally, and this will be a very good substitute in the winter. Also place in another corner of your yard, under shade, if possible, a little fine gravel, pounded oyster shells, or if these are not convenient, then some coal ashes; fowls require something of this nature to assist the gizzard in grinding the food. The ashes will answer for a dust bath also.

FOUR CARRIER PIGEONS were recently sold in London for an aggregate sum of \$375, one of the four bringing \$150.

THREE THOUSAND DOLLARS in prizes are offered to competitors at the second annual exhibition of the Central New York Poultry Association, to be held in Utica from the 6th to the 13th of this month. Catalogues are now ready for distribution.

THE TREAD.—It is well known that there is a thick substance floating in the white, generally attached to the yolk, of nearly all fresh eggs—less transparent than the white, and frequently having a pithy appearance—and that substance is almost universally believed to be "the tread," or that portion which impregnates. This is a great error, which can be easily proved by taking eggs laid by hens that have never been with a cock, and breaking them, when the same substance will appear.—*Cor. Fanciers' Journal*.

DECOMPOSITION OF EGGS.—According to Mr. William Thompson, of Manchester, the decomposition of eggs may be brought about by any one of three different agencies. The first, which he terms "putrid cell," is generated from the yolk, this swelling and absorbing or mixing entirely with the white, and ending with a true putrefaction. The second is that of the vibrio, the germs of which (floating as they do through the atmosphere), when settling on the moist surface of an egg, readily penetrate into it, and set in motion the putrefactive condition; but when the shell is dry such penetration is impossible. The third is a fungus decomposition, in which the spores penetrate through the shell as before, sending filaments through the egg and converting the white, into the consistency of a strong jelly, the filaments being sometimes so abundant as to cause the whole contents to resemble a hard-boiled egg.

THE POULTRY WORLD does not think that the best and most economical way to pluck fowls for market is by doing it without scalding. It prefers scalding, but says: "If there are any who want to operate without the scalding process, let them do so, and when they are tired of it, let them try the following improved method: Dip the fowls in cold water and let them drip. Then apply finely pulverized resin to the feathers, using a dredging box for convenience. Then scald in the usual way. The resin sticks the feathers together so that the pin-feathers come out with the others, saving much trouble. Apply about half a teaspoonful of resin to a fowl. Use the common crude article. It is cheap stuff and its cost is made up ten times over by the labor saved." Half a teaspoonful of resin dredged on each fowl! We fancy this will not "take," either with the farmer, or his wife and daughters, or whoever has the preparing of the fowls. We prefer cold plucked poultry and they usually bring two cents a pound more.

The Dairy.

American Dairymen's Association.

The annual convention of the above Association was held at Utica, N. Y., beginning on the 12th of January and continuing during that and the two following days. The attendance was, as usual, large and composed of representative dairymen from all parts of the continent mainly, however, from the great dairy region of Central New York. Compared with previous conventions of a similar kind the number of papers read was not so large, but the contents of each were considerably greater, whilst the variety of information adduced as the result of many practical experiments tended unmistakably to show the progress that is being made in this most important department of husbandry.

The first question discussed was that of milk, its quantity and quality,—in which the Hon. J. Shull of Hon. Mr. Moon, J. M. Joslyn and Prof. Arnold took part. All these gentlemen agreed that the quality of milk is invariably due to the nature of the food. Hon. Mr. Shull, however, asserted from his own experience that overfeeding, or feeding of too rich a nature, reduces the milk both in quality and quantity. Corn meal, apparently the great staple over there, received a large share of attention. Mr. Shull maintaining with reference to it that whilst eleven pounds or under, administered daily to each animal, had a beneficial effect from a dairyman's point of view, a larger quantity of the same material stimulated the system rather to lay on fat, whilst it at the same time tended to produce fever. For old cows, however, he advocated heavy meal feeding, and offered on this theory the following as his experience, taking as his basis a grade cow which when fattened weighed 1,300 lbs.:—Value of an old cow in the fall about \$15; value of milk whilst fattening \$15 or \$16; cost of feed \$61; sale of carcase \$68—the amount of labor expended being offset against the manure gained. Prof. Arnold, on the question of old cows, considered that, after they have been milked for a long time, there is a tendency to turn all food into fat instead of milk.

The subject of 'Curing Rooms' was next discussed, and the necessity of a pure atmosphere with a temperature of from 65° to 75° fully demonstrated:—full milk cheese requiring a lower degree than half-skim or skim cheese. It was likewise deemed an important point to have the curing room disconnected from the factory proper to prevent the absorption of odors from whey and other matters. From the *Country Gentleman* we condense the following continuation of proceedings.

Mr. T. D. Curtis then followed with a paper containing *Some Hints*. It requires good milk to make good cheese. The milk should contain at least 12 per cent. of fatty, or butyraceous matter, or the cheese will be too dry and not rich enough to cure well. He thought that if oleo-margarine can be worked into the cheese, the cream already in the milk could certainly be retained in the cheese. He objected strongly to skimming. Cheese with plenty of cream in it keeps well, while the skimmed article must be used while new, or it dries up and loses its value. Mr. Moon said that he had found that cheese partly skimmed cures in thirty days, and is perfect cheese in eight months from the time it is made.

Mr. C. L. Sheldon then read a paper on *Acidity*. It requires much judgment in cheese making to determine just when to dip the curd to prevent farther action from the lactic acid developed during coagulation. It has generally been supposed that if exposed to the action of the acid too long, the fats in the curd would be destroyed, and the cheese thereby injured. But he has found that if cheese, which has thus lost flavor, is kept much beyond the usual time of cutting, it will be found rich, meaty and high flavored. Lactic acid, therefore, acts as a conservative force in retarding the ripening of the cheese. He has found out by trial that cheese made when a high degree of acid was developed, could be held much longer in New York market than the ordinary October cheese made with a low degree of acid.

President Seymour then took occasion to urge upon dairymen the importance of procuring and learning the use of microscopes, as invaluable aids to them in determining the quality of the milk furnished and the product made. He thought that a good entomologist would be of more use to the dairymen and farmers of the State than two door-keepers at each door of the legislative halls.

A paper on *Cream*, by Dr. E. L. Sturtevant, was then read by the Secretary. Cream is an uneven product, rising in layers, the largest globules at the top, and these make the best butter. The lowest layer of cream is worthless for making fine butter. Milk yielding only 10 per cent. of cream may make more butter than that which gives thirty per cent. The large percentage of cream in favored breeds, or favored cows, has no material value as a criterion of the yield of butter. From the fact that cream rises in layers, the butter from shallow setting of milk may be greater in quantity and less quality than that made when the milk is deeply set. In his practice the dairyman must be guided by actual experience, instead of theory or guess-work. He thought shallow setting of milk the best to produce quantity of butter. He would not pour in water to cool the milk. Mr. Joslyn said he has found that by pouring in water to cool the milk suddenly, he obtained more butter without injuring the quality. Mr. Arnold thought the thinning of the milk permitted all the cream to rise, and thus increased the product. Some discussion then followed on the subject of heating instead of cooling the milk, to expel the animal heat. Several, among whom was Mr. Arnold, advocated this quite strongly. Care must be taken, however, that the heating be done slowly, as sudden changes of temperature injure the product.

Mr. J. M. Joslyn of Cattaraugus then exhibited a cheese made entirely from sour milk and buttermilk. The cheese was rich, fine and of good flavor, and according to Prof. Arnold was well ripened and digestible, and perfectly wholesome. Mr. J. said the cheese was made at a temperature of 59°, less rennet being used than for sweet milk, and the cheese was cut with a perpendicular knife, in the vat. About three pounds of salt were used to the 100 pounds of curd. He has worked milk that was 84 hours old, and none less than 36 hours. He got 40 cents for his butter, and never less than 13 cents for his cheese, most of the sales being at 14¢ and 15¢ in New York. He gets 3¢ pounds of butter from 100 pounds of milk and then makes the usual amount of cheese. Mr. X. A. Willard spoke very favorably of the quality of the cheese made by Mr. Joslyn's process.

L. T. Hawley of Syracuse then read a paper on *Manufacturing and Preservation of Butter*. Salt, practically, does not preserve butter, but gives it flavor. It will become rancid nearly as soon if salted, as if not. There is but one way to preserve butter, and that is well understood by a majority of dairymen. The first thing is to select cows giving rich milk. The next is good pasture and pure water for the cows. The utmost cleanliness is required in every department. No odors should be allowed in or around the milk room. Churn at a temperature of 64°. If cream be kept several days, 50° is the temperature. After churning, the butter should be washed in brine; this dissolves the casein, and enables it to be washed out readily. After two or three washings, salt with Onondaga Factory Filled Dairy Salt, one ounce to the pound. It must not be over-worked. None but perfect air-tight tins or tubs should be used; white oak is best, the package being well sealed in brine made of the same kind of salt: the butter must be packed solid, and covered with brine. The amount of salt used is determined by the taste of the consumer. It takes 65 to 70 pounds of salt to keep a barrel of pork or beef. It will thus be seen that in butter the salt used cannot preserve it. It is necessary that the butter should be so made and packed that it will keep, with or without salt. Poor butter cannot be made good by use of salt, nor fine butter injured by good salt. If the butter is taken from the churn before it is gathered, and put into a sieve, and then the buttermilk washed out by pouring brine on it until it runs off clear and the casein is washed out thoroughly, the butter will keep.

Mr. Olmstead, of Saratoga, said that the best butter he had ever seen was in Italy, and it had no salt in it. Parmesan cheese is made by scalding the milk, coagulating, cutting up finely, scalding again and then pressing. It is never salted. Mr. H. Farrington, C. W., enquired of Mr. Hawley whether salt is not needed in butter, to preserve the small portions of casein left in the butter. Mr. H. said that no difference is noticed in the keeping quality of butter when kept exposed to the air. Salt hardens butter. To keep well butter should be pressed by the ladle. He has seen butter which has been kept two years, and was perfectly sweet. It was salted one ounce to the pound, with Onondaga salt. The brine used in washing this old butter was not saturated, except at the last washing. The salt used is not to preserve the butter, but to dissolve the cheesy particles. The salt used in salting the butter is for flavor, not for keeping.

Mr. Chapman said that at the N. Y. State Fair in Watertown, the idea was advanced by a professor that salt preserves animal matters by keeping them cool. He said that Onondaga salt is stronger, and less is needed than of imported salts. Mr. Hawley said salt absorbs water from meat, and thus preserves it. It takes six ounces of salt to keep a pound of pork. Mr. Montgomery said that a year ago he used a barrel of Onondaga salt in a factory where he had made cheese for 11 years, and this barrel of salt spoiled his cheese. They were good for 15 days, but after that they became "sweet" and "rose." Mr. Hawley said that the trouble was owing to bad milk used in the cheese—"Fresh" salt is not so good as old barrel salt. There are more chlorides in the salt unless it is refined. He would wash each churning of butter in freshly made brine. Mr. Farrington said that a good cheesemaker has always used the common Onondaga barrel salt, and makes a uniformly

good article, and gets a good price. He thought that a good maker would always make good cheese, no matter what salt is used.

F. B. Stone read a paper on *Butter and its Preservation*. Butter, if chemically extracted from milk and properly put up, will keep indefinitely. The quality of butter depends primarily on the quality of the milk from which it is made. Butter undergoes no chemical change from the time the milk is drawn from the cow until it is gathered in the churn, if cleanliness has been strictly maintained. No water should be used in working the butter. If the butter has not been freed from casein or buttermilk, butyric and lactic acids are soon formed. Wooden packages are apt to injure the butter, and to absorb some of the butter. Metallic packages are not safe. Stoneware would be good if the covers could be fitted on tightly. No varnishes have been found perfect and insoluble. Paraffine makes a perfectly air-tight and insoluble varnish for metallic packages. The tin cans are cheaply prepared by chemical action, so that the paraffine will adhere permanently. The cost of these packages is but little more than the ordinary wooden ones. Several spoke favorably as to the packages shown by Mr. Stone, as they are air-tight, and there will be no leakage whatever. Mr. Douglass, New York, objected to spruce packages or basswood covers, as they impart a bad taste to the butter, and this question of packages is one of the greatest importance to dairymen. Firkins should be made of oak, and Welsh tubs of ash, with a hardwood cover. Mr. Hawley objected to crocks as good conductors of heat. He said the cost of the package is a bagatelle; good butter in a good package will keep and sell, and in a poor package more than the value of the package is lost. Mr. Stone said that a very thin coating of paraffine only is required. As now made, it requires 160° Fahrenheit to melt it.

Mr. G. E. Morrow, Chicago, thinks that the perfect butter packages will not be "return packages." What is needed to satisfy the trade and consumers is a cheap, air-tight package—so cheap that when the butter is used out it can be thrown away. M. Munson, of Delaware county, can get his packages returned for 10 cents each, and unless a cheaper package can be obtained than is now made, "return packages" will be used in Delaware county.

CHEESE AVERAGES.—The average number of pounds of milk to a pound of butter and to a pound of cheese at the Aville Creamery, Ellington, N. Y., for 1873, was: for butter, 38,056 lbs. of milk to one pound of butter, and 12,025 lbs. of milk to one pound of cheese. The net value of a pound of milk was 1.4128 cents.

JERSEY BUTTER AND HOW IT KEEPS.—D. O. Fisk, of Shelburne, Mass., says he has kept Jerseys for twenty years, and finds them all he could desire, both as to milk and as to feeding qualities, when, for any reason they are past milking, or even as steers. That as regards keeping qualities of the butter, no butter will keep unless the buttermilk is all washed out and properly salted; and that Jersey butter is no exception to the rule.

AN ITEM FOR BUTTER MARKS.—The *Western Farm Journal* gives an account of the daily operations of Mr. Massa, residing near Nachusa, Iowa, who sold 1,605 lbs. of butter, the product for ninety days of twenty cows—\$19.01 per cow. It does not appear that there was any selection of cows made, or any effort to increase the average product. The result is given simply as the results of ordinary dairy management, where particular attention is given to butter. The high prices paid for butter everywhere, and the scarcity of the article, will warrant farmers in giving particular attention to this product. The effort should be mainly devoted to securing an improvement in the quality.

WILL CREAM RISE QUICKER IN A LOW TEMPERATURE.—A California dairyman claims that the cream will rise sooner if the pans are set in ice-water, than even if in a room maintained at the usual temperature. It may be that by lowering the temperature to a certain point the rising of the cream may be facilitated, but when it comes to surrounding the pans with ice-water, it may be found that the theory is being carried one step too far. The philosophy of the dairyman is, that cream rises because it is lighter than the milk, and by cooling the milk down to almost freezing point, he would increase the specific gravity of the milk, and the cream would rise faster. If he did not also increase the specific gravity of the cream at the same time it might do so.

BREEDING OF THE DAIRY STOCK. Considerable attention has been given in the vicinity of Lewisburg, Penn., to the improvement of dairy stock, with the most gratifying results. The common native stock appears to have been used as a basis, upon which Short-horn and Jersey crosses have been made. Cows yielding from 14 to 15 lbs. per week are not unusual among the cattle so bred, and some individual animals have sold as high as \$300 to \$1,000. Undoubtedly there can be a great improvement made in the value of cattle for dairy purposes by judicious crosses and a continued course of selection. And it would be difficult to find anywhere a race of cattle which will respond more readily to an effort for improvement in this and other directions than the common native stock which every farmer has at his hand.

1875.

1875.

THE CANADA FARMER,

ESTABLISHED IN 1864.

A large monthly paper, clearly printed and well filled with an immense variety of Editorials, Correspondence, and Extracts from other Journals, on

AGRICULTURE, HORTICULTURE,

AND

RURAL AFFAIRS.

The Best Paper for a Canadian Farmer to Read, and also the Cheapest.

The conductors of THE CANADA FARMER will continue to labor earnestly for the following ends:—

- To arouse attention, by frank and temperate discussion, to all questions, scientific, commercial, legislative, or otherwise, specially affecting the farming interests.
- To stimulate the agriculturists of our country to adopt an improved system of husbandry, by blending the lessons of modern science with the practical experience of the Canadian farmer.
- To bring under the attention of our farmers all improvements at home and abroad, worthy of adoption, affecting the management of Field Crops—the Barn Yard—the Stable—the Dairy—the Orchard—the Poultry Yard—the Apiary—the Kitchen Garden—and the Flower Garden, and to excite an interest in the progress of Rural Architecture and Landscape Gardening, and all that concerns the domestic economy of the Farm House.
- To mark and report all improvements in Agricultural Machinery, foster new inventions, and promote the adoption of all labor-saving machines, in the work of the farm and garden.
- To keep prominently under attention all that specially concerns the Dairy Farmer and the grazier—the best breeds of Cattle—the best systems of feeding—the most approved processes of cheese and butter making—the best mode of packing—and the best markets to sell in.
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- To afford the farmers of Canada an ever-open medium for addressing their brother agriculturists throughout the Dominion, suggesting matters of common interest and advantage, and eliciting information or advice on practical questions of difficulty or doubt.
- To report concisely the proceedings at agricultural shows, fairs, and sales throughout the Provinces, note the condition and progress of the herds and flocks of prominent stock breeders, and record the importation of thoroughbred stock from abroad.
- To watch and report carefully and promptly the actual state and probable prospects of the produce markets at home and abroad, and specially promote all movements designed to secure the best prices in the best markets for Canadian farm produce.

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THE CANADA FARMER will continue to be supplied to Agricultural Societies, News Agents, and others, in quantities at Club Rates.

Any one is at liberty to get up a club on his own responsibility, and those desiring to do so, should send at once for a circular showing the terms. Parties subscribing (in a club or otherwise) before the 1st January, 1875, will have the paper sent to them up to the 31st December, 1875, on payment of a year's subscription. Each club paper shall be addressed separately, and may be for any Post-office. Parties getting up clubs will be supplied with specimen copies gratis, on application.

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

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

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

The Canada Farmer

TORONTO, CANADA, FEBRUARY 15, 1874.

Work for the Month.

This is usually considered to be a season for leisure and social enjoyment among Canadian farmers, but there is no reason for considering the comparative rest from labor as an enforced one. A pushing, energetic man can always find plenty to do. This is the time of year when the plans for the ensuing summer's campaign should be carefully conned over and matured. A few hours' consideration now may save days and weeks of hard labor and vexation.

During the latter part of January the snow was so deep as to interfere with many of the necessary farm operations. There are therefore, now, rails to be cut, fences fixed, the wood-pile to be replenished, and timber to be cut for lumber, which in ordinary seasons might have been much more forward. The wood for the summer's firing should be drawn now. If implements have been left in the open, go and bring them in, even at the eleventh hour; look over them carefully, and clean and oil such parts as may have rusted from exposure. If you have no shed for your implements, build one now. It will pay well to do it.

Seed can be selected now at leisure. If this, perhaps the most important work on the farm, be left till sowing time, it will assuredly be neglected in the press of business. Remember how the famous Wykoff Winter wheat was improved by careful selection. The originator of that variety discovered accidentally, while throwing his wheat from side to side of the barn to dry it, that the grains which rolled the farthest were the plumpest and soundest grains. In a few years, by practising this, his seed was in request everywhere. Nothing will pay better than thus selecting seed grain.

It will be bad policy to leave any hauling undone for a day after the opportunity offers. The manure should be taken to its final destination and spread. Do not leave it in heaps where dumped, as rain will carry the soluble parts into the earth where piled, robbing the manure of its riches and making the one place too rich.

Those farmers who have a kit of carpenter's tools will now find a chance to make them pay. There are boxes, implements, and a thousand-and-one things to be repaired. "A stitch in time saves nine," and so does a nail or screw. A little practice will give any one some degree of deftness in the use of tools, and, as soon as this is acquired, delight is taken in the work, which would repay the cost of the tools; and every time the tools are used money is saved. Farmers should encourage their boys to attain expertness in this direction.

Stock has been well sheltered through the winter of course, and well fed. They must not be allowed to run down now. Every pound lost now is so much money gone for good. Where hay runs short, straw cut and steamed and mixed with meal or bran will keep them going. Straw alone will not do it. Treat the milch cows kindly and liberally. Such as are coming in should be separated from other stock. Do not keep on milking till near calving time. By doing so both the cow and her calf are robbed. Give your young stock good care, and see that the stronger animals do not get all the feed.

Look carefully to your horses as the treacherous dampness of Spring approaches. See that their stables are comfortable, well-lighted and ventilated. Their feed should be increased as the days get longer and their work more laborious. Look to their feet and see that they are scientifically shod. Breeding mares want extra care. Colts should be "gentled" now, made familiar with man, and induced to understand that they are not going to be hurt.

Early lambs will be coming in. The ewes will want the closest attention and the most humane care. The other sheep can be let out to pick up what they can find.

In the orchard and garden there is much that can be done. Pruning may be done on mild days when the wood is not frozen; but do not prune too severely. Look carefully for depredations of mice and rabbits. Girdling may be prevented by placing pieces of wood around the trunks of trees, and tying with wire; or bandages may be put round. The snow should be trampled firmly for several feet around the trees, to prevent mice burrowing and playing mischief under the surface. The manure for the garden should be collected and piled for distribution before rains set in. Manure for prospective hot-beds should be kept in small heaps to prevent fermentation.

Painting is a thing which every farmer can do for himself. If he does not like to mix his colors himself, and we recommend him not to do so, he can buy them ready made, of better quality and cheaper than he can mix them. There are now no flies or dust to vex the soul of the painter. All wood-work that is exposed to the air will well repay the cost of painting.

The heavy snows must have sorely tried all weak roofs. The snow should be removed from all flat or weak roofs after every storm. Get a piece of board three or four feet long, to the four corners of which fasten short ropes—to which short ropes fasten long ones. Throw the long rope over the building from which the snow is to be removed. Then drag over the board, move a pace aside and drag it back, and so on.

There is one thing which is timely now as at all times. If you have a neighbor who does not take the CANADA FARMER, and you wish to do him and us a service, tell him exactly what you think of our paper, which, we flatter ourselves, will be the means of securing a new subscriber.

The Emigration of English Farm-Laborers.

"Westward the tide of empire rolls its way" was literally a poetical prophecy; for year by year our countrymen, since that was sung, have been finding their way into the far wilds of America and to Canada in numbers so great that even the fertile imagination of the poet could scarcely have conceived the magnitude. Not a few of those wanderers have found the home of their adoption not so good as the one they left behind them—no better than as a stepmother in comparison with a mother, but the greater proportion have reason to be thankful that they improved their condition on the other side of the Atlantic. But before they accomplished the better position they have attained in the Western States and in the Dominion, they had to set their shoulders to the wheel after a far more vigorous fashion than they would have chosen to exert in this country.

Thus saith the London Farmer, and, in admitting so frankly that "the greater proportion (of emigrants) have reason to be thankful" that they left their homes, it atones for much sneering at, and talking against, farm-laborers' emigration. Our English cotemporary says that these successful men "had to set their shoulders to the wheel after a far more vigorous fashion than they would have chosen to exert" at home. It is admitted by everybody who is acquainted with the two countries that, in our stimulating air,—we are speaking of the Dominion only, where malarious diseases are no more rife than they are in England itself—men can do a given amount of work with less fatigue than in the depressing climate of Britain. This being granted, we contend that the world and the men themselves are the better off by just so much as their shoulders have been more vigorously set to the wheel.

It is all very fine for the Farmer to talk about men in a state of semi-starvation, "choosing" to put more vigor in their motions. They can not do it; and, if the ruddy-visaged, well-fed, portly farmers of Old England were put on the rations that they make their men exist upon, they would soon discover the fact.

In answer to what we have said about semi-starvation, there will be trotted out, as an average specimen of his

class, and to prove that English farm-laborers are not systematically half-starved, a prize animal—some laborer who is getting (hear it!) a pound a week, and a cottage rent free! said cottage being worth (to him—to no one else) one shilling and sixpence a week—which, being added to the aforesaid pound, gives the astounding total of twenty-one shillings and sixpence per week, out of which the man, his wife, and an indefinite number of arrows (and their quivers are full invariably) are to be clothed, fed, warmed and sheltered. And this is the condition of a prince among laborers—a man who has lived a blameless life in the midst of the direst poverty—who is possessed of every virtue that a servant can have—is sober, honest, industrious, respectful, and up to his work—has never been caught looking too longingly at the hare or the pheasant, sacred to his betters—who always touches his hat humbly to the squire, the parson, and his master—in short, who possesses qualities that, properly directed in other lines of life, would bring him to the front among the merchant princes and successful men of his time.

The bitterest drop in the cup of this typical laborer is, that he knows that his next change will be for the worse, for he is already at the topmost round of the English laborer's ladder. He knows that, save he never so diligently, he will never possess more than six feet by two of his native soil—and six feet by one will probably suffice, for he does not run to corpulency, which is not strange; and his last moments will be more pleasant if soothed by the knowledge that there is enough money in the old stocking to pay for the only small freehold that it is possible for him to attain to. He understands, too, that his sons will be no better off than he, unless they go to the city, to the mine, or to the New World of which he has heard so much from Joe Arch and his colleagues.

And this last is the destiny of thousands of his fellows, let the Farmer sneer and advise as it will. Next Spring will see shoals of the laborers of England seeking these shores—the deserving of them to thrive in a manner which unjust land laws, and no less arbitrary laws of caste, forbid at home—the less worthy to become, under the pressure of necessity, better men, more valuable members of society—and the worthless to sink speedily to their level, or to return home and vilify the Dominion, possibly through the columns of the *Farmer*, for the rest of their lives.

Curing Hams.

(To the Editor of the CANADA FARMER.)

SIR.—Please give a good recipe for curing bacon and hams for smoking.

F. SMITH.

The finest and most nutritious bacon is dry-cured. Immersing in pickle tends to wash out of meat those juices which are its chief elements of nutrition. We have seen various methods of curing and smoking; the best we know of is that practised by Kentuckians in the curing of what are known as the famous "Kentucky hams."

The following materials are employed for 250 pounds of meat: 10 pounds common salt; 1 pound Turks' Island salt; 4 pounds sugar; $\frac{1}{2}$ pound saltpetre. The salt to be used should be heated in the oven until it is quite dry. The pieces of meat are then rubbed with it as soon as it is cold. They are then laid with skin side down and the sugar is spread over the meat surface. After the lapse of three or four days, most of the sugar will be melted and absorbed. At this time the pieces should be thoroughly rubbed with the dried salt, and some of it should be washed in round the bone of the leg. The rubbing requires to be well done. Some persons use a piece of wool for a rubber. At the end of a week, if the weather is cold, and at the end of three or four days, if it is warm, the pieces should be handled over and rubbed again. The saltpetre, finely pounded, should be used with the salt. It is a good plan to use a little of it pure about the bone. Large pieces will be required to be rubbed four times, medium-sized ones three times, and small ones only once. At the end of the last rubbing, which should be on all sides of the pieces, the remainder of the material should be spread on top. When the pieces have remained a week after the last rubbing, they should be wiped quite dry with a cloth, when they are ready for the smoke-house. There are advantages in hanging the hams and shoulders from the upper instead of the lower side, as is ordinarily done. By doing

this the juices of the meat do not run out while the operation of smoking is going on, and a smaller part of the outside is injured by absorbing too much smoke. By using a wire instead of a cord to hang up the hams by, all danger of their falling in the smoke-house is avoided.

The chief difficulty with most smoke houses is they are not high enough. In a low smoke-house the smoke reaches the meat when it is quite hot, and the meat is injured thereby. A smoke-house made of wood is preferable to one made of brick or stone, for the reason that it is more likely to be dry. The walls of a brick or stone smoke-house will often be covered with moisture, with which the smoke will unite and form a very disagreeable compound. Care should be taken that the pieces of meat do not touch each other while the operation of smoking is going on. If they do touch, they will be imperfectly smoked and liable to injury.

The operation of smoking should proceed slowly. The very best materials for making smoke are corn-cobs, as thereby a delicate flavor is imparted to the bacon. The next best material is hickory wood. All materials should be rejected from the smoke-house fire that will produce a disagreeable smell. It is an excellent practice to kindle a little fire in a smoke-house every few days, even after the meat is sufficiently cured. It keeps the air within dry and prevents mould forming on the sides of the meat.

IT IS RECOMMENDED that the dogs be put upon starvation rations immediately. Spring will soon be here and the lightning-rod man around.

A GENTEEL FARMER in Massachusetts, a retired Bostonian, didn't know how to take a waggon wheel off to grease the axle, and so he bored holes through the hub and poured in the grease.

TO GET GOOD FARM HELP CHEAP, and an abundance of it M. L. Dunlap says: "pay your day laborers at the end of the week or close of the day, and those who work by the month at the end of the month."

AN OLD experienced farmer once said to a new beginner in farming, "Young man, let me give you a little piece of advice, will you? Never stir up your soil deeper than you are able to manure it." This is an axiom which is applicable in many ways.

A CORRESPONDENT of the *National Live Stock Journal* is answerable for the statement that the horses of Oregon are finer looking and appear to have more "warm blood" than those in common use in the East. He attributes this fact, as also the unusual soundness of horses there, to the superior quality and good constitution of the basis of the breeding stock taken across the plains. These were generally selected with care, and those which lacked constitution died on the road.

A SHAM FARMERS' ASSOCIATION.—A man has been going round among the Wiltshire, Oxfordshire, Berkshire and Warwickshire farmers obtaining subscriptions for a sham National Farmers' Association. He landed several pretty good fish, among them Lord Walsingham, C. S. Read and other well-known agriculturists. His career was brought to a close by a conviction before the Warwick Quarter Sessions, which will prevent him, for twelve months, from giving that close attention to the affairs of the "Association" which he would desire to bestow.

IN SIR ARTHUR HELLS' work, "Social Pressure," there are a few remarks which put the rural population question in a forcible light. He contrasts the Flemish system of farming with that of England. The first leads to an excessive rural population; thus in the great manufacturing and commercial districts, those who live by rural labor form nearly half of the total population, forty persons to 100 acres, or on a scale that perhaps only China can rival. Such a superabundance of hands is not a necessary consequence of small farms, although the latter tend naturally to create them. If Flanders produces more than England relative to its area, it only produces half relatively to its rural population, and in no country are there so many poor as in this rich and fat Department. The city of Lille offers a sad instance of this state of affairs, the third of its inhabitants being on the books of the charitable organizations; and more than one parish is in a similar position, so that by the presence of such a scourge, the fruitful fields and smiling landscapes lose much of their seeming prosperity.

THERE ARE erroneous and exaggerated impressions abroad as to the amount of good that chemistry can do to agriculture. In an essay before the Kansas Horticultural Society, Prof. Kedzie illustrated this by example and showed that the extravagant expectations of the past few years as they are shown to be baseless, are in danger of being followed by equally extravagant underestimates of what scientific knowledge may do to advance agriculture.

THE *Gardeners' Magazine* is in a rage because the *Pall Mall Gazette* tells a story about Colorado cabbages weighing 44 lbs. each. The *Gardeners' Magazine* wants to show Colorado-cabbage-growers, and the editor of the *Pall Mall Gazette*, round the next Agricultural show at Islington, where it will engage to find cabbages weighing eighty pounds. And furthermore, the *Magazine* offers to bury the *Pall Mall* office in cabbages of more than forty-four pounds each.

J. N. STURTEVANT gave a whole lecture in a few words when he said "A mowing machine is an extravagance for him who is sparing of oil, or does not keep the nuts tight. The scythe is more economical. But when a man has a fit training to manage the mower, the value of it is very great. So when persons adopt an intelligent way of keeping cattle, they will be appreciative of thoroughbred cattle, and they will be profitable to them, when not purchased at too high a price."

THE looseness with which the United States Patent Laws are administered is exemplified by the patenting of a recent "new invention," consisting of the fastening of grape vines to a stake by a nail, after winding the vines spirally around the stake. It is the fastening with a nail which is patented. The idea was new to the Commissioner of Patents, so he granted to the patentee the sole right to drive nails through grape vines for a series of years. The patentee will now proceed to map out the country into districts and to sell "rights." Persons using nails for fastening grape-vines, though they may have used them for years, will be liable to fine until the "patent" is overturned. We offer our sympathy to our horticultural friends over the line, especially to Mr. Allen, of Massachusetts, whose vineyard was described lately by the *New England Farmer*, from which description it is not unlikely the patentee got his idea.

WILD RICE PAPER.—The wild rice of North America (*Zizania aquatica*) is widely diffused over the Continent, but is particularly abundant in the north-western portions. It grows in wet, marshy places, and along the margins of lakes. The culm or stem rises to a height of from 7 to 8 feet, with broad leaves, and a large terminal panicle of flowers. The seeds are half an inch long, are slender, and covered with a dark cuticle. The Indians and pioneer settlers make use of them as an article of food, cooked like rice. They are nutritious, but have a *savage* flavor. The stem of the wild rice is being extensively employed in the manufacture of paper. It yields as much raw material as the esparto,—a grass growing in Southern Europe, and greatly used for making ropes, sacks, mats, baskets, etc.—and being free from silicates, the paper made from it is quite as strong and flexible as that from rags, while it is easily bleached, economical in respect to chemicals, fine in color, and almost devoid of specks and blemishes. It is estimated that 1,000,000 tons of the rice-plant can be obtained annually from the Canadian lakes alone.

M. PARAF, of San Francisco, is said to be the discoverer of a way of doing without rain, if necessary. He knew that the air is full of moisture, and he knew that chloride of calcium would attract and condense it, for cultural purpose. He has applied this chloride on sand-hills and road-beds, on grass, on all sorts of soils, successfully, and he has ascertained that it may be applied in such proportions as will produce the irrigation of land more cheaply and efficiently than by means of canals or other methods of securing artificial irrigation. One of M. Paraf's applications will produce and retain abundant moisture for three days, when the same amount of water introduced by the present method will evaporate in an hour. He believes that his preparation will not only produce two blades of grass where but one now grows, but that it will render possible fields, meadows and prosperity, where now there is nothing but sand and desert waste. M. Paraf forgets that soil will only absorb a certain quantity of these salts without injury. A few three-day applications and the soil would become barren.

(Bringing Water from a Distance.)

To the Editor of the CANADA FARMER.

SIR,—I have a stream of water, distant about 2,000 feet from my house. The water would have to come up a grade of about 30 feet. Please give an estimate of how much it would take to complete the job, and what kind of a forcing machine would be best.

Camilla, Ont.

SUBSCRIBER.

The hydraulic ram, which has before been described in the CANADA FARMER, is the best thing we know of. The ram itself is a very simple and inexpensive affair, ranging in price from \$9 upwards according to size. The other expense would depend upon the size and material of the 2,000 feet of pipe wanted. Lead is by far the best material, and, in our climate, the pipes must be laid beyond the reach of frost, say four feet or more under ground. Trouble will arise if the rise is not made continuous, as gas and air will accumulate in the higher portion. So long as the rise is continuous, the pipes can be laid to follow the contour of the ground. A half inch pipe would probably be quite large enough.

The expense will so depend upon local circumstances that we can give no estimate. Our correspondent will be able to form an opinion from the information we have given. We have not the address of the makers of the hydraulic ram by us. Any agricultural implement firm will be able to supply the ram.

A Successful Agricultural College Farmer.

One of the three persons (we believe three is the whole number) who have passed through the course of the Iowa Agricultural College, and are now farmers, publishes his year's farming accounts. The CANADA FARMER is always glad to give credit where credit is due, and as we have animadverted heretofore upon the management of Agricultural Colleges in the United States, we want to be fair and give both sides. The statement runs thus:—

"D A Kent graduated at the Iowa Agricultural College, in November, 1873, and in 1874 farmed in Iowa, having thirty acres in corn, twenty in flax, twenty in wheat, ten in oats, and one in garden crops. He raised fifteen calves and fifty pigs. He makes a showing of sales amounting to \$1,812.50; of which, however, \$877.50 were obtained by crediting corn with sixty-five cents a bushel when fed to hogs. His direct expenses for hired labor, etc., were \$101.25, leaving \$1,711.25 as the gross return for his labor and the product of the farm. The land was badly run down."

It is probable that, if this account was thoroughly overhauled, it would turn out not to be so very unheard of a success,—but let it pass. The College only received 240,000 acres of land as an endowment. If too captious a view of the matter be taken, the account will never be balanced at all.

SOME interesting contributions to climatology have been made by M. Hofmann, during a journey through Italy. He found from numerous data that a difference of latitude of 1° corresponds in general to an acceleration or retardation of the development of vegetation about three days and three-quarters. M. Hofmann considered twelve different plants, which, growing at railway stations, were specially suitable for the investigation. The generally received notion on the American continent is that summer advances northward in steps of about twelve miles a day; and we have seen numerous and flowery editorial statements of the fact. M. Hofmann's observations tend to show that, in Europe, summer gets northward more quickly than it does here by four miles a day. There is one consolation. If the European summer can discount ours in the race to the North Pole, our Canadian winter can sling the snow in the face of his European brother in his race southward.

AT THE monthly Farmers' Club meeting held during the Smithfield Show week in London, the subject under discussion being, "The Future of Farming," Alderman Mechi said that, "on his own farm and many others which he could name, the amount of produce was such, that he was convinced that, if the whole of the land of England were farmed as it ought to be, taking the present rate of consumption, not one-half of the produce could be consumed, supposing there were no foreign importation whatever." At which the farmers present laughed irreverently. The Alderman continued and said that he could produce plenty

of men connected with Norfolk and Lincolnshire who would bear out that statement. "If the farmers of England as a body produced what was produced by some of the farmers of those two counties, the people of this country would not, at the present rate of consumption, consume one-half of the total, without any foreign importation." The report does not state whether the laughter was repeated.

A Talk about Farm-Buildings.

At the Western New York Farmers' Club, the subject of "Farm-Buildings" came on for discussion. Willard Hodges doubted whether painting shingle roofs was advisable. He read an article condemning the practice, as it caused water to remain longer under the shingles. Mr. Beckwith said old fashioned riven shingles have been superseded by cut or sawed, which are open to receive rain. The "fuzz" left by the saw draws the water under the shingle, where it is retained, causing rot. I advise using very narrow roof boards, with wide spaces between.

Mr. Reed in Wheatland there is a house sixty-eight years old, the first frame dwelling in town, whose original roof still does good service. The roof was made of riven shingles.

Mr. Root said his house, built nineteen years ago, had a very flat roof, and though he used cut shingles it was now as good as ever. The roof was painted as laid, and again after laying, and the paint had not worn off.

Mr. Holten had laid a very flat roof, half with cedar and half with pine shingles. Gave it two coatings of linseed oil after laying, and after the last covered with fine sand while the oil was moist. This was twenty-five years ago, and the roof remains perfectly tight. Much of the sand remains on the shingles. There is now probably other roofing material better than shingles.

Mr. Quimby spoke of the superiority of Pennsylvania barns. All have cellars for roots, for cattle and for horses. Their houses are generally inferior, and men say laughingly that the farmers care more for their horses than for their wives. All barns, even on level ground, should have basements beneath. It takes no more roofing to cover a high barn than a low one. Most farmers after building find that they have made their barns too low. Then, the granary should be attended to. Not one granary in ten is rat and mouse proof. Yet it is easy to keep vermin out by using 1½-inch matched hemlock boards. The hemlock splinters cannot be eaten through by rats or mice. The pig-sty should be made with reference to the convenience of the service. Hogs are naturally very neat animals, and if furnished separate apartments will never soil their bed or feeding room. The trough should be divided into apartments, to give room for each animal without crowding its neighbor.

Mr. Beckwith made an excellent and cheap corn-house of an old hay-barn by making the crib inside with slats raised from the floor, and providing an open space between the crib and the side of the barn for ventilation. This plan secures perfect protection for the corn from snow and rain.

Mr. Ganetsee exhibited a grooved roofing made in sections, which can be used equally well for siding. It appears to be a good thing, and a committee was appointed to examine, and report at next meeting.

Mr. Ross said that when young he was much troubled by inconvenient barns and other out-buildings. This set him to thinking on the subject, and he had at last succeeded in perfecting his ideas in most particulars. Much depends on the location of buildings for convenience. Barns should be in rear of the house, with driveway and horse-block. He built a barn 36 by 78 feet, with horse-barn 36 by 50 feet, forming an L. It has a cistern 26 feet long and 10 feet deep, which had never been dry. His horses and cattle are all on the same floor, and he can water and feed them without going out of the barn. Has his granary in a small building outside the main barn. This was on pillars, with tins to keep out mice. The main barn was thus saved for storing grain and hay from the basement to the roof. Cellars should be made under the whole house. It costs little more than to dig a foundation, and plenty of cellar room is always handy. He kept his sills from dry rot by ventilating the basement with horse-shoe tile.

THE ENGLISH Agricultural press is again taking up the advisability of the appointment of a Minister of Agriculture. The North British Agriculturist says:—"The agricultural interest has grown so vastly in national importance that few, if any, can deny it merits a direct voice in the Government. There ought to be a department of agriculture and a responsible head. Commerce has been linked to Agriculture in the recommendation of the Central Chamber, and perhaps the two interests may be, in this respect, advantageously combined, though commerce has not hitherto been so inadequately represented in the councils of the nation as agriculture.

THE PERUVIAN GOVERNMENT have entered into an important contract with Messrs. Dreyfus, Brothers & Co., by which all the guano warehoused in Europe, and which was on the sea prior to the 31st March last, became their exclusive property. Further, in consideration of fulfilling the obligations of the Peruvian debt up to July, 1875, the contractors are to maintain exclusive possession of the whole remaining stock of guano, and be allowed sixteen months time to sell it, during which time the Peruvian Government will be entirely excluded from the market. This is important to the creditors of the Republic, as it gives the contractors a prior claim, notwithstanding the clause of the general bond.

A HIGH COMPLIMENT was recently paid to Mr. T. C. Booth, the famous Short-horn breeder, of Warlaby. A testimonial was presented to him of the value of 230 guineas. It comprised a gold watch and guard, a silver soup tureen, four silver corner dishes, a dozen silver dessert-knives and forks, and a silver fish-carver, and fork, together with a gold bracelet, mounted with pearls, for Mrs. Booth. On the watch and tureen was the following inscription: "Presented to Thomas Christopher Booth, Esq., by his friends and neighbors, as a grateful record of his kindness in allowing them the privilege of using the celebrated Warlaby bulls, thereby largely contributing to the improvement and value of their stock; also as an expression of their most sincere respect and esteem. 20th November, 1874."

AS FAR BACK AS 1824, M. F. Edwards was led to conclude that the complete development of the frog could not take place in the absence of light. Other observers, however, arrived at different results from their experiments, and the question is still fairly open to discussion. A contribution to this subject has recently been made by Prof. Schnetzler, of Lausanne, in the shape of an interesting paper, entitled "De l'Influence de la Lumière sur le Développement des Larves de Grenouilles." The eggs of the common frog (*Rana temporaria*) were taken from a pond last March, some being placed in vessels of colorless glass, and some in those of green glass, whilst in other respects they were exposed, as far as possible, to similar physical conditions. These comparative experiments showed that the development of the tadpole was greatly retarded by the green light. The writer is disposed to connect this imperfect growth with the want of ozone, experiments having shown that, whilst ozone was present in the white vessel, no traces of it could be found in the green glass.

THE TRIALS instituted by the Royal Agricultural Society respecting the Potato Disease have resulted, as was to be expected, in showing that not one of the so-called disease-proof sorts has, in reality, resisted the disease. During the period of vigorous growth, in all the varieties, in five out of the twenty localities the disease was virulent, and by the end of the season it was found that in almost all these places more or less disease was apparent; so that the question of disease-proof potatoes, as far as these trials are concerned, has been practically decided in the first year. Some most important communications have, however, been received from Professor De Bary, who has ascertained, by recent experiments, that the potato disease is not propagated by infested tubers; and that, although the mycelium of the fungus (*Peronospora infestans*) was distinctly apparent in the stalks of plants raised directly from diseased tubers, no gonidia, or germs, were evolved. In a latter communication, Professor De Bary expresses sanguine hopes that he has at last discovered the certain nidus, or resting places, of the oospores, or active primary germs of the fungus, which, as he says, would essentially complete its life-history. The great practical results of these discoveries, if perfected, will obviously be that measures may be taken to destroy *in situ* the oospores of the fungus.

Agricultural Intelligence.

The English Short-Horn Herd Book.

It was mentioned in the last number of the CANADA FARMER that negotiations between the committee appointed in last July to negotiate with Mr. Strafford for the purchase of Coate's Herd Book, were in a forward state. It is now announced that certain difficulties in the way of the sale have been removed, and that a provisional contract has been signed for the sale. The committee state that, in answer to their appeal for funds, a hearty response has already been made by many Short-horn breeders, whilst numerous applications from parties desirous of becoming members are received daily. The arrangements made with Mr. Strafford, however, necessitate an immediate realization of a capital sufficient to enable the committee to complete the purchase and carry on the work, and they are, consequently, led to urge all interested in Short-horns to become life members of the society forthwith. A meeting was appointed to be held on Feb. 3, for carrying out arrangements. All parties wishing to become members are respectfully requested to communicate with the Hon. Secretary, Mr. John Harward, Winterfold, Kildermunster, as soon as practical.

Ontario Dairymen's Association.

The eighth annual convention of the Dairymen's Association of Ontario, was held at Ingersoll, on February 10th and 11th—too near the time for our going to press to allow of anything but a brief record of the proceedings in this issue. Professor Bell delivered an address on the subject of "Canada in the Dairy and in the Market." The subject of feeding cornstalks to cows was debated. The opinion was almost unanimous, that cornstalks were not objectionable for dairy cows. The best size of cheese for the English market was discussed. The usual size, 70 to 80 pounds, was said to be too large. Fifty-six pound cheese would sell first when there was a glut. New York dealers give a cent or more per pound for thirty-pound cheeses.

The subject, "The Best Age to Remove Cheese from the Factory," was discussed. The opinion seemed to be that cheese was hurried to market too soon. "Coloring," was talked over, and admitted to be required by the public and not injurious. Hon. X. A. Willard delivered an exhaustive address on "Milk." An address on "The Importance of Elevating the Intellectual Character of the Dairyman," was given by Mr. C. E. Chadwick. Discussions took place on "Which is the Most Suitable Curing-Room, and the Best Method of Ventilation" and "Will Creameries Pay in Canada?"

On the question of the comparative worth of Canadian and Liverpool salts, there seemed to be a variety of opinion—some saying that the Canadian salt had improved lately, and is now as good as the best—others speaking in favor of Liverpool salt. It was recommended that hoops be of the diameter of 14½ inches. The next annual meeting is to be held at Ingersoll.

Toronto Electoral Division Society.

The annual meeting of this Society was held in the Agricultural Hall on the afternoon of Wednesday, the 20th ult. After the reading and confirming of minutes and other routine business, the Directors' Report, the most important portions of which will be found in other columns of the FARMER, was read and unanimously adopted. The following officers were then balloted for and declared elected:

President, Philip Armstrong; 1st Vice-President, George Vair; 2nd Vice-President, John Forsyth; Secretary-Treasurer, Wm. Edwards, Directors, John Gray, James Forsyth, John Paxton, James Fleming, John Chambers, T. J. Harris, Alonzo Watkins, John McCarter, and William Lightfoot.

Messrs. James Fleming and John Forsyth were appointed representatives to the next annual meeting of the Association at Ottawa, in the event of the President and 1st Vice-President not being able to attend.

Messrs. G. W. Buckland and H. C. Thomson were appointed auditors of accounts for the ensuing year.

Resolutions were also unanimously adopted on the following subjects—

Vote of condolence to the family of the late John Gray, in reference to his untimely death.

Vote of thanks to the Agricultural and Art Association, for the use of a room for the Society's meetings.

Vote of thanks to Mr. J. B. Boustead, the late President, for past services to the Society, in his retirement from the Board of Directors.

Vote requesting the Board to communicate with rural Societies as to a Union Fall Exhibition.

The International Association of Short-Horn Breeders.

Messrs. W. R. Duncan, G. Sprague, and Emory Cobb, a committee appointed to perfect the organization of the International Association of Short-horn Breeders, have addressed a circular to breeders, inviting them to become members of the Association. The circular says:—"It is perhaps hardly necessary to refer at length to the importance of the cattle interest, and its rise and progress in the United States and Provinces of Canada. The most of you are conversant with the history of the earlier importations, and are very well informed as to the great improvement wrought upon the cattle of the country through these early importations. There was, at first, a great diversity of sentiment as to breeds, but after long and patient trials, the Short-horns stand out to view without a peer, and a very respectable array of talent and capital are enlisted in the breeding of Short-horns.

"The breeders of Indiana called a meeting at Indianapolis, to be held on the first Wednesday of December, 1872. A large delegation assembled on that occasion; an organization was effected, duly officered, with a Director from each State and Province. A Constitution and By-laws were adopted. It was ordered that the Convention assemble annually, and that the proceedings be published in pamphlet form, thus furnishing a means of preserving for future reference the points discussed and the essays read.

"It was ordered that a membership fee of \$2.00 be exacted from each member, the fund so raised to be used to print and send out the proceedings. In 1873 the Convention assembled at Cincinnati, with a good attendance, and adjourned to meet at Springfield, Illinois, on the 2nd day of December, 1874. At this meeting it was shown that the membership was not large enough, at the price fixed, to defray the unavoidable expenses, mainly the expense of printing the transactions, and the undersigned were instructed to address breeders through the medium of a circular, asking all who may be so addressed to become members of the Association, by sending name and post-office address to S. F. Lockridge, Secretary of the Association, Green-street, Indiana, enclosing the membership fee.

"We are all engaged in a common cause,—the introduction and improvement of Short-horns,—and no one of you can afford to leave anything undone which shall in a proper manner promise to aid in developing this great interest."

Ontario Poultry Society's First Show.

The Ontario Poultry Society will hold their first annual show on March 2nd, 3rd and 4th, at Guelph. \$1.00 is offered in prizes. The entrance fees are: for fowls, geese, turkeys and ducks, 50 cents each coop. For pigeons, rabbits, and caged birds, 25 cents each coop. An addition fee of 10 cents for each coop will be charged. Entries close on Feb. 26th, before which day fees must be remitted to the Secretary. The specimens to be exhibited before two p.m. on March 1st. Entries (except singing birds) are to be in pairs, labelled with name of owner, and bona fide the property of exhibitor. The judging will be by the American standard. The vitality of eggs laid during the show will be destroyed. Specimens are to be priced and ten per cent. on sales deducted toward expenses of show. Exhibitors must coop their birds as they wish them arranged for exhibition. The admission fee will be 25 cents for adults and 10 cents for children. The above is condensed from a circular which the Secretary, Mr. Geo. Murton, Guelph, will furnish to all who want fuller information.

At a meeting of the trustees and officers of the N. E. Agricultural Society, one of the representatives of various State Agricultural Societies in New England, offered a resolution which was adopted, that "the employment of volunteer committees at Agricultural Exhibitions secures the services of those most interested in Agriculture, appeals at once to the zeal and devotion of the members of the societies, and results in decisions as wise and fair and as efficacious as can be obtained in any other manner."

THE CULTIVATOR'S GUIDE FOR 1875, published by J. A. Summers, Toronto, is a well got-up catalogue, for which any one who contemplates purchasing garden, agricultural or flower seeds, should send.

New Granges of Patrons of Husbandry.

The Order of Patrons of Husbandry continues to extend itself in the Dominion. In the January number of the CANADA FARMER, we published a list of Granges in existence on January 1st, 1875. We now supplement that list with the names of Granges organized since that time:—

84. KETTLEBY.—Calvin Davis, master, Kettleby; Charles Lloyd, secretary, Kettleby.
85. FOREST HILL.—William A. Moore, master, Yorkville; J. E. Hopkins, secretary, Eglinton.
86. GRANGE.—A. A. Stewart, master, Ailsa Craig; Henry O'Neil, secretary, Parkhill.
87. MOREGAN.—Wm. H. Haldenby, master, Kinlough; A. W. Haldenby, secretary, Kinlough.
88. POPLIN.—Joseph Goodfellow, master, Brawley; D. J. Hunter, secretary, Craigvale.
89. COOKSTOWN.—Thomas Duff, master, Cookstown; C. Cooke, secretary, Cookstown.
90. ENNISKILLEN.—Thomas Dundass, master, Petrolia; Robert Dawson, secretary, Petrolia.
91. PLUMPTON UNION.—James Vanuatter, master, Forest; Sylvester Kinsey, secretary, Forest.
92. MOUNT PLEASANT.—James Agnow, master, Lucknow; Thomas Murray, secretary, Lucknow.
93. ————Guy Bell, master, Brampton; David Lawrence, secretary, Brampton.
94. HARMONY.—Wm. Spence, master, Braughton; John Campbell, secretary, Woodham.
95. SHERKSTONE.—Frederick Heckadox, master, Sherkstone; Jacob M. Sherk, secretary, Sherkstone.
96. GRANGE.—Jacob Bowman, master, Dundas; Wm. D. Binkley, secretary, Dundas.
97. WANSTEAD.—A. Y. Anderson, master, Wyoming; J. E. Anderson, secretary, Wyoming.
98. LORNE.—Arch. F. Campbell, master, Belmont, Geo. McCallum, secretary, Mapleton.
99. SHERRIDAN.—Ferris Lawrence, master, Sheridan; Richard F. Polard, secretary, Sheridan.
100. FARMER'S WREATH.—John Stewart, master, Lucknow; John J. Taylor, secretary, Lucknow.
101. SHARON.—Amos J. Hughes, master, Sharon; Chas. E. Lundy, secretary, Sharon.
102. NORTH RIDGE.—John Noble, master, North Ridge; G. W. Johnston, secretary, North Ridge.

Manchester Fat Stock Show.

The annual exhibition of fat cattle, sheep, pigs, poultry, pigeons, and dogs, was opened on Tuesday, the 21st Dec. There were only seven classes for cattle, and the entries were very insignificant in number, while the stock shown, with very few exceptions, was not of first-class quality. Mr. T. Statter, of Stand Hall, entered several of his prize beasts, and was rewarded by the first prize for the best fat Short-horn ox or steer exceeding three years and four months old; a similar honor for the best ox or steer of the Scotch, Irish or Welsh breeds; and the premier prize for the best fat cow or heifer of any breed or cross-breed, except Short-horn. Mr. R. Wright, Lincoln, was placed first in the class for Short-horn cows or heifers of any age, and Mr. J. Reid, Alford, Aberdeenshire, second; Mr. W. S. Roberts, Llangefni, Anglesea, second in the class for cattle of Scotch, Irish or Welsh breeds; Mr. H. N. Edwards, Leominster, second in that for cows or heifers of any breed except Short-horns; and Mr. J. Reid third. The show of sheep was small, and the principal prize-taker was Mr. Statter. A second prize, for fat wethers, was given to Mr. A. S. Drake, Meath; a first to the Duke of Portland, for crossed or mixed breeds; and in which class Mr. T. Richardson, Mansfield, was placed second. There were some good pigs, and Mr. P. Eden, Salford; Messrs. J. Wheeler and Son, Shipston-on-Stour; Mr. Leonard Pilkington, Gateacre, Liverpool; Mr. S. Wilson, jun., Ramsbottom; and Mr. Thomas Statter, divided the first and second prizes. There was a very large show of poultry.

CATALOGUES, ETC., RECEIVED.—The following catalogues have come to our table: William Rennie, Toronto Agricultural Warehouse, agricultural machines, implements, seeds, trees, fertilizers, etc.; a treatise on the use of Paris green, by Reynolds & Co., New York; T. S. Hubbard, Fredonia, N. Y., grape vines, fruit trees, etc.; George W. Campbell, Delaware, O., grape vines, small fruits, plants, seeds, etc.; R. H. Allen & Co., New York, seeds; Jas. J. H. Gregory, Marblehead, Mass., vegetable and flour seeds; Ellwanger & Barry, Rochester, N. Y., fruit and forest trees, shrubs, plants, flowers, etc.; Hovey & Co., Boston, flower and vegetable seeds, etc.; J. A. Simmers, Toronto, garden, agricultural and flower seeds, etc.; F. K. Phoenix, Bloomington, Ill., plants and seeds.

FIELD ROOTS, garden vegetables, etc., grown from seed supplied by Mr. Wm. Bennis, Toronto, Ont., were awarded many distinguished honors at the Provincial and other Exhibitions of last season. Our readers will do well to write for his annual descriptive seed catalogue for 1875.

John B. Craig's Short-horn Sale.

This sale took place at Beck's Revere House, Brampton, on January 15. The following were the sales made, and the prices:

Table listing various short-horn breeds and their prices, including Euphemia, Waterloo, Mystery, Bright Eyes, and others.

J. S. Thomson & Bro's. Sale

This sale took place at Mayfield Farm, on Jan. 14.

Table listing various short-horn breeds and their prices, including Lovely Gem, Stamford, Miss Ramsden, and others.

The Stock Sales at the Atha Farm.

A joint public sale of Short-horns and Cotswolds, the herds of Mr. William Noller, jun., of Atha, and of Messrs. Birrell and Johnson, of Greenwood, was held at the Atha Farm on January 15th.

Table listing various short-horn breeds and their prices, including Fair Maid of Atha, Milne, Princess of Atha, and others.

Table listing various short-horn breeds and their prices, including Third Lady, 4th Countess of Goodness, and others.

Plympton Agricultural Society.

The Directors of the Plympton Agricultural Society held their annual meeting on January 12th. Present: James A. Couse, President; D. S. Robertson, Secretary; and Messrs. Ferguson, Kennedy, Dennis, Young, and Phippen, Directors.

English Short-horn Sales for 1875.

We copy the following list from the Mark-Lane Express and publish it as a guide to breeders in fixing upon the dates for the local sales:

THE TOTAL proceeds of the sale of Mr. Marr's Short-horn bulls at Uppermill, Scotland, amounted to £1,113, giving an average price for 31 animals of £35 18s., which is £3 1s. 6d. per head more than the price of last year.

Coming Stock Sales.

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

- April 7th, C. C. Parks, Waukegan, Ill.
April 8th, Elliott & Kent, at Dexter Park, Chicago, Ill.
April 9th, J. H. Kissinger, at Dexter Park, Chicago, Ill.
April 14th, S. W. Jacobs, West Liberty, Iowa.
April 15th, Milton Briggs, Kellogg, Iowa.
July 23d, Kanard, Kidd & Cunningham, Clark Co., Ky.
Oct. 19th, Wm. Long, Winchester, Ky.
Oct. 20th, B. P. Goff, Winchester, Ky.
Oct. 21st, W. C. Vanmeter, Winchester, Ky.
Oct. 22d J. W. Pruett, Winchester, Ky.
Oct. 23d, C. T. & S. B. Redmon & H. Judy.

Sales of trotting stock have been appointed as below: June 16th, J. J. Jones, Winchester, Ky. June 29th, Dr. Price, Lexington, Ky.

Ontario Fruit Growers' Association.

The annual meeting of this Association commenced at Hamilton, on Feb. 11th. We are unable, in this issue, to give more than a bare outline of the first day's proceedings. The question how to maintain the fertility of large orchards was discussed. President, the Rev. R. Burnett, Dr. Cross, Messrs. Moyer, Bowlaugh, Leslie, Cullham, Newton, Cornell, Caldwell, McKay, Burt, Wolverton, Jones, Saunders, Lee, Anderson, Arnold, Murray, Graham, and Cornell joined in the discussion, which brought out a variety of modes of treatment.

WESTERN INDIANS predict no more grasshoppers for six years.

A LONDON Omnibus Company made \$70,000 in one year by substituting maize for oats as their staple horse feed.

THE PRINCE OF WALES has intimated his intention of becoming a life member of the newly-formed Short-horn Society of England.

THE WARRIOR, a horse bred by the late Lord Derby, and the only white horse that ever started for the Derby, was sold at Tattersalls lately for twenty guineas.

THE DARK BAY stallion, Scotland's Glory, belonging to Mr. Hall, Cedar Grove, has been sold to go to Johnson Co., Iowa, for \$2,450. His colts have been prize-takers at several of the Fairs.

AN EXAMPLE of the cheapness of water communication: Freight on thirty-five barrels of green apples from Council Bluffs, Iowa, to New York, \$146.27; from New York to Carluske, Scotland, \$15.

A CORRESPONDENT of the Maine Farmer reckons up the profits of a flock of thirty-three merinoes at \$6.60, besides the lambs. He has refused \$25 per head for some lambs. He believes in merinoes.

THE CLINTON (Ill.) Register chronicles the extraordinary yield of 344 bushels of first-class oats from five acres, being at the average of sixty-eight and four-fifths bushels per acre. They were grown on the farm of Mr. Jeremiah Kelley, of DeWitt county.

THE MASSACHUSETTS HORTICULTURAL SOCIETY have issued the schedule of prizes for the year 1875. The amount appropriated for prizes is \$6,400.00; of this, \$2,800.00 is for plants and flowers; \$2,100.00 for fruits; \$1,200.00 for vegetables; and \$300.00 for gardens and greenhouses.

HEAVY PIGS.—J. Port, Austinburg, O., killed recently two pigs, three-fourths Berkshire, that weighed when dressed 203 and 187 pounds respectively. Age five months and twenty days. They were fed on nothing but whey and grass the first three months, except what milk was obtained from the sow.

MR. EDWARD HOLLAND.—This well-known gentleman died, of congestion of the lungs, in January last, full of years and honor. He was an ex-President of the Royal Agricultural Society of England, and an ex-M.P. He was the prime mover in establishing the Cirencester Agricultural College. His model farm at Dumbleton is celebrated all over the world.

THE North British Agriculturist of Jan. 20th says:—On Friday last the Underley herd was enriched by the birth of a red heifer from Tenth Duchess of Geneva, whose last previous calf, Duke of Underley, by second Duke of Onecida, is exactly one year old to-day. The dam therefore has gained time. Her calf this year is by Second Duke of Frogunter.

SALE OF THE HARGRAVE PARK JERSEYS.—This important sale took place recently at Stanstead, England. The fame of Mr. Gilbey as a breeder of this class of cattle is well known, and the sale brought together the prominent stock men of the Kingdom. The Duke of Bedford was the largest purchaser, getting Tal, Duchy, Milk Girl, Daystar, Beauteous, Fancy and Day Flower, giving for them \$4,042. Lord Chesham also bought several animals, and some were bought for America.

Seeds.

Spring Wheats—The Golden Globe Wheat.

(To the Editor of the CANADA FARMER.)

SIR,—Seeing in the January number of your valuable paper that you desire correspondence on the subject of spring wheat, I have thought that a short account of the spring wheats raised in this part of the country might be acceptable.

Three varieties of wheat, Fife, China, and Black Sea (Spring only is raised here), have taken the lead almost to the exclusion of every other for the last twenty years. The Fife would still be a favorite but for its liability to be injured by the weevil. The China, and its first cousins the Rio Grande, and McCarling, have the defects of being bad yielders, and very difficult to harvest, being apt to shed; while the Black Sea, which I suppose the red chaff condemned by the Waterloo millers as "inferior in yield and quality of flour to the Fife," has the objection referred to, especially if not cut in time, and another is that it is so weak in the straw as to be very apt to lodge. It has, however, one redeeming quality, which is its hardness.

Our business is in its nature uncertain; it should be our endeavour to make it less so, by sowing only the safest crops, one of which is Black Sea wheat.

We have a new wheat, introduced here two years ago, the Golden Globe or Redline, which, so far, appears to me to be as hardy and more productive than the Black Sea, while it is as great a favorite with millers as the Fife. I send you some heads and shall send you a sample of the grain; it is short and plump, and set close together in long heads, some containing as many as seventy grams. The straw is tall and strong, standing up well. We have had two instances of 25 bushels being raised from one sown, in this township, while in the adjoining township 30 to 1 has been raised. You will observe that the chaff is not pure white as in the China, and that it does not show the grain at the side of the head as it does in that variety, which it seems otherwise at first sight somewhat like.

S. GOING.

Wolfe Island, Ont.

The ears of wheat arrived in good condition. It is an open, fiercely-bearded, long-eared, small-grained, red variety. The grain resembles the grain of the Red Chaff in appearance, and probably in quality, though the ears are quite dissimilar. Mr. Rennie, of Toronto, to whom we showed it, classes it as a second rate wheat.

The Extra Early Vermont Potato.

(To the Editor of THE CANADA FARMER.)

SIR—In the January number you invite subscribers to give their experience with new varieties of potatoes. In 1873 I procured some Extra Early Vermont, and planted side by side with the favorite Early Rose, and found them to be as represented, viz. —earlier than the latter variety.

Last year, I planted in the same manner, and gave both varieties the same cultivation in every respect, and I found the Vermont superior both in quantity and quality.

It is not always advisable to discard such well tried varieties as the Early Rose, and others; however, as an early potato, I believe the Vermont to be superior.

I have also tried Compton's Surprise, but do not think so highly of it, and do not think it will hold the position assigned to it by some. Its color will detract very much from its popularity. Another variety I have tried, viz. —the Late Rose, (a sprout of the Early Rose), and believe it to be superior to any other variety under cultivation. In future it will be my favorite crop for market. The Early Vermont and Late Rose I believe to be the two best varieties grown at the present time. I purpose trying other new varieties this coming spring. If our reports do not come up to the Ontario standard, you will please remember that we live in the Dutch oven and dog-cart vicinity.

Lachine, Q.

A SUBSCRIBER.

Potatoes from One Pound of Seed.

The results of the competition for Messrs. Bliss & Sons' prizes offered for the largest crops of Extra Early Vermont, Compton's Surprise and Brownell's Beauty, have been published. Some remarkable yields are reported. The conditions were that a pound of seed should be sown and should not have any unusual or forcing method of cultivation. The successful competitors resided in the following States: Vermont, New York, Pennsylvania, Ohio, Illinois, Minnesota, Kansas and Tennessee, and one in Nova Scotia.

The principal yields in pounds from one pound of seed, of each kind, were as follows: Extra Early Vermont,

DURING THE year 1873, 35,440 sheep were killed and 35,035 injured by dogs in the State of Ohio, and the aggregate amount of loss from this cause was \$156,318.

SALE OF PURE-BRED STOCK AT ALFORD.—The annual sale of pure-bred stock at Alford—the best place in Scotland to expose young bulls of the polled Angus breed—has been fixed for the 16th of March next.

THE 9th Duchess of Airdrie, calved January 6th at Woodburn, Ky., a fine roan bull calf, "25th Duke of Airdrie;" cow and calf doing well. The 25th Duke is by the 4th Duke of Geneva.

MR. I. T. DAY, of Martin Co., Oregon, furnishes his experience last season in fattening pigs on wheat, by which means he made a good pay for his stock of hogs, and realized \$1 per bushel for his wheat, though working at a disadvantage.

DEATH OF LORD SONDER.—Death is announced of Lord Sonder in his 51st year. The deceased nobleman was a distinguished breeder of Southdown sheep and of Norfolk polled cattle, and in both these departments of national showyards has long been a formidable opponent.

ONE OF OUR YOUNG MEN, remarks a Bloomfield (Conn.) correspondent, who earned as Jork in a Hartford store, at the rate of six hundred dollars in 1873, cultivated last summer on shares eight acres of tobacco, receiving for his half about three thousand dollars. He naturally thinks that this kind of farming is more lucrative than clerking.

A CORRESPONDENT of Massachusetts Ploughman reports that thirteen pigs of two litters, a mixture of Chester White and Suffolk, were fattened by ten different persons in the vicinity of a Vermont town, and averaged 315 pounds dressed, varying from 230 to 433 pounds. The age is not given, but from the account, they could not have been more than ten months old.

GONE AFTER THE \$40,000 PRIZE.—On the 16th of January, died at the farm of Hon. T. J. Megibben, of Kentucky, the famous \$25,000 4th Duchess of Oneida, purchased at the New York Mills sale. She leaves a three-months-old bull calf by 14th Duke of Thorndale. She was not insured. Coming so soon after the loss of the 5th Duchess of Geneva, that brought \$40,000 at the same sale, it suggests that breeding superlatively fine stock is not so very paying a business after all.

IMPORTANT SALE OF ALDERNEY STOCK.—The Hargrave, Essex, herd of Alderneys, formed by Mr. Gilbey, was sold last month at Standstead by Mr. John Thornton. The fame of the herd, individual animals of which have won prizes all over England, attracted the leading breeders in the kingdom. The fifty animals brought to the hammer realized 3056 guineas. The Duke of Bedford was the largest purchaser, getting Tal (of Royal and West of England fame), Dorchy, Milk Girl, Daystar, Beauteous, Fancy, Dayflower, giving for them 770 guineas. Lord Chesham also bought several, and some were bought for America. One heifer brought 255 guineas and a cow the same. Eighteen cows averaged over £90 a head.

PROPOSED SHORT-HORN SOCIETY IN IRELAND.—The *Irish Farmers' Gazette* says:—"It has been suggested that an 'Irish Short-horn Society' should be formed, as an auxiliary to that which has been established in England, as it is believed that by working together Irish breeders will be better able to further the objects contemplated by the general society than they could do singly, and without communication with each other. It is proposed that there should be a dinner on the first day of the Spring Show, and that the judges would be asked to dine with the members. We are sure that the proposed society will be of the greatest advantage to Irish breeders, and it will be for their interest to give it their hearty support."

THE NORTH AMERICAN Ayrshire Register.—Messrs. Lewis and Sturtevant, South Framingham, Mass., have entered upon the preparation of this work. The first volume will be kept open for entries till April 1, after which date it will go to press, and be issued at \$1.00 by mail. A circular is issued entreating breeders to send entries promptly. The terms for entries to Vol. 1 are \$1.00 for the insertion of each pedigree of an animal owned by applicant, and 20 cents each for each pedigree of a living animal necessary for the carrying out in full of the pedigree of the animal offered. Those animals not living, and which enter into a pedigree, will be registered gratuitously by the editors.

SHORT HORNS IN NEW ZEALAND.—The most important sale of Short-horns ever held in the Colony of New Zealand is reported to have taken place at the farm of Mr. George M. Bell, Meadow Bank, Waimea, Otago, on Oct. 22. The herd was established in 1867, the purchase being made mostly in Victoria, but many of them of British extraction. Twelve bulls were sold, the highest price paid being 255 guineas; one brought 200 guineas, one 125 guineas and another 100 guineas. The lowest figure for a bull was 45 guineas. Two bull calves sold at 55 and 24 guineas. There were 30 cows and heifers sold, the highest price, 325 guineas, being paid for "Queen of Butterflies," the next highest price being 290, 205 and 200 guineas. The average of the cows and heifers was 111 guineas. Four heifer calves were also sold, the prices of which were from 35 to 75 guineas. The whole of the lots were bought by stock-owners in New Zealand, most of them being retained in the Province of Otago.

708, 698, 690, 674; Compton's Surprise, 900, 874, 832, 811; Brownell's Beauty, 1,018, 811, 782, 749.

The competitors for premiums for largest crops produced from one-fourth acre were few in number, and the crops small in comparison with the yields reported above. The rates in bushels per acre were as follows: Extra Early Vermont, 416, 176, 172; Compton's Surprise, 490; Brownell's Beauty, 593, 637.

Experience with Compton's Surprise.

(To the Editor of THE CANADA FARMER.)

SIR:—In the CANADA FARMER for January you ask for information on the raising, or experimenting on, some of the new varieties of potatoes. I would say that, on the 8th of May last, I procured one pound of Compton's Surprise, price \$1.25, which I cut to single eyes and planted, two eyes in a hill, twenty-two hills in all, on a small patch of ground which had grown onions the previous year.

The hens scratched out and destroyed two hills. The others I kept well hoed and clean; but the Fall being too dry they did not do so well as they otherwise would have done. However, on September 23rd, I dug forty-five pounds good fair-sized, mealy potatoes, which I intend to cut to single eyes, and try again, two eyes to one hill. I have no doubt, that, with a favorable season, and fair cultivation, they will yield 100 per cent.

Logierait, Ont.

D. HOSEY.

Compton's Surprise and Brownell's Beauty.

(To the Editor of the CANADA FARMER.)

SIR.—We, last spring, procured one pound each of Compton's Surprise and Brownell's Beauty. They both did pretty well, the Brownell's Beauty yielding rather over sixty pounds from the one pound planted, and the Compton's Surprise about fifty-four pounds. They were both treated the same way—cut to one eye to a set, planted in a drill in the field, and getting neither extra manure nor care.

So far as one small trial goes, we like the Brownell's Beauty the best. The potatoes were more equal and larger in size, and to us they tasted better. They somewhat resemble the Garnett Chili in color and shape, but seem earlier, and scarcely so white flushed as the Chilis.

Cobourg, Ont.

J. R.

New Potatoes—Brownell's Beauty.

(To the Editor of the CANADA FARMER.)

SIR:—With me, Brownell's Beauty, with which I have had two years' experience, is a complete success. It is of good quality, sound, yields well and keeps well, and is moderately early. The tubers grow close together, so there is not much trouble in gathering.

Stratford, Ont.

SUBSCRIBER.

A CORRESPONDENT in Nova Scotia asks for information concerning the *Egyptian* wheat which he has seen advertised as to be had in Ontario. Can any of our subscribers give the desired information?

OUR readers will see that this new department of the CANADA FARMER promises to be a most valuable one. It depends upon themselves whether it shall not more than fulfil its promise. Send on items of your experience with new varieties and facts tending to show decadence of present favorites.

SUCCESSFUL POTATOES IN NORTHERN ENGLAND.—According to an English agricultural journal the potatoes which have proved most successful in the north of England, are the Early Rose, Late Rose and Vermont Beauty, all American varieties, and quite free from disease.

MANGEL WURZELS AND TURNIPS CULTIVATED BY HARRIS LEWIS.—Harris Lewis, now President of the New York State Agricultural Society, is known to be a strong advocate of the economy of cultivating root crops. He is reported, after trying numerous varieties, to now cultivate only the Long Red, Ovoid and Yellow Globe Mangels (giving preference to the Long Red), and the White Sweet German Turnips.

A NEW SQUASH—THE BUTMAN.—The *Agriculturist* gives a description of a new squash, introduced, of course, by the father of squashes, Mr. Gregory, and named the Butman. The new comer is pronounced to be superior to any squash going. It resembles in appearance the Hubbard, and it is said to be as productive; it however differs in color, it being of a bright green, intermingled with white; some of the specimens might be described as white, mottled with green; in external color it is very distinct and striking; it has the thick shell of the Hubbard, and is thick-fleshed, the flesh being a very lively light salmon color. In keeping qualities it equals the Hubbard, but is in its prime from October to January. It had its origin in Maine, and was invented by Mr. Butman, who crossed the Hubbard with a Japanese variety.

Miscellaneous.

Ice Houses above Ground.

Knowing as I do from long and extensive experience how common procrastination is, I infer that there are many in various parts of the country who intend to build an ice house to be filled the coming winter, and have not even provided the material for it up to the present late day. For the benefit of this unfortunate class, I would say that I have more than once been obliged to fill an ice house and build it afterwards. I will explain this seemingly paradoxical expression. I have prepared a foundation, supplying proper drainage; built up a bulk of ice of the required dimensions, and subsequently enclosed it with the material forming the house. The style of house to which I refer is built entirely above ground. This class of houses may be made to preserve ice as well as those in the ground. The commercial houses of the country are all built above ground.

All that is necessary is to build of liberal dimensions; provide drainage, so that no water can stand under the ice, in contact with it; be sure and trap the drain; enclose the ice with double walls of studs and board partitions, leaving at least 30 inches between the boards; fill the space with dry sawdust or dry tanbark (the former is preferable), and pack it closely; build the walls at least one foot above the top of the ice; leave openings so that air may circulate freely through the house over the ice; roof so as to exclude rain, and bank around the building with earth, so as to prevent air from escaping from the house, under or through the foundations; and cover the ice with not more than 10 or 12 inches of dry sawdust. No straw, tan, sawdust, or other material is required under or between the layers of the ice. I usually make the floor, on which the ice rests, of any rough wood laid closely on the earth. Neither stone nor brick foundations are necessary. Blocks on which to rest the sills, laid on the ground properly levelled, are a good foundation. Three by four-inch scantling are heavy enough for the sills, studding and plates. The boards forming the double walls of siding, enclosing the sawdust filling, should be placed on the outside of the inner row of studding, and on the inner side of the outer row. When sided thus very little nailing is required, as the pressure of the dust on either side keeps the board walls against the studding. The dust should rest on a board floor a few inches from the earth, that it may not absorb moisture from it. Half-inch bolts should be used to bolt the inner and outer rows of studding together, to prevent the dust or other filling from spreading them apart; one every four feet in the height of the studs is all that is required.

The earth embankment all around the building should be closely packed against the outer boards, and if it can be conveniently obtained without excavating a trench around the building, it is better to avoid making a trench; but the water from the roof, and that which falls or flows around the building, should be conveyed from it by good surface drainage. It is better to project the eaves of the roof well, unless gutters are provided, so that the roof water may not wash the embanked earth from the building. Gutters are preferable. If the ice house is conspicuously located, so that it is essential to give it more beauty of exterior than that produced by exposing to view the exterior studding, it may be sided on the outer side of the outer line of studding; but there is no economy in depending on siding on the exterior of the studding to support the dust, for as soon as the boards are weakened by decay they burst off, and it is impossible to repair on account of the falling dust; but boards on the side of the studding towards the dust will sustain it until they are utterly decayed.

The door for filling should extend from sill to eaves plate. No hinges are required for the doors. There should be double rows of cleats on each of the wide door jambs; between each double row bin-boards should be loosely inserted as the filling of the house advances, and the space between them should be finally filled with dust the same as the remainder of the walls. The ice may be removed through the same door by removing the loose boards, and the sawdust in the doorway should be thrown in around the ice. As the ice melts next to the walls the space should be kept filled with dry dust. The filling in the doorway should always be maintained one foot higher than the bulk of ice. When the house is filled, the ice should be so placed as to be highest in the centre, and should be so kept throughout the season in which it is used, that the melted drainings from its upper surface may flow off towards the wall and thence to the floor, instead of filtering through the main body of the mass of ice. This precaution alone, when I have recommended its strict observance, has secured the keeping of ice throughout the season in houses before considered worthless. Too much covering material

on the ice in the house, particularly if it is allowed to ferment, is worse than too little. A dairy house may be constructed by the side of an ice house arranged as I have recommended, and the floor of the dairy house need not be more than two feet below the surface of the surrounding ground, and the cold air from the ice house can be utilized. —*Cor. Country Gentleman.*

Old Boot Jelly—Shirt Coffee and Sugar.

In an article on the utilization of waste material, the *Scientific American* says: There are quite a number of patented processes for the utilization of waste leather, which convert it into leather board, valuable for a variety of employments. One way consists in grinding the material to a meal-like powder, mixing it with gums and cements, and applying steam. The compound is then kneaded and rolled into sheets. Another plan is to mix old leather, hemp fibre and sheepskin cuttings, and boil with soda ash. Sulphuric acid and coloring matter are subsequently added, and the substance, moulded into sheets, forms a good quality of leather board. Oerting's process makes a good waterproof article, which is useful for making buckets and similar objects. It consists in dissolving rubber in benzene, to which a quantity of ammonia is afterwards added. The leather in the form of pulp is next put in, and the whole worked into a plastic dough. Slaughter-house cuttings are worked up into glue, raw-hide whips and small fancy articles in immense variety.

We had almost forgotten one valuable employment of old boots—the manufacture of jelly. The reader may stare, but science smiles superior and asserts very emphatically that a toothsome delicacy can be made from a dilapidated foot-covering. Some time ago, Dr. Vander Weyde of this city, regaled some friends, not merely with boot jelly, but with shirt coffee, and the repast was pronounced by all partakers excellent. The doctor tells us that he made the jelly by first cleaning the boot, and subsequently boiling it with soda under a pressure of about two atmospheres. The tannic acid in the leather, combined with salt, made tannate of soda, and the gelatine rose to the top, whence it was removed and dried. From this last, with suitable flavoring material, the jelly was readily concocted. The shirt coffee, which we incidentally mentioned above, was sweetened with cuff and collar sugar, both coffee and sugar being produced in the same way. The linen (after, of course, washing) was treated with nitric acid, which, acting on the lignin contained in the fibre, produced glucose or grape sugar. This, roasted, made an excellent imitation coffee, which an addition of unroasted glucose readily sweetened.

By way of conclusion, let us "nail" a paragraph which still crops out occasionally among "scientific items" in country journals, and has reference to the synthesis of leather in tea, affirming that the addition of milk to the infusion of the herb acts upon the tannin therein to form the leather. The only difficulty about this statement is that milk does not contain a particle of gelatine, and hence cannot possibly form leather with tannin; so the neat calculation of the number of pairs of shoes which every human being drinks yearly is like the owners of the subject of this article—without substantial foundation.

A Great Farmer's Maxims.

The successful life of Mr. Jacob Straw, the prince of American farmers, is attributed to the close observance of the following maxims, originated by himself:—

When you wake up do not roll over but roll out. It will give you time to ditch your sloughs, break them, harrow them, and sow them.

Make your fencing high and strong and tight, so that it will keep the cattle and pigs out.

If you have brush make your lot secure, and keep your hogs from the corn; for if the corn is kept clean they will eat it better than if it is not.

Be sure to get your hands to bed by seven o'clock—they will rise early by force of circumstance. Pay a hand, if he is a poor hand, all you promise him; if he is a good hand, pay him a little more; it will encourage him to do still better.

Always feed your hands as well as you do yourself, for the laboring men are the bone and sinew of the land, and ought to be well treated.

I am satisfied that early rising, industry and regular habits, are the best medicine ever prescribed for health.

When rainy, bad weather comes, so that you can't work out of doors, cut, split and haul your wood.

Make your racks, fix your fence or gate that is off its hinges, or weatherboard your barn where the wind has blown the siding off, or patch the roof of your house.

Study your interests closely, and do not spend your time in electing Presidents, Senators and other small officers, or talking of hard times when spending your time whitening store-boxes, etc.

Take your time and make calculations. Don't do things in a hurry, but do them at the right time, and keep your mind as well as your body employed.

Gelatine.

The American trade in gelatine is said to employ several million of dollars annually, and in Europe to be of still greater value. The purest form of the article is known as isinglass, which is prepared from the oil-bladders and sounds of several species of fish, especially of the sturgeon. These tissues are cleansed and dried, forming what is termed leaf-isinglass; or they are twisted into various forms, called long and short staple; or they are folded into packages, called book-isinglass. The production of isinglass used to be limited to Russia; whereas now large quantities are produced in South America, the East Indies, the Hudson's Bay Territory, New York and Canada. The manufacture of the Russian isinglass, which is still esteemed the best in the market, is as follows:

The bladders are placed in hot water, carefully cleared from adhering blood, cut open longitudinally, and exposed to the air with the inner delicate silvery membrane upwards. When dried, this fine membrane is removed by beating and rubbing, and the bladder is then made into the forms desired.

Gelatine is prepared from a variety of animal substances, but chiefly from the softer parts of the hides of oxen and calves and the skins of sheep, and also from bones, etc. The method of treating skin-parings and hide-clippings is first to wash the pieces carefully, and then to cut them into small pieces, and put them into a weak, warm solution of caustic soda for a week or ten days. From this they are removed to an air-tight chamber, where they are kept for some time in a temperature of 70°. Then follows a cleansing process in cold water, a bleaching in the fumes of sulphur, and a final washing; after which they are steamed in pots until the gelatine is dissolved, which is strained off while hot, and poured out in thin layers that, when sufficiently cooled, are stretched out on nets to dry. Machinery is employed to cut the gelatine into the delicate strips in which it is usually sold.

An inferior gelatine is made in France from bones and other parts of animals. It is said that the enormous number of rats which are killed in the sewers and abattoirs of Paris, after their skins are taken off, are wholly consumed by the gelatine makers. The French manufacturers have a superior art of clarifying these inferior gelatines, and by coloring the thin, transparent plates, render them very attractive and fine-looking. Their cost is much less than that of the best qualities.

Tarring Fences and Shingles.

We note that the old controversy about tarring or painting shingles and fences is being revived again, on the principle we suppose that as an old generation passes away the new one wants to learn wholly for itself what it wants to know. It ought, however, to be generally known by this time that not moisture only, but heat and moisture, either or both, are the agents in the decay of woody matter. Most writers seem to think it is moisture alone, and hence all that is required is to coat the wood with some substance that will keep the water out. To be sure they know that heat, when it is up to what we know as the burning point, will destroy wood, but they seem to forget that even when not burning, heat is destructive only in a less degree. Any black substance, therefore, which attracts heat, though it may keep out the other destructive element, water, adds to the destructive agencies at work on the wood, and should be avoided wherever duration is an object.

It needs no understanding of these laws, however, to know that tar or any black substance tends to rot wood away much faster than wood that has had nothing at all done to it. A fence tarred and exposed to the full sun, as any observer knows, soon crumbles away. In a few years the wood is like an overdone pie-crust. And then all know how long a mere whitewashed fence lasts. Yet there is no preservative character of much account in lime. Every rain goes through it into the wood, but it is the white color, which rather turns away the heat than attracts it, which is in that case the great agent which preserves it so long.

In all discussions as to the preservation of wood by paints or coatings, therefore, we see that the color of the washes or paints is an important point in the argument. As for tar, it is the very worst thing that could be used where there is exposure to the sun. Under ground, or where there is no heat for it to attract of consequence, it is another matter, and does possess more or less preservative power. *German Town Telegraph.*

PRESERVATION OF CLAY PAVING-BRICKS.—According to experiments made in Stuttgart, it was found that bricks that had been coated three times with linseed oil were less smeary from wear in wet weather, as well as more free from dust in summer, than those that had not been so treated. The cheaper petroleum residues were also employed instead of the linseed oil. Saturation of paving-bricks, sandstone, etc., about manufacturers with hot tar is also highly recommended where the black color is not objectionable.

The Hunny Bee.

BY JOSH BILLINGS.

The hunny bee iz about 10 times the size of the hous fly-i never measured them-they won't stand still long enuff, but i think i hav got their dimensions about right.

If i hav made a blunder in this matter i am ready to repent and be forgiven for it.

They are as bizzy as a type-setter on the N. Y. Weekly, in thozu countrys wharu hunny iz skarse, but wharu sweet meats are a drug they went work at all.

I dont kno az wo kan blame them for this, for if beef-steak lay hot and well buttered bi the roadside all the time, and bivalves were running around on the half shell, peppered and salted, crying "Who will eat me?" i would like to see the man yu could hire to thrash out ryo that was wet in the bundle for 10 shillings a day.

Hunny bees are built with a sting, which is quicker than a ghost when a good bizzness chance offers; but i never knu one to use it just for the devilry ov the thing.

Theze little workers travel about five miles a day during the sweet season, and bring their hunny home stuk unto their logs. If there is a lazy one in the hive he gets lynched at once. Lynch law iz the hunny bee's justiss.

Man stole this code from the hunny bees, just az he laz stole pretty much evrything else he haz got.

Killing oph the lazy may look a little tuff, but after all thare is smuthing like morey in it, for it iz the only way known az yet to put an end to their torments.

Hunny bees have a queen, but never a king; this is a grate kompliment to the sex, and iz an argument for Wimin's Rights, which the beleavers in this doktoring are welkum to use without giving me kredit for it.

The hunny bees are the only nation i kno ov who hav allways had a queen for their ruler, and who hav been more prosperons and have existed longer than enny people we kno ov.

I lov the hunny bees bekauzo they are allwuss bizzy, and hav a stinger allwuss hot and redovy for the lazy, and for thozu who poke their nose into their bizzness.-N. Y. Weekly.

The Men Who Are "Going to Do."

This reminds me of some men who are always going to do great things but never begin. I once had a neighbor-and in fact, may have some of the same sort now-who was perpetually telling what he was going to do, consequently never had time to do anything. He would get up early in the morning, draw on a heavy pair of boots, with pants tucked inside; then to see him start out for the barn, making everything fly right and left, one might suppose him to be one of the driving sort. So he was, for about an hour or less, or until called to breakfast, after which he would light his pipe, stroll over to his nearest neighbor, or hang over the fence and talk to every passer-by respecting the same old story of what he was going to do to-morrow, or next week. It is needless to say that my neighbor soon found out that farming was a poor business.

I can call to mind a number of similar instances where the best of resolutions failed to bring success. It is well enough for a farmer to get up early and "storm about" a little in the morning; but if he lacks the "sticktoitiveness," all his bluster will not amount to much in the long run.

Neat, cosy homes, good gardens, orchards and other home comforts, are never obtained by these going-to-do sort of folk.-Cor. Rural New Yorker.

A SUNNY TEMPER.-What a blessing to a household is a merry, cheerful woman-one whose spirits are not affected by wet days, or little disappointments, or whose milk of human kindness does not sour in the sunshine of prosperity. Such a woman in the darkest hours brightens the house like a little piece of sunny weather. The magnetism of her smiles and electrical brightness of her looks and movements infect every one. The children go to school with a sense of something great to be achieved; her husband goes into the world in a conqueror's spirit. No matter how people annoy and worry him all day, far off her presence shines, and he whispers to himself, "At home I shall find rest." So day by day she literally renews his strength and energy, and if you know a man with a beaming face, a kind heart and a prosperous business, in nine cases out of ten you will find he has a wife of this kind.

A SMOKE CONSUMER.-The proprietors of a Cleveland newspaper have recently applied an apparatus to their office chimney which is said to be a perfect preventive of smoke and a great saver of fuel. Its discovery was purely accidental. As a mechanic was trying to secure a better draft for a sluggish fire the thought occurred to him, after other devices had failed, to try the effects of steam. A small pipe was made to conduct the dry steam from the top of the boiler to the upper part of the furnace, which it entered in two small jets, striking downward on the burning fuel. No sooner was the steam injected into the furnace than the sluggish, smoky fire sprang up into a clear, bright yellowish and intensely hot flame, filling the whole furnace with a loud roar. The man found he had not only secured a strong draft, but something much more important-a smokeless fire.

A FARMER can do more work with a good thin' ing apparatus than with the best span of horses ever hit and to a waggon.

Do Does PERSPIRE?-It is frequently urged as an argument against the ordinary method of muzzling dogs, that it closes the mouth, and thereby prevents perspiration, which, in the dog, is said to take place only through the mouth. This, according to Land and Water, is an error; perspiration going on through the skin, as in other animals. The idea of perspiratory glands in the tongue is characterized as absurd, these organs being only found in the dog's skin, which is abundantly supplied with them. The real cruelty of the close or strap muzzle is, that it hinders free respiration rather than free perspiration.-Popular Science Monthly.

UTILIZING HEAT.-A Boston letter says: "Dr. S. G. Howe has arranged a simple contrivance for utilizing heat in the dwellings of the people, by means of a wooden box and air box about the hot water boiler which is now a common appendage to the kitchen range, even in the dwellings where the rent is low. By means of this arrangement, which is in use at Dr. Howe's own cottage at Newport, the room over the kitchen can be kept warm with moistened air, with no expenditure for fuel more than is now necessary. The same idea has often occurred to others, perhaps, but I have heard of no contrivance so effectual as Dr. Howe's."

FIGHTING FISH.-The Paris Jardin d'Acclimatation has just received from Shanghai a collection of Japanese and Chinese fishes, among which are some of the fighting sort, which furnish great amusement to the Annamites. The following is their mode of proceeding. They select two combatants of dark color and put them into separate glass bottles, which they then place close together. The fish immediately begin to watch each other; their hues change; they become black, the tail and fins grow phosphorescent, and the eyes sparkle with peculiar lustre. They soon rush towards each other, but are stopped by the bottles. When their rage is at its height, they are liberated and placed in the same reservoir, and a furious combat takes place until one being defeated seeks safety in flight, again changing its tint to a whitish grey.

SEA-WATER ICE.-The notion generally prevails that, when salt water freezes, the ice is fresh, and, when melted, will produce fresh water. Prof. Tyndall states that such is the case, in his "Forms of Water." But Dr. Rao, the Arctic explorer, declares that he was "never able to find sea ice, in situ, either eatable when solid or drinkable when thawed-it being invariably too salt." He adds, however, that when his party found ice projecting above the water, and from its appearance indicating that it was a year or more old, it was generally fresh and made good drinking water. His theory explaining the fact is, that the salt is not itself congealed, but that a concentrated brine, imprisoned in minute cells, is retained in the solid ice. These cells communicating with each other, when the ice is lifted above the general level, the brine is drained off, leaving the mass fresh.

STOCK GAMBLERS AND THEIR SLANG.-Gamblers of every grade have their slang terms to convey to the initiated just what they mean, and however blind it may be to the uninitiated, it is perfectly intelligible to those possessed of the high civilization (!) necessary to "manipulate stocks." Four different forms of contracts are known under the general term of stock privileges. The "put" and "call" are single privileges. The "straddle" and "spread" are double privileges. A "put" is a contract giving the holder the right of delivering a certain amount of stock within a definite time at a stipulated price. A "call" is exactly the reverse of a "put," being a contract giving the holder the right of calling for the stock instead of delivering it. A double privilege is a "put" and "call" on the same stock in one contract. When a double privilege is drawn at the market price of the stock, it is called a "straddle," and cost from two and a half to five per cent. premium. But when drawn at a distance of from one to two and one-half per cent. above and below the market price, it is called a "spread," for which a fixed premium of two per cent. is paid. The distance from the market at which a "spread" is drawn, depends on the class of stock and the activity of the market.

WHITE MICE.-White mice are very pretty pets, yet many object to them on account of their mousy odor, which is natural to them and cannot be removed. By keeping a little box of chloride of lime or carbolic disinfecting powder in their cage, this odor may be entirely neutralized. A good box for the purpose may be made of a tin baking soda can, and nailing it to the upper part of the cage. A cage for the mice can be constructed out of a starch-box, fitting it with a second story leading from the first by a flight of stairs. Tin cages are very nice. The best diet for white mice consists of wheat flour and cracker-dust, alternating with oatmeal once or twice a week. An occasional crust of bread, nibble of oats, canary-seed, &c., will be relished. Raw meat, fed just before the litter, will tend to prevent their devouring their young. Milk should be their sole beverage. White mice are very prolific, producing monthly litters of from four to twenty. They are very intelligent little creatures, and can be taught innumerable tricks and antics. One was once caged with a canary, with which it was on the most amiable terms, eating and drinking from the same dish without quarreling.

CONTENTS OF THIS NUMBER.

Table listing various articles and their page numbers, including sections like THE FIELD, GRASSES AND FORAGE PLANTS, IMPLEMENTS, HORTICULTURE, THE ORCHARD, THE FRUIT GARDEN, THE FLOWER GARDEN, THE VEGETABLE GARDEN, BREEDER AND GRAZIER, VETERINARY, THE APIARY, THE POULTRY YARD, EDITORIAL, AGRICULTURAL INTELLIGENCE, and MISCELLANEOUS.