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THE CANADA FARMER.

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Agriculture.

City and Town Sewage.

The value of city sewage for agricultural purposes can scarcely be overestimated, and yet it is only within a comparatively recent period that schemes for its effective utilization have been brought to anything like practical maturity. About twenty years ago, for the first time, a system of underdrainage was suggested in London, England, for the purpose of conveying all sewage to the ocean, and thereby preserving the Thames water pure and uncontaminated. For seventeen years the great work was continued, and, quite recently, we read of its completion at last, at a cost of about twenty-two million dollars. Almost immediately afterwards, a company was formed for utilizing this sewage, but, owing to a lack of public appreciation, the matter, for the time, fell through for want of capital. Again, however, the attempt was renewed, and the scheme is now being practically carried out under the direction of Mr. John Box, an eminent English engineer. The beneficial effects of such an undertaking, when completed, can best be judged from similar experience in other quarters. In a midland county in England, the local board of health in 1870 took on lease for seventeen years a plot of about thirty acres of ground, with the intention of experimenting with the sewage from their own district, which contained a population of about five thousand. At first the receipts fell far short of the expenditure, but then the plot was in a very low and barren condition. Every year since the first, however, the balance fell upon the proper side, and improvement followed improvement, until in 1875, the receipts for the year ending in March showed an income of \$6,000 against an outlay of \$2,995. A similar experiment, tried in Leamington, Warwickshire, on an estate owned by the Earl of Warwick has resulted, according to his own admission, in "very large profits." The Earl pays annually to the Town Council \$2,250 for the town sewage, and he has perfected arrangements for receiving and distributing it over the farm, which is four hundred acres in extent. It is applied to almost every description of crops, cereals, roots, beans, peas, celery, rhubarb and even strawberries. Last summer his rye was cut seven different times after irrigation with this manure, and his root crops are described as enormous. Mangolds have yielded as much as eighty-two tons per acre, and he is enabled to obtain turnips in perfection, continuously, all the year round. It is also worthy of remark that the water which flows from the farm is clear, sparkling, and quite free from fungoid growths. These experiments have been in operation four years.

Your Whiffle-Trees are too Long.

Most ploughmen have such long whiffletrees that it is often impracticable to make any plough work satisfactorily. Excellent ploughs are frequently denominated as worthless, and rejected simply because the double whiffletree or the ox yoke was too long. Yet, the ploughman never suspected wherein consisted the true cause of the difficulty. Our own practice, from boyhood, has been to make the double whiffletree for ploughing never more than two feet between the points of attachment of the singletrees, which were about twenty-three inches in length. When it was desirable to plough narrow furrow-slices, the singletrees were attached only twenty-two inches apart. Let a ploughman attempt to plough with a double-tree six feet in length and he will readily understand why a plough will not run correctly when the double-tree is too long. When the double tree is too long the plough will be drawn too far from the furrow to the unploughed ground, unless the ploughman makes a constant effort to prevent the im-

plement from cutting a furrow slice wider than can be properly turned over. The agricultural works at Ilion, N.Y., sent us one of their right-handed hardened steel Mohawk Valley Clipper ploughs for trial, which operated so beautifully that we persuaded a near neighbor to take it and give it a trial when he was ploughing his ground for corn. He could do nothing with it, as it would cut and cover in spite of all his efforts to make it run right. Of course the beautiful clipper was denounced and rejected before he had ploughed twice across the field. We saw at a glance the cause of the trouble. With his permission we bored holes in the doubletree, so as to bring the singletrees ten inches nearer each other, five inches inward from the old holes. Then he tried the plough again; it ran beautifully. He smiled and laughed, and laughed and smiled. He could not say enough by way of commendation. The plough was the same implement during both trials; no part had been changed, but the doubletree was so long that the draught was thrown five inches too far toward the unploughed ground.—N. Y. Herald.

Management of Farm Privies.

The "modern improvements" attached to city residences have solved, as I suppose, the perplexing question of the management of privies in cities, at least in connection with private dwellings. As to hotels, the case is less satisfactory, as it is hard to find one where, in spite of running water, glass tubes, and various other contrivances, the odors are not well nigh unendurable. How they should be managed is an open question, at least without some system which does not comprehend frequent if not daily cleaning. But privies for the use of farmers' families are no more difficult to manage than farmers' kitchens, and if they are not kept as clean and inodorous, the owner is himself to blame, and his reputation for cleanliness should go just as low as if he maintained a filthy kitchen.

The vault system is an abomination, and should no longer be tolerated. The patent and costly earth closets are well enough for those who can afford to buy them, but the economical farmer can do much better. Instead of the vault under the privy, deeply dug and walled up, place a water-tight rectangular box, long enough to occupy the space under the seat, and small and shallow enough, so that when nearly full, one man can get it out, either by main strength or by the aid of a crowbar or lever. In the privy place a box, keg or half barrel tub filled with some dry substance—muck, sawdust, road dust, earth, coal ashes, plaster or even sand—and each time when the privy is used, throw a small shovelful of the absorbent into the box, and that will effectually put an end to the odors.

When the box, or movable vault, is full, have it shoveled out (which will not then be a very offensive work), and wheeled or carted off to the farm compost heap, or put directly upon the land. The man who objects to such an arrangement on the plea of "no time to attend to it," is not much of a man as regards cleanliness. He might as well object to cleaning his stables for the same reason. He obtains a valuable fertilizer by it, and in addition secures his family against the danger of fevers, which neglected vaults often breed on the premises. There is no sickening stench to pollute the air for many rods around, and for this reason the privy may be safely placed nearer the house than when a vault is used, though it should always be far enough away and so located that it is not a prominent object in the landscape. To accommodate sick or feeble members of the family, particularly at night or in stormy weather, a water closet conducted somewhat on this system, and cleaned daily, may be connected with the house, though except for such uses there can be no occasion for it on farmers' premises.

It might be supposed that a vault treated regularly with one of the deodorizers mentioned above might be kept from becoming offensive through a series of years, but this is hardly possible, especially in hot weather. There is always corruption in such a mass; flies are attracted, maggots bred, and odors can only be kept down by frequent cleaning out and starting anew. A box holding from one to two barrow loads necessitates frequent attention, and something which insures attention is what is wanted. And a man might as well complain because his clothes must be washed weekly, or of want of time to keep his face clean, as to complain that his privy must be cleaned out once in two or three weeks.—Cor. Country Gentleman.

Leaves from Farming Experience—No. 9.

Plant Food and Raising Cattle.

If we could get four bushels of ashes for each acre of straw crops, and 11 bushels for green crops, no other manure would be needed, as all the substances wanted for plant food are in the ashes, less ammonia. A fair supply of lime, potash, soda, phosphoric acid, sulphuric acid and magnesia, with alumina, must be in the soil to secure a crop, because the crop is made of these things, together with the gases, as carbonic acid, oxygen, a small portion of hydrogen and nitrogen. These form part of most animal and vegetable substances, and are abundant in the common air. If we supply the earthy substances, they will attract the atmospheric gases to supply the wants of the plant, but the plant may be much forwarded by a supply of carbon, or rotten vegetable matter and ammonia, either in the soil or sown with the seed.

In every fertile soil there is a quantity of the oxides of iron, from 2 to 5 per cent. The prudent farmer will find it to be his interest to supply all these things as the raw material to manufacture grain, roots and hay from. I salted all the hay and grain as it was put into the barns, about a quart of salt to a ton of hay, and when the hay was cut and steeped for feeding, 2 ounces of salt was mixed among the food per every beast. I do not allow any guesswork, everything is done by measure or weight. A cow may average 40 lbs. urine daily, not giving milk; when giving milk, 20 lb.; 7 lb. dry straw will absorb that, or 20 lbs. dry, black muck, or 30 lbs. good, dry, arable soil; any of these articles may be dried and used a number of times, and the floor of the cow house may be constructed so that the spare water will collect in one corner, and run through a hole in the wall into a small tank. It may be mixed with a third or fourth part of water. It will save ammonia as it is formed. I found it too expensive to collect dry earth and mix it with this urine, therefore I got a water cart made of 1½ inch pine, to hold in the water. It was 6x5 feet, 1 foot deep inside. A hole in the top received the water from a pump; an iron pipe 12 inches long, 2 inch bore, the pipe square half its length. A hole in one of the squares received the urine from a hole in the bottom of the water box; that pipe was firmly fastened with screw bolts to the back end of the water box below. The pipe projected 4 or 5 inches, on which a canvas or leather hose was fastened to the middle of the distributing pipe. It was about 6 feet long, the distributing holes made to suit what was wanted, something like a street watering-cart. There was a valve inside the box lifted by a small brass wire cord. The privy was on this water tank. A small quantity of plaster or dissolved copperas, or both, and a little pearl ash would do good; but I never tried the pearl ash. The tank should be emptied every two weeks. I found this the cheapest way of using the urine. It has a good effect on newly-cut grass land, or any other crop, as turnip-ground, before and after sowing. You will find plenty of use for it, and, with a water cart, it is easily done. In 100 lbs. of cows' urine there will be about 7 lbs. of solid matter, consisting of ammonia, potash, soda, chlorine, sulphuric acid and a little phosphoric acid, all ready to feed plants. The longer it is kept out of the ground the loss will be the greater. I believe the sooner manures are got into the ground there will be the less loss of plant food. As to raising young cattle, we raised about 9 yearly, all heifers, of our best milking stock. They were fed the first week with the mother's milk; then, 2 weeks, skimmed milk warm, 1 or 2 weeks, oatmeal gruel and skimmed milk warm, three times daily; 3 or 4 weeks, warm pea-meal brose made thus: Take the quantity of pea-meal required, pour boiling water on it, stir till all is wet, mix with warm milk or whey three times daily. The longer time you feed the calf will be the better. I housed them as soon as the cold set in, in a warm house, and fed twice daily with hay and a few cut turnips and salt.

JOHN ROBERTSON.

Bell's Corners.

(Continued next month.)

Action of Lime.

Limestone occurs in masses usually, is readily obtained and changed to a convenient form. When burned, the carbonic acid is driven off, and lime is left as the product, which is also known as caustic and quick-lime. Contact with water, even the moisture of the air, causes a union by chemical affinity of the water and lime, resulting in hydrate of lime, commonly called "slacked lime," and the two terms above given are also applied to this. Lime also has a great affinity for acids, especially carbonic acid, and if exposed to the action of this latter substance—so abundant in the air for a sufficient length of time, the two unite and the hydrate becomes combined to the hard, practically insoluble and inactive carbonate of lime. Because of this affinity for carbonic acid, quicklime and slacked lime both have a powerful decomposing action upon organic matter, which is always largely composed of carbon and carbonic acid. Most organic substances also contain nitrogen in some form. The action of the lime causes the oxidation of the carbon and nitrogen (if ammonia is not already formed) to carbonic and nitric acids, which the lime unites with to form carbonate and nitrate of lime. When ammonia has been formed in decaying nitrogenous substances, which always happens after a very short period of decomposition, the effect of lime in connection therewith would be to drive off the ammonia.

Thus we see that lime mixed with fresh nitrogenous matter, such as excrements, carcasses, etc., is a preserver of the nitrogen; while with decaying or well rotted material of this sort, such as barn-yard manure, when ammonia has been formed, the lime is an unprofitable admixture.

During the decay of organic substances in the soil, lime aids and promotes the production of nitric acid, with which it combines to form nitrate of lime. Prof. Goessmann found a cave in the Mississippi valley, the earth of which contained 7 per cent. of nitrate of lime. Doubtless the great nitre deposits were in many cases formed by the action of lime on nitrogenous matter, then the potash or soda, as the case may be, intervened, and the result was the present nitrate of potash or soda.

Free acids and those in unstable compounds, are likewise taken up by lime. And many hurtful compounds (as of iron in peat and marsh lands), are neutralized and rendered harmless. According to Liebig, in soils rich in silicates, and abounding in organic matter, insoluble silicates accumulate. Lime serves to destroy these compounds and liberate the potash in a form suitable for use by the crops.

By chemical action in various ways in stiff clays, including several of the above, lime destroys their tenacity, and makes them porous and friable.

Application.

From the facts given, and the results of experience, an instructive lesson may be drawn concerning the application of lime. Soils rich in organic matter, even though they already contain it in considerable quantities, drained peat swamps, stiff clays and coarse heavy soils, and especially those destitute of it, are all benefited by an application of lime. Good results also follow its use on light soils after an incorporation of organic matter, as green manure, muck, or a thick sod or green crop ploughed under. Sterile soils are rapidly rendered more sterile by its application. Wet lands show least effect from treatment with lime. Hence such lands must either be drained, or receive an extra amount. Clays should also have organic matter applied in connection with lime. It acts most effectually near the surface. The apparent effect is greater the second season than the first, so that the most satisfactory results are obtained by sowing broadcast in the early fall, with at most only a light harrowing or brushing. It should be applied in an air slacked, fine mechanical condition. The most profitable quantity to apply depends much on the land, wet soils, those well filled with organic matter and clays, taking most—from ten to forty bushels being recommended, according to the circumstances.

A careful study of this subject will explain why soils containing lime are benefited by an addition; and also why, though an excess of lime in soils causes the production of coarse plants, yet its use often improves grasses and grains. It is said that turnips on some farms grown on land well limed, are better cattle food than otherwise, perhaps because of the potash set free for their use. But a great deal still remains to be learned about this substance. —*Scientific Farmer.*

Harroving Wheat.

Mr Harris says his practice is to harrow the wheat three times in the spring. We go over the wheat both ways with the harrow, and then sow the clover seed and follow with the harrow to cover up the seed. If the ground is very hard, the harrows do not break up the crust sufficiently to afford a good covering for the seed, and if dry weather follows we have a poor catch on these hard spots. I have my doubts as to which is the better plan, but am inclined to think that so far as securing a good catch of timothy and clover is concerned, it is better to give up

harroving winter wheat in the spring and to sow timothy seed in the fall and clover seed very early in the spring. It depends very much on the soil and season. The harrowing helps the wheat and kills a good many weeds, and on sandy loam the harrow leaves a good seed bed for the clover, and if we are favored with a few showers, we are pretty sure of a good catch of clover.

This we find in the *Iowa State Register*: A correspondent inquires if it will do to harrow wheat where timothy was sown last fall or early this spring with the wheat. There can be no doubt about it, where the timothy was sown with the winter wheat last fall. It will be equally beneficial to both wheat and timothy. But where the timothy was sown this spring, it will not do to harrow until the timothy has taken thorough root. If the timothy has taken well, the wheat will not be too large before the grass will be large and strong enough to stand the harrow. If it tears out one-half of the timothy the balance will be better with harrowing than the whole will be without. Try and conquer some of your old ideas that harrowing will injure the plants. The agricultural world is advancing, and this is among one of the most important improvements. —*Mo. Jan Farmer.*



Hungarian Grass.

Hungarian grass (*Panicum Germanicum*) is now cultivated largely in many parts of Canada. Of its early history the best account we have, is that of its introduction into Hungary from India, thence into France, whence the seed was first brought to this country. The Hungarians named it Bengal millet, the French Moha de Hongrie. This grass is thought to contain more nutriment than common millet. It is leafy, remains green until the seeds mature and is valuable as a fodder when cut in the milk. It germinates readily and is remarkable for withstanding drought, its capacity in this latter respect being such that it is often green and flourishing when other vegetation is parched up; and even when arrested by excessively dry weather, the slightest shower will restore it to vigor. Its favorite soil is one of medium consistency, well manured. It is usually sown broadcast, in June, and yields from twenty to thirty bushels of seed to the acre. The seed is cheap, and being small, is easily sown and covered with an ordinary harrow. It will make a rank growth on rich land, maturing in a few weeks. The heads are very full of seeds which are rich in nutriment. If cut and cured at just the right time, it makes a very palatable and nutritious food

for horses and cattle. Hungarian grass has some demerits. It is necessary that it be cut before the seeds are mature, to realize the greatest benefit from the stalk, and then it is sometimes difficult to cure it; and the fact that if fed when mature, the seeds having strong diuretic qualities, will injure the animals to which it is fed.

Improved Tile Draining.

A writer to the *American Farm Journal* describes the latest improved methods of tile draining in Illinois, with the cost as follows: For a few years all the tiling was done by one single Irishman, and he with, I think, only one tool, a long-handled, round-pointed shovel. Next we had an Englishman, with a variety of tools, who, by his quicker and better work, soon drove the Irishman out of the neighborhood, and I have not seen him since.

Farmers soon began to think that money invested in tile ditches was not lost, and the supply of ditchers was hardly up to the demand, so other men began the work. There are now from four to six men engaged in this vicinity the year round, excepting when the ground is very wet, or very hard from either being dry or frozen. The Irishman's plan was to dig a ditch from 1½ to 2½ feet deep, have the bottom almost as wide as the top, then lay the tile close to one side, fill up the ditch and the work was done. The Englishman's plan was to dig the ditch barely wide enough at the top to work in, and to narrow it downward so that there was only room for the tile on the bottom, and he always, when possible, finished all by night that he began during the day, so that his work was not to do over again. In preparing to work, the first thing he did was to put an iron pad on the sole of his boot, so as not to hurt his foot when digging. The next thing was to clear and level the ground for twenty or thirty yards ahead. Then he would stretch a line, and make it fast with two pegs; this was to keep him straight. Then he would go to work with a spade about fourteen inches long, and with this he would take out fourteen inches of earth every time, carefully paring down the sides, so that when at work in the ditch, he would not knock any dirt in. Then he would clean out the loose dirt, and the ditch would be straight, clean, and fourteen inches deep.

The next action was to take a spade eighteen or twenty inches long, about six inches wide at the top, and probably three at the bottom. With this long, narrow spade he would take out its full length every time, and was careful to spill as little dirt as possible. After digging four or five feet with this spade, he would pick up another tool, which he had laid handy, and clean out the loose dirt, gouge out all irregular places, and prepare the bottom of the ditch for the tile. This tool (gouge or gouger), which is to prepare the bottom of the ditch for the tile, is made something after the manner of a hoe, supposing the head to be as long as a tile, and both sides turned up so as to make it the shape of half a tile. By using this tool alternately with the long narrow spade, he shaped the bottom of the ditch with little trouble, as he went along.

The next thing was to place an iron pad to the back of one of his boot-heels; then after laying the tile alongside the ditch, he would get into the ditch, make the first tile secure, then he would take another tile and lay it carefully to the end of the first, then, with the foot, on which the iron pad had been secured to the heel, he would knock it firmly back against the other, and so on through the ditch, always leveling the ground and stretching his tile before beginning to work, and always partly, if not wholly filling up the ditch immediately after laying the tile.

Two men can do more in the same time working together than they can separately, one using the long spade and the gouge, and the other doing all the other work, excepting, perhaps, the filling in.

Since more men began the work, other improvements have been made. One man had a pair of shoes, made on purpose for the business, with wooden soles about an inch thick. By using cotton wood for soles, the shoes are no heavier than common shoes and a great deal better for this business. Instead of getting into the ditch to lay the tile, some of them have a tool for this purpose, it is simply a handle with a three-quarter inch iron rod, about a foot long, secured to the end and bent at a right angle with the handle. With this they can pick up a tile and lay it in its place, without getting into the ditch. Some have a rake with four or five teeth, eight or ten inches long, to fill in with. A set of tools for two men consists of one fourteen-inch spade, one line with two pegs, one long-handled shovel with the point cut off, and both sides turned up, to take out loose dirt, one long narrow spade, three gouges of different sizes, to suit the tile, one hook to lay the tile with, and two rakes to fill in with; altogether, about \$20 worth of tools.

When their spades get worn so they cannot dig a ditch two and a half feet deep in the manner I have described, they will sell them, or throw them away and get new ones, preferring to do good work with good tools, to poor work with poor tools. The average price per rod for ditching is forty cents, when board is given and thirty-five cents,

when the employer will fill in the ditch. We think it is always best, when having any ditching of this kind done, to employ men who follow the business, for with their many tools they can do it better and cheaper.

Hen Manure.

In a large part of the published statements of the profit on poultry, there is no mention made of the manure, but it is a very valuable fertilizer. The *American Agriculturist*, 1873, page 327, says: "Hen manure is almost exactly identical in quality and effect with guano, and may be used in the same manner. Its value, if free from foreign matter and dry, is \$50 a ton." The *Poultry World* estimates it to be "almost equal to guano in richness" and a correspondent of the same paper says: "I would rather have it than Peruvian guano." The *Live Stock Journal* estimates "that a hen will produce one bushel of manure in a year, which, compared with the price of commercial fertilizers, is worth \$1.00. Lewis Dunbar, West Bridgewater, Mass., according to statements in Flint's report, 1871, values it at \$1.00 a bushel, and again in 1872, at 87 cents a bushel.

But let us see how much a fowl will eat in a year, and then find out how much the manure from that amount of food would be worth. By statement of S. B. Bird, Framingham, for six months ending Sept. 20, 1868, an average of fourteen fowls ate fourteen bushels of grain or 1.4 gills each per day. By statement of Lewis Jones, Wayland, for ten months ending Sept. 1st, 1867, fifteen fowls ate twenty bushels of grain, or 1.2 gills each per day. By another statement of S. B. Bird, for eight months ending Sept. 15th, 1867, sixteen fowls ate fifteen bushels of grain, or 1 gill each, per day. The writer found by experiment, that seventy fowls ate nine bushels of grain in twenty-three days, or 1.43 gills each per day. I find an average of the four statements to be 1.25 gills per day, or 1.78 bushels per year for each fowl.

Prof. S. W. Johnson estimates the nitrogen in commercial manures to be worth thirty cents per pound, pot ash seven cents, and soluble phosphoric acid sixteen cents per pound. I find by table in Flint's report, 1872, page 167, that 1.78 bushels corn contain 1.8 pounds of nitrogen, which at thirty cents per pound is worth fifty-four cents, 0.35 pounds potash at seven cents per pound, is worth two cents; 1.13 pounds phosphoric acid at sixteen cents per pound, is worth eighteen cents. Hence we find the fertilizing elements in 1.78 bushels corn to be worth seventy-four cents. Allowing ten per cent. for loss, we have sixty-seven cents, the value of the manure of one fowl for one year. I found that my seventy fowls in twenty-three days made five bushels of manure, which amounts to 1.36 bushels a year for each, consequently one bushel would be worth fifty cents. This is considerably less than some of the estimates I have collected, but I think it is very nearly correct. By feeding oats, bran and meal, the manure would be a trifle richer, but I think corn is the chief food given, and is a fair representative of the average quality of the food of poultry. Certainly the manure is too valuable to waste, and I think those farmers who have no place where they can confine their fowls, would find it to their advantage to build a good house and yard, and keep them in it most of the time, thereby saving the manure and their gardens too.—*Cor. N. E. Farmer.*

Rolling Marker with Wheels.

The following directions are given in the *Midland Farmer* for making a rolling marker with wheels to lay off or mark land for corn that is not half so hard on a team to pull as a drag marker, and one that can be rode on, and makes a much better mark than the drag, and is very easily turned around at the ends, and can be backed up against the fence, if necessary. I made myself one last spring, the first and only one that I ever saw. It is acknowledged by all to be the best made. Try one, and you will throw away the drag marker. Have a slab sawed three inches thick, by sixteen inches wide, of good timber, enough for six half wheels; then take a pair of compasses, points of compass sixteen inches apart; now circle off a half wheel, and work down to the circle. Now you have a half wheel. Then take a gauge, and gauge the edge of the wheel to one inch thick in the centre; now level off the sides of wheel to gauge-mark, then make the other five likewise; joint the edges together; when the half wheels fit well and are straight, saw out a place in the centre to put a journal through the wheel, one inch square, and measure about six or eight inches from journal, and countersink or dovetail a piece across the point on both sides of wheel, two inches wide, and one inch thick, twelve inches long and one on each side of journal; then bolt the pieces together with three-inch bolts, countersink bolt heads and taps—four bolts through each of the two pieces opposite each other; now dress off the journals round

what is on outside of wheel—wooden journals will last one or two years; then take a piece of soft wood and make one inch thick and ten or twelve wide; make two small wheels; bore one-inch hole through centre, and put one of them on the journal, and on each side of the wheel—this is to make the wheel run true—bolt these through the wheel. Be careful and countersink the bolt head and taps, and nail a piece of tin on the outside. This will make the wheels run smoother. When this is done, the wheels will run true and like a top. Then it is necessary to make a small frame for the centre wheel. Make it of lumber that is as heavy as the wheel lumber, and fasten this small frame in the centre of a large frame. Get a blacksmith to make a good, strong pair of hinges, so that it will not break in running over stumps or rough ground, and can be raised in turning. Timber for frame, two inches thick and four inches wide, and nine feet long. Bolt these together with eight-inch bolts; put the end pieces for wheels to run in about five inches apart, and the long pieces on top; make wheels from centre of track to centre, three feet and ten inches; in making frame, put the two front pieces of frame eight inches apart; then bolt a pair of hound taps on, so that a waggon tongue can be put in; back piece of frame will be about three feet from the front pieces. A bench can be made over the wheel, so a man can ride or stand or walk.

Old Pastures.

In his lecture before the Massachusetts Farmers' Convention Prof. Stockbridge treated the perplexing question of the renovation and restoration of our pastures in a practical and satisfactory way, and the large audience to which he spoke evinced their approval and endorsement of his words in a positive manner. The subject is one which has given our farmers a good deal of annoyance, but by following the correct and sensible advice of the lecturer, we are sure our pastures give an abundance of good feed, and become a source of profit. Think of from five to eight acres of land being required to pasture a cow; think of the amount of grubbing and gnawing, brouse and travelling the animal must endure through the hot days of summer to get filled up, and then think of producing a good quantity of milk or making nice butter on weeds, briars and hard-hacks! Land of this kind is not a pasture—it is a wild range, a sort of common, in which cows lead a vagabondish life, and just work hard all the time to maintain an existence. The pastures of Holland, says Prof. Stockbridge, carry a cow and a sheep to the acre—but then the Holland farmer prizes his pastures and cares for them better than any other portion of his farm. The fact is, our pastures are the most important part of the farm. It is while the cattle and sheep are in them that they make the greatest gain and yield the most profit. Young cattle put on their best growth when at pasture; cows give their heaviest yield of milk, wool makes its largest growth—all, during the months when the animals are at pasture. And if this is done at the rate we now experience, with our pastures little better than swamps and bramble beds, what might the profit and gain not be increased, were they but cared for and improved in the manner pointed out by the lecturer?

The course of renovation is rational and practicable. The steep hillside pastures must be planted and let come up to wood, and even if this is done they must be cared for and given a good chance. God never intended them to be stripped of their forest growth, but man in his unwise desire to make a clearing, worked an untold injury in laying them open to deluging rains and scorching suns. They must be made to grow wood and timber for coming generations. Pastures that are too rocky to be ploughed must be grubbed of the undergrowth and bushes, top-dressed and liberally re-seeded; while those that may be ploughed must be subjected to a better course of treatment, including ploughing, manuring, re-seeding and a general renovation, as though one "meant business." This course will give good results, because by it a good sward will be obtained, and the nutritious grasses in abundance will come in. From pastures of this kind will come good flesh, abundant milk, rich butter, satisfactory profits. But as the lecturer remarked, the work of improving our pastures must begin with the farmer himself. He must be made to acknowledge the importance of the pasture, that it can be restored, that it is policy to do it, and then he will set about the work in earnest. No subject could find a better application to our farmers than the one treated of, and we hope it will result in a vigorous improvement of our pastures the coming season.—*Mass. Farmer.*

Manure from Towns.

The time is past in the west when a farmer who has a large amount of manure about his barn discusses the question of whether he had better remove the manure or the building. Most farmers admit the fact that their land is running out even when they have made a judicious use of the manure they make on their farms. They have learned during the last few years that they must resort to all the

means eastern farmers employ to make and save manure, in order to keep up the fertility of their soil. Even those who have faithfully attended to the matter find that their farms are not as productive as they were when they first commenced to cultivate them. They do not like the present condition of affairs or the prospect for the future. Still they hardly know what to do. Farming land is too cheap in the west, and crops bring too low prices for the majority of farmers to use commercial manures. Farms diminish in fertility for the reason that much of the fertilizing materials they produce is carried to town and there disposed of. In many towns in the west the manure which is produced in stables goes to waste. Sometimes it is thrown into streams, sometimes it is used to fill up low places, while at other times it is allowed to wash away. Sometimes market gardeners, who know the value of manure, arrange for this manure, but generally farmers can arrange to get it without any cost in money. Most owners of public and private stables are glad to dispose of their manure for the small consideration of sufficient straw to feed their horses. Straw is a drug on most farmers, and it can be taken to town at times when a farmer is going there on business. Generally when farmers go to town they take loads of corn and grain, and come home light. It would be little trouble at these times to take home a load of manure from places where they have to deliver straw.

There are many other sorts of fertilizing material that farmers can obtain in towns beside stable manure. Generally the ashes made in cities and villages are wasted. They could ordinarily be obtained without money, if persons wanting them would furnish vessels to store them in, and would take them away promptly when they are filled. Of all the substances that are used as manure, there are none of equal value to ashes, as they alone contain a large amount of potash, and potash is what is wanted in all our soils.

Spent hops, that are thrown out of breweries, are also very valuable for manure. So is charcoal and the waste from paper mills. Many butchers give away the bones from their cut meats, while others will sell them at a nominal price. If these bones are covered with ashes, they will in the course of a season become so soft that they can be easily crushed and be in a condition to be applied to grass land, where they will prove of the greatest advantage.—*Chicago Times.*

Portable Fences.

Where it is desirable to set up a fence for enclosing a field for a single season, or for a few years at most, some sort of a portable fence is decidedly preferable to the more expensive and substantial stone wall, or even a wooden fence of posts and rails. Sometimes one may have a few calves that he would like to give a small enclosure in some mowing field, or a sick animal may need a field by itself. A sow with pigs or a few sheep may need a special enclosure for a month or two, after which the fence might be no longer needed in the same place. Under such circumstances, some kind of a light, cheap fence, that can be readily put up and taken down again, will prove very convenient and may pay a good per cent. on the cost of making and setting it. The fence described at the winter meeting of the Connecticut State Board of Agriculture at Winsted, by Mr. Hubbard of Middletown, struck us as being the best thing of the kind that we have ever seen. It is plain, simple, light and cheap and when set up and properly pinned, will turn all kinds of stock that should ever be enclosed by fences. The stock required for such a fence consists of four boards, 12 feet long by 6 inches wide, equal to 24 feet; two pieces of 2 x 4 joist, 5 feet long, equal to 3½ feet; two stakes for props 4½ feet long, which may be round saplings from the woods; two pieces of board 2 inches wide and a foot or more long, and about 20 temporary fence nails. The tools needed for building such a fence are a hammer, an inch and a half auger, half inch bit and a saw, all of which any farmer should be competent to use.

The fence should lean from the field to be pastured with the props upon the opposite side, although cattle may run on either side with little danger of its being thrown down or broken. For calves, pigs, or other small animals, a fence one-fourth lower might answer as well. When finished and set up, it will stand as firmly as a wood-sawyer's horse, and may be removed and re-set in a new locality about as easily.

During the discussion which followed the exhibition of a model of this fence by Mr. Hubbard, several farmers criticised it because it was proposed by some gentlemen to have the panels lock into each other and be confined together by nailing or otherwise; but this would defeat the very object that Mr. Hubbard had in view, that of making a fence that should not stand in the same place a long while without moving.

As fast as the farmers outgrow the idea of keeping up a great amount of permanent fence for dividing their mowing and tillage lands into small lots, they will appreciate the advantage of a kind of light and cheap portable fence that can be put up or taken down in a few hours around

crops that need protection for a short time, or for enclosing young stock at certain seasons, or the after-feed in mowing fields. But what we most need to learn at present is the false economy of building and trying to support so many unnecessary fences around and across our tillage lands. Pastures must be fenced for the present, but the time will come when fences around mowing lots and gardens and by the roadside will be far less common than is the case now. People are learning that fences cost more than they are worth, and Yankees don't like to trade in that way a great while after they learn the fact.—*Rural New Yorker*.

Superphosphate on Turnips.

Having only lately come into possession, says a writer to the *Colonial Farmer*, I had no barn-yard manure for any crop with the exception of a small quantity for my potatoes, and I had concluded to put in the turnips with no manure. However, a neighboring farmer, well known in this locality as a good and successful farmer, happened to call about the time I was preparing the ground, and strongly advised me to use some superphosphate. I was rather incredulous as to the result, but I concluded to follow his advice, and for the sake of making a fair comparison as to the effects of this artificial manure, I left six ridges without any, and distributed the superphosphate upon the remaining fifty, then at the rate of 12½ lbs. per ridge, at a cost of 31½ cents per ridge, and a total cost of \$13.55—without counting the labor of applying it, which was about ⅓ of a day's work for one man.

When I commenced pulling the turnips, I had every bushel measured with care, and the following is the result:—The six ridges without superphosphate yielded 27 bushels; the six ridges alongside with superphosphate yielded 76 bushels; difference in favor of the manure, 49 bushels. And by calculating the cost of the superphosphate on the manured ridges, I find that the extra 49 bushels only cost me 34-5 of a cent per bushel. Thus you will see, I obtained nearly three times as many from the use of the manure, and the same ratio was maintained over the whole field. The total yield was 620 bushels. If I had applied the manure to the first six ridges, I would have had about 50 bushels more, and taking those ridges as a standard, and supposing I had not manured any part, I would have had just 220 bushels from the acre. I might also add that only about a fourth part of the 27 bushels off the unmanured ridges were saleable turnips, while of the 593 obtained from the manured part, not 10 bushels were small or otherwise poor. The soil is a sandy loam on a slight elevation, in fine condition, and was planted in potatoes the previous season. The superphosphate was that called "Cumberland Superphosphate," and was procured from Jardine & Co., St. John.

Cost of Starting Ten Acres of Hops.

A correspondent of the *Syracuse, N. Y., Standard*, says: "It may be interesting as well as useful to know something of the expense of hop-growing, and I will endeavor to give the cost, very nearly, for I have been in the habit of keeping some account of these and other farming items, and I think I can come very close to the mark, which, of course, will vary with different men and localities. The labor is on the basis of \$1.50 per day.

| | |
|--|-------------------|
| To six days laying out yard, 12s | \$ 0 00 |
| To 40 bushels (15 pounds per bushel) roots, say 3s per bushel, we have paid 6s | 120 00 |
| To eight days cutting same, 12s | 12 00 |
| To 15 days setting out roots | 22 50 |
| To hop-house covered with hemlock and bottomed, spruce floor, sawed cedar shingles | 550 00 |
| To stove and pipe | 80 00 |
| To kiln cloth, 1½ yards, 16c and making | 8 00 |
| To hop press | 55 00 |
| To 75 hop sacks, three yards burlap, 1s, making and thread, 7½c each, 45c | 33 75 |
| 8 boxes for 32 pickers, 12x25x27 inches | 40 00 |
| To hop bars with springs for common lumber wagon | 38 00 |
| To 15,556 poles, cedar, 12½c, sharpening ¼c. 15c | 2,333 40 |
| To cartage to yard, 1c | 155 54 |
| To 2 hop boxes, 20 pounds each, 15c | 6 00 |
| To 2 grubbing hoes, \$1.50 | 3 00 |
| To 2 self-sustaining ladders for tying | 2 00 |
| Total | \$3,468 21 |

To put it in round numbers, for ten acres, it will cost \$350 per acre. In addition to all this, a house is needed, with beds, a stove, cooking and table ware for a family of twenty-five to forty, for use only from fifteen to twenty days, in picking time.

I believe these are about what will be needed, and the prices on an average nearly correct. I have said nothing about the use of the land for the first year, or the cultivating, as the corn crop will pay this; nor have I said anything of such tools and implements as are needed in usual farming, for these are on hand, if no hops are raised. A two horse cultivator will be desirable, on the score of economy.

The labor, cost of harvesting, use of land, fifteen per cent. on the cost of poles to make them good when worn out, ten per cent. on other capital, etc., for each year, with good fair crops, will be about fifteen cents per pound.

Best Crop to Plough down for Manure.

At a recent meeting of the Puslinch Farmers' Club, Mr. H. Reid said with reference to the above: It is generally admitted that the best crop to turn under for this purpose is clover, but the trouble is that we can't grow clover and consequently we have to seek some other substitute. As far as I can judge, both by experience and observation, buckwheat is the next to clover for this purpose, especially on our light, gravelly soils, and the best fall wheat I have ever grown, superior even to new land, has been after ploughing under a heavy crop of buckwheat. Peas is also a good crop to plough under, and can be made available early in the season, which buckwheat cannot. That is, by sowing an early variety as soon in the spring as the land can be cultivated. They can be ploughed under by the last week in June and turnips sown thereon, and by sowing with plaster after the turnips were up I have had an excellent crop. Of course the turnips have to be sown on a flat surface, but it is getting to be the opinion of many that turnips do better on a smooth surface than on raised drills, only that they are not so easily cleaned and cultivated. Rye is sometimes used for the purpose of ploughing under, and it has this advantage, that it can be pastured to the middle of June, which is sometimes a desideratum to the farmer, and afterward will grow sufficient to plough under. I cannot say from experience whether it is equal to buckwheat or not. There are other crops used for this purpose, such as rape, turnips &c., but as I have had no experience with regard to them, I hope some other gentlemen will be able to give us their experience on these points. In regard to the time of sowing buckwheat for this purpose, I think from the middle to the end of June is the most suitable. It is then fit to plough under by the middle of August, and fall wheat requires to be sown now by the first of September to give it sufficient root to stand the winter.

Borrowing Farm Tools.

There are many cases in which it is pleasant to be accommodating and lend farm tools, and equally justifiable and honorable to borrow them. As a general thing, however, every farmer ought to own and have every tool needed to do the work on the farm; that is, all the usual tools required in ordinary farming, and every fair and judicious farmer will have such and take care of them, too—keeping them in proper place and condition, so that they will always be handy and ready for use when wanted—readily found, in proper place, without loss of time in hunting them up. To such a farmer, it is justly vexatious and annoying to find that his tools are away, among his neighbours, he knows not where, just when he most wants them, having been obligingly lent to a neighbour, at a time when not needed by himself, under the promise that they would surely be returned very soon; but the promise was neglected, with no regard, apparently, very often, for honor in promise, or the wants and convenience of the owners.

In such cases, it would almost seem that a man is not entitled to the ordinary privileges of a neighbor to be accommodated with the loan of needed tools. Where people are prompt and conscientious to return borrowed tools, there is a pleasure in accommodating them with the loan.

But when they recklessly borrow and heedlessly keep them so long that the owner and his family almost forget where they are, it really becomes a criminal act.

There are some tools of a character that one farmer scarcely ever needs—perhaps hardly once a year—that another has need of often, so as to make it pay to buy and own them; in such instances, a farmer is justified in borrowing, but he should be scrupulously careful to return them at once, and not subject the owners to the trouble and loss of ruining over the neighbourhood to find them.—*Maryland Farmer*.

Carbon as a Solvent in the Soil.

We write much of the value and importance of certain minerals as fertilizers, and the necessity of supplying them if they are lacking in the soil. Phosphoric acid, potash and nitrogen, are the substances which we most generally seek to add in the form of manure; but in our eagerness to supply these we should not overlook the importance of the presence of carbon, not only as plant food of itself, but as a solvent of other plant food in the soil.

Carbon forms a large proportion of the vegetable matter which by slow decomposition becomes the vegetable mold in the soil, generally considered so necessary to the growth of crops. It is found in its purest form in the diamond, in graphite, plumbago or black lead, as it is more commonly called, and in charcoal. United with oxygen, it forms a carbonic acid which operates as a powerful solvent, rendering available those other mineral compounds so neces-

sary to the growth of plants. Dr. Gregory, Professor of Chemistry in the University of Edinburgh, gives the following:

"To illustrate the power of water containing carbonic acid to dissolve phosphate of lime, which is insoluble in pure water, I may state," says he "that I found the carcass of a pig which had been buried for fourteen years on the slope of a hill which was moist and undrained, to have shrunk into a flat cake of fatty acid; the muscles, membranes, nerves and vessels had putrified and disappeared, and not a trace of bone earth was to be found. The whole had been dissolved by water percolating through the body, and had thus been carried down to the lower ground. I found the water, like all water that passes through soil, to contain carbonic acid, and this had been the solvent.

"In a dry situation bones remain unaltered for centuries, as in the sandy soil of the battle-field of Canná (fought more than two thousand years ago), in which the bones of those killed in that battle are found to this day entire, though having lost much of their animal matter. The solvent power of carbonic must act in every soil, and hence the value of *humus*," (this is the material of the soil which is the result of vegetable decomposition), "in the soil and of decaying organic matter in the manure."—*American Rural Home*.

CANADA THISTLES.—At a farmers' institute held recently at Rochester, Mich., destroying Canada thistles was discussed, and all agreed that to keep them down a year, so they could not obtain the use of their leaves in the open air, would destroy them. Put two or three feet of straw over them, or cut them off below the surface and cover them up once a week with salt throughout the season.

WHEAT CULTURE.—At a late meeting of the New Hampshire Board of Agriculture S. C. Patee read an essay on "Wheat Culture," in which he advocated a thorough preparation of the soil in the autumn, previous to spring sowing; a judicious selection of seed, which should be soaked in strong brine, and dried off with lime and plaster of Paris to prevent smut, and an early sowing to accelerate the growth before the damp winds of July and August can cause rust.

OLD HOUSE PLASTER.—In tearing down old buildings or scraping plaster off the ceilings, for improvements, a large mass of stuff is furnished that may be of great benefit to gardeners and farmers, if they will haul it home and put it on to their land. There is no other form of lime which they can get that will be so valuable, in proportion to its cost, as old house-plaster; and when their teams are in town, it will pay the farmers richly to haul the old plaster home and put it on their corn and garden patches; and in no application will it give a better return than when put around the fruit trees and berry bushes.—*Maryland Farmer*.

ORCHARD GRASS.—The editor of the *New England Farmer* says of orchard grass: "If grown thickly and cut early, it is one of the best grasses for milch cows we ever cultivated. It will do well sown without grain in spring, if the soil is rich and pretty free from weed seeds. It should be mixed with other grasses that mature at the same time. Two bushels orchard grass, one bushel June grass, or Kentucky-blue-grass, and eight or ten pounds red clover make a good mixture, and is a liberal quantity for an acre. It should be put upon land that may be expected to produce two full crops in a season. It will not bear being long under water or ice in winter; may be kept vigorous for several years by liberal applications of fertilizers suitable for top-dressing."

LOOSENING LAWN GRASS.—If the grass on your lawn is too thin and sparse the whole surface may be loosened with a sharp steel rake (or a fine sharp harrow on a larger scale) and grass seed sown; and its germination and growth will be greatly assisted if the whole surface is dressed with a fine compost before sowing and raking. If the lawn is defective from the growth of coarse grass or weeds, there are two modes of treatment. One is to pull up all the weeds immediately after a long rain, when the ground is soft, or to cut them out with a spud; and the other is to summer-fallow the whole ground for one season, keeping the surface stirred and clean all the time, which will kill nearly all weeds. This is to be resorted to only in case the lawn is full of weeds and in desperate enough condition to warrant it.—*N. S. Post*.

SIMPLY MADE BONE MANURE.—A Contributor to the *Horticulturist* buys bones of a butcher at a dollar the hundred pounds, and considers them the cheapest fertilizer he can obtain. He transforms them into meal by the following simple process: "I have a large water-tight hogshead standing out of doors, near the kitchen. In the spring I cover the bottom about six inches deep with dry soil. On this I put a layer of bones, about the same depth, and cover them entirely with unleached ashes. On these another layer of bones, then ashes, and so on till the hogshead is full. I leave it then exposed to the sun and rain all summer and winter till the next spring. Then on removing the contents of the hogshead, I find nearly all bones so soft that they will crumble to powder under a very slight pressure, and they give a nice little pile of most valuable manure, ready for immediate use. Any of the bones not sufficiently subdued I return to the hogshead again, for another twelve months' slumber.

Horticulture.

The Fameuse Apple.

Among the apples that proved successful and did well in portions of Northern Illinois and Southern Wisconsin last year, one of the most unfavourable known for a long time was the Fameuse. We saw at various fairs this apple, excellent in appearance and quality. It is a great favorite with orchardists generally, both for family use and as a market variety, being of fair size and bright color. The tree is healthy and usually productive. With us it is generally known as the "Snow apple," while the Canadians call it *Pomme de Neige*. It is supposed to be of Canadian origin. Dr. Warner describes it thus: Free, vigorous, productive; shoots red; foliage dark, abundant. Fruit medium, round, regular; colour deep red, except where part of the apple has been shaded by a leaf. Dots, minute; basin, medium, regular; eye, very small, closed; cavity wide, waxy green; stem, stout, core, medium, closed; seeds numerous, pointed, brown. Flesh, snowy white, very tender, fine-grained, juicy; flavor, sub-acid, mild, delicately-perfumed, not rich. Quality good. Use, dessert, kitchen and market. Season, October to December.—*Western Rural*.

Transplanting Trees in Fall or Spring.

Mr. W. H. Ragan, Secretary of the Indiana Horticultural Society, gives his views on the above subject thus, in the *Ladana Farmer*. The principle through which successful propagation of plants, by artificial means, is insured, is a temperature of the soil in which the cutting is inserted and a lower degree surrounding the top. Such conditions stimulate the root, and retard leaf growth. A cutting inserted in soil heated from below, will strike root, and retard leaf growth. A cutting inserted in soil heated from below, will strike root, as the gardeners term it, long before any apparent growth manifests itself above ground. This tendency is in accord with a natural law that demands first the permanency of the plant resources before a supply can be demanded therefrom. When these conditions are reversed, we see leaf growth developed, with flattering prospects of success, when a few days of dry weather intervening, causes the plant to wither and die. On examination we find no root growth to supply the heavy drain by the developed foliage upon the plant, rendering death only a question of time.

NOW, A TREE TRANSPLANTED EARLY IN THE FALL has the advantage of having its roots in warm soil, while its top is in the cool atmosphere, conditions almost analogous to the artificial means adopted by the propagation.

A transplanted tree, with a large portion of its roots lost in digging, becomes very much like a rootless cutting, requiring similar treatment to insure its growth. A tree transplanted early in the fall, while the ground is yet warm, will form numerous fibrous roots before cold weather, which, if protected by the mounding process referred to in a previous article, will be ready in the spring to contribute to the wants of the tree, when drawn on by the developing foliage. Thus, the propriety of covering the roots warm and securely for the winter, will become apparent to the planter, as this tender growth will be easily damaged by the heavings of the frosts and winds of winter, when your tree becomes even worse off than if removed in the spring. This mound of earth should be removed when spring opens up.

TREES TRANSPLANTED IN THE SPRING

have the reverse conditions of the fall planting to contend with, viz: a high atmospheric temperature, tending to develop foliage, and a low temperature of the soil, retarding root growth, often resulting fatally, as in the case of the cutting referred to, when overtaken by a period of drouth.

The results of fall and spring planting, in favor of the former, are more apparent in case of trees of large growth, being due to the greater proportional mutilation of the root, and the larger expanse of evaporating surface in the foliage. Such being the case, the reader will readily perceive the importance of transplanting large deciduous trees early in the fall.

Planting Trees.

In selecting trees for planting, great care should be taken to see that the roots are removed from the ground without unnecessary mutilation, and that they are kept in a healthy and good condition until they are placed in the ground. The work of planting should be commenced as soon as the ground is dry enough to be worked without

injury, and if possible, the trees should be planted before the buds swell to any great extent.

When purchasing trees, it is far better to go to the nursery, select the trees, and see them dug for one's self. In that way one may be sure, not only of having trees with properly shaped heads, but with a full supply of roots also. In too many nurseries the roots are badly cut and broken when the purchaser is not by to see to the digging of them, and in every nursery there are many trees with poorly shaped tops. While digging the trees, the root should never be exposed to the sun and wind, as, when so exposed, the tender fibres soon lose all vitality, and new ones must be formed before the tree can start into growth.

Having selected and carefully dug the trees, they should be placed in a waggon to be taken to the orchard with an abundance of wet straw or moss about the roots, and covered with sacking or a piece of old carpet. If they cannot be planted at once, they should be "heeled in," by placing the roots in a trench and covering them with fine, moist earth.

When ready to plant, dip the roots of each tree in mud of about the consistency of thick cream, and then plant at once, taking care that each root lies in its natural position, and that fine earth is packed closely around each. The tree should be set an inch or so deeper than it stood in the nursery, and inclined a trifle in the direction from which the prevailing winds come, and when convenient, it is well to place what was the south side of the tree in the nursery in the same position when planted. After planting, the tree should be thoroughly mulched, and may receive a light pruning, if necessary, to give a proper shape to the head.—*Practical Farmer*.



A New Turnip.

A recent variety, Waite's Hybrid Eclipse, introduced by a London seed-merchant, is illustrated in our present issue from the catalogue of Mr. W. Rennie. As figured, it is of large size, richly colored, and remarkably smooth and symmetrical. At the crown it is broad and round-shouldered, and measures about six inches in diameter, the same degree of size being retained to a depth of several inches, when it contracts in a conical form to a tap-root. In the upper portion the color is clear purple, richly clouded, and contrasts finely with the yellow below. It is recommended as a turnip of excellent quality, very productive, and, although in the Southern portions of the States it has not come up to the anticipations formed of it, it is highly recommended as worthy of trial by Canadian farmers. It is sown and treated like other ordinary varieties.

The Web-Worm.

Now is the time to deal fatal blows to the pestiferous apple-tree web-worms. The caterpillars known as the web-worm have already made their appearance on our quince bushes, pear trees, and on some other trees, such as the apple tree and mulberry. They are not confined to these particular trees, but are found also, later in the season on other varieties, and on the bushes and shrubs of our gardens, making them look, as the season advances, unsightly, to say nothing of the injury done the tree or bush. Their webs, at first small, are gradually enlarged until they sometimes extend over entire branches in the latter part of summer. These caterpillars, when grown, are about one inch in length. Their bodies are thinly clothed with hairs of a greyish color, intermingled with a few which are black; the general color of the body is a greenish yellow, dotted with black; a bright yellow stripe on each side and broad blackish stripe along the back; head and feet black. On arriving at full size, or late in summer, they leave the trees and wander about, eating such plants as fall in their way, till they have found suitable places of concealment, where they make their cocoons, composed of a slight mass of silk. They remain in the cocoons in the chrysalis state through the winter, and are transformed to moths early in the summer season. The time to exterminate these destructive insects (all web-worms or *Hyphantria textor*.) is when they are just beginning to make their webs in the trees or bushes. So soon as they begin to appear on the branches, they should be stripped off with the leaves and crushed under foot.—*The Interior*.

Some New Grapes.

On the question, what new varieties that have been tested in Ohio are the most promising, Mr. Campbell is our standard authority, and he gave us his opinion respecting a number of kinds that he had tested, as follows:

For an early black grape, the Belvidere, originated at Belvidere, Ill. The vine is a strong grower, hardy and healthy, very productive; bunches large, long, and usually shouldered; berries as large as Concord. The vine is, in general habit and appearance, much like Hartford, but has invariably large clusters, and ripens a little earlier. In quality, I am very sorry to say, it is not much better than Hartford, and it has the same bad habit of dropping berries when over-ripe. Its handsome appearance and very early ripening are its chief merits—besides hardness, health and productiveness.

For an early white grape, I have grown no variety that seems as promising as the Lady grape. Its period of ripening at Delaware is from the middle to the last of August, according to the season. It is a Concord seedling, with the hardy and productive habit of its parent—and in quality the best of all its class, unless an exception may possibly be made of the Eva grape. At all events it is the best in quality of any early grape I have ever grown, or of which I have any knowledge, and I believe it will deserve and attain a popularity second to no variety, unless it may be the Concord, and is in quality its superior.

The Eva grape I regard as also promising, though I cannot claim to have thoroughly tested it. I can say, however, that it is healthy, hardy and of vigorous growth, apparently productive, and above the average in quality of its class; better than Martha or Concord, and ripens about the same time.

Worden's Seedling I think another promising variety. Though not long tested, I believe it will be found among the healthy and hardy kinds, as large as Belvidere and of better quality.

Sensasqua I have tested for several years, and I consider it a promising variety. Without being quite as hardy as the Concord, it is a much better grape, and worthy of a trial.

The Irving is equally promising, but is a white variety, in general habit much like Sensasqua, and ripens about with the Concord.

I would like to hear from others how Croton has succeeded in different parts of the State. With me it is good grower and productive; a very fine grape withal; but the vine is too much inclined to mildew, and not hardy enough in winter to be classed as "promising for general cultivation."

Several persons present said their experience with Croton was the same as that of Mr. Campbell.—*Cor. Country Gentleman*.

Improper Top-Grafting of Trees.

There is a large loss of trees occasioned by top-grafting. It is well to improve the fruit of our orchards by grafting, but too often is the tree destroyed thereby. A healthy tree, ten to twenty years old—the usual character of trees grafted—standing on good soil, is valuable property, and therefore the laws of life that govern trees, should be well mastered by the grafter. A tree may be hurled to destruction in a half hour or even less; but twelve to twenty-

five years may be required to grow its like again and that with much care and expense. The main cause in killing trees by grafting is in cutting away too much wood at a time. When a tree is thus robbed of too much of its wood, it loses its power to draw the sap of the whole roots, and so its functions of life are impaired and soon death may set in. Large limbs cannot be cut from the tree without severely hurting it. Do not then commit an onslaught on your trees by a wholesale cutting with the grafting-saw. Better consume two or three years to change the fruit of your trees, than to lose it entirely or lose its usefulness. Graft small limbs. It is better to put in more grafts than to cut a large limb. Cutting should be seldom done where the limb is over two inches thick. The safest size is from half an inch to an inch and a half. The number of limbs to be cut cannot be given on paper; the grafter himself must use his judgment in this. Of course the size of trees guide this matter also. The most thrifty trees are most likely to be hurt by a too heavy cutting. By all means leave more young branches than what you take away, and do not disfigure the tree too much by the operation. When trees look bald by grafting, the cutting was too heavy and the tree is damaged.

This will be a good year for grafting. The trees have now much recovered from the dry summers and cold winters, and the ground is full of moisture again—favorable for young grafts. The earlier the work is done the better for the health of the tree. *Cor. Michigan Farmer*

Improving Unproductive Orchards.

In the *Rural Home* for March 18th, there is an article on how to increase the supply of apples: "Take the country at large, and there is no one branch of business connected with the farm so neglected as the apple crop. Many old farms have but a few apple trees planted, and they are entirely neglected, so far as pruning and cultivating are concerned.

There is little danger of getting the orchard too rich. When we want good crops, we prepare the ground well and manure heavily. The same process is necessary with the orchard, if we expect to gather choice fruit. It is not necessary to destroy a tree for barrenness, or because the apples are affected with bitter-rot. Take a corn-cutter and cut off half or more of the last year's growth, and they will hardly ever fail of setting an abundance of fruit.

To cure bitter-rot, take an auger and bore into the heart of the tree, fill the hole with saleratus, plug up, and I will insure a cure. Or, fill the hole, half full, with sulphur, and the caterpillars will not touch a tree it is in. Two years since, I served some trees in that way; the year before, we did not gather an apple, all being destroyed by the bitter rot. In the fall I never gathered nicer and smoother apples; not a sign of a worm in an apple. I thought the sulphur was the cause of the change. I intend to test the matter on some trees this spring."

Mutilating Fruit Trees.

Of all the blunders that the common farmer and some others make with trees, none is so common or so hurtful, and which he is long finding out, and of which he might know so certainly, as the practice of cutting off lower limbs. All over the country nothing is more common than to see mutilated trees on almost every farm. Big limbs cut off near the body of the tree, and of course rotting to the heart. This is a heart sin against nature. The very limbs necessary to protect the tree from wind and sun, and just where limbs are needed most, are cut away. But the greatest injury is the rotting that always takes place when a big limb is sawed off—too big to heal over, it must rot, and being kept moist by the growing tree, is in the right condition to rot, and being on the body, the rotting goes to the heart and hurts the whole tree. It is common all over the country to see large orchards mutilated in this way. We often see holes in the trees where big limbs have been cut away, where squirrels, and even raccoons could crawl in. Perhaps the only reason these trimmers would give, is that the lower limbs were easiest got at, and some would say they wanted to raise a crop under the tree.—*G. Alder's Monthly*.

Without Strawberries!

From the bottom of our heart, we pity the family without strawberries. To be compelled to live year after year without enjoying one of the most delicious fruits God in His goodness has given us, is cruel. To be deprived of it, when it is so healthful, so delicious, so desirable every way, and when it can be raised so cheaply and so abundantly—is a shame. If a man is married, he not only wrongs himself by not having them, but he is cruel to his wife by preventing her from enjoying them. If he is a father and loves his children, he will want them to be happy and healthy, by eating all they want of them, week

after week, while they bear. Plant them; plant them, everybody! Let every family rejoice in a patch of strawberries. Let them go to the loaded vines and pluck the aromatic, scarlet beauties and eat their fill. Let strawberry short cakes, and strawberries and cream supply the table. Strawberries for everybody. Yes, and the other fruits also—raspberries, blackberries, grapes, gooseberries, currants, and all of the tree fruits. More fruit food is needed by farmers.—*Exchange*.

A New Culture for Asparagus.

The horticultural observations and experience you so wisely invite, have worth just in proportion as they come tested and sifted from mere notions and whims. What others tell us they have tried or seen, gains value only through a like ordeal. No one matter with which the human family has to do is fuller of humbugs told as truths than horticulture. I, therefore, sift well all new ways, put out as betters of the old. Under this rule, asking for what I am about to tell, only the trust deserved by well weighed words, I relate a new mode of asparagus culture, told me by the venerable Elias Fairchild, whom all here know to be truthful and exact. Just over our New York boundary, a hotel-keeper, who was also a garden-lover, planted on good, level soil an asparagus bed of some twelve by twenty feet. When its growth became strong, he, year by year, covered it with two or three inches of good rich mold. Up through this shot the stalks and crept the roots. The method was followed up every season, with the result of larger growth and product, till the bed became an oblong mound of some two or three feet in height, and a perfect wonder in the quality and quantity of asparagus furnished for the table. That yearly blanket of soil was, my friend thinks, the only culture or enrichment given. The bed was never dug with fork or spade.



PERILLA.

Have we not in this a new and better method for this toothsome and healthful vegetable: To many it may not be new. It was to me. A slight experience of mine, the last season, gives me faith in its value. By sheer accident, some two or three inches of good rich loam was spread over a portion of my asparagus bed; I noticed there a much more vigorous growth of the vegetable as well as weeds, than elsewhere on the bed. The question is, if such results come simply from this heavy dressing of good mold, may we not hope for greatly larger when we spread on new earth, full of absorbed richness from cattle yards, the bottoms of old stalls, or taken where the wash of house or barn have soaked the soil.

If others have known such results from like causes, I hope they will not fail to tell your *Monthly*, to which we look for sound views and new light on all horticultural matters.—*Gardener's Monthly*.

Perilla.

This is a beautiful, ornamental-foliaged border plant with deep mulberry or blackish, purple colored foliage, forming a fine contrast with bedding plants, for which it is specially adapted. It may be sown when the ground is warm, any time during this month or even later should the temperature not prove auspicious. It is a beautiful plant, and cannot fail to evoke the laudations of florists who try it.—*Rennie's Catalogue*.

Growing Tuberoses.

To cultivate the tuberoses, that most beautiful of all plants, put the bulbs in six-inch pots, three in each, and use a mixture of equal parts turfy loam, peat and leaf mold, and place in a pit. Give very little water at first, and as they commence to grow freely, increase it, and keep near the glass. When they begin to push up their flower spikes, they will, of necessity, require to be placed where they will have sufficient space for the proper development of the tall spikes. These will come into bloom from August to October, when they will require a temperature ranging from sixty degrees to seventy degrees, the latter being preferable. If wanted to bloom earlier, the pots should be placed in a warm pit and on a hot-bed, the temperature of which is about fifty degrees, to start them into growth more quickly.—*W. Rural*.

MARKING TREES.—The *London Builder* recommends people who transplant to mark the north side of each tree with red chalk before it is taken up, and replace it in its natural position. A larger proportion will then live, as in ignoring this law of nature transplanted trees generally perish.

WASH FOR FRUIT TREES.—The *Practical Farmer*, speaking of a wash for bodies of fruit trees, recommends the following: 1 ounce of coppers to 8 or 10 gallons of water forms a good wash, and is advised for trial as a preventive against blight. One pound of bleacher's soda and one gallon of water forms a wash that cleans off all insects, and leaves the trees with fresh, young looking, healthy bark.

STRAWBERRIES IN POTS.—Dr. Smith said that when dining with a friend in New Orleans, he was regaled with some splendid strawberries, and on inquiry found that he raised them in a very small back yard in pots placed on shelves. The pots were put in the cellar in winter, and thus the same plants were kept for several years. He made these remarks for the benefit of those who had not a garden.—*N. Y. Farmers' Club*.

MIXTURE FOR STRAWBERRIES.—A correspondent of the *Lancaster Farmer* procured a half hoghead, filled it with rain water, and put into it one-fourth pound ammonia (sulphate?) and one-fourth pound nitre. When the strawberry plants were blossoming out, he gave them a sprinkling of the solution at evening twice a week until the fruit was nearly of size. The result was double the amount of fruit on those where the liquid was applied, to what was obtained from those alongside, to which none of the liquid was applied.

A NEW SHRUB: *Viburnum dilatatum*, says the *Botanical Magazine*, is a hearty white-flowered Japanese shrub, with large leaves somewhat like those of the common Hazel-nut. There are ten or twelve Japanese species of *Viburnum*, including the present plant, which promises to be a welcome addition to our gardens. Some of the *Viburnums* owe much of their beauty to the fact that they bear enlarged but abortive flowers in a way analogous to those of the *Hydrangea*. In the present species, however, the flowers are all normal, forming dense rounded clusters at the apex of the downy stem.

A CLIMBING PLANT.—Everybody wants a rapid climbing plant in summer for covering some wall, trellis, arbour, or some unsightly object. The *London Gazette* speaks thus of the *Physianthus Albans*:—"A small plant, little more than a foot high, was turned out against a wall with a warm exposure about the end of May, and now covers five or six square yards of surface, every joint being furnished with a raceme of pure white flowers. An easier plant to cultivate can hardly be imagined." Mr. Meehan thinks it even better for American gardens, and alludes to a plant in Chicago which covered a trellis eight feet high with hundreds of its pure white, waxy flowers.

TREATMENT FOR SMALL FRUITS.—The *Gardeners' Chronicle* says: "Where water can be commanded there is nothing so profitable as to well soak the soil about small fruits just about the time they have set their fruit. Much of the value of this operation, however, will depend on the nature of the soil. The advantages are least in a tenacious and greatest in porous soil. It is said that an animal derives most benefit from food when it is hungry before it begins; it is certainly so with plants. Water applied to soil already wet is an injury, and water never has so telling an advantage on vegetation as when every leaf is about to wither up for the want of it. A plant that never seems to want water is in a very doubtful condition in regard to its health."

RIPENING AT WILL. A correspondent of the *London Gazette* mentions a vine on a portion of whose branches grapes were ripened by conducting them into a heated room, while other parts of the vine bore unripe fruit. This shows that the ripening of fruit is in part dependent on the temperature of the top of the tree or vine, as well as the root. Many have doubtless noticed the fact nearer home in grape-vines whose clusters hanging over kitchen doors and windows will ripen several days earlier than those on other portions of the vines. We have observed this often, and it suggested a possible means of ripening peaches, apples, grapes or other fruit, by enclosing the specimens, while hanging on a tree or vine, in a glass case, admitting light and heat freely and excluding cold air, especially in the night.—*Rural Home*.

LIQUID GRAFTING WAX.—The following is a receipt for making Lefort's liquid grafting wax, which is highly commended in France, where it was invented, and until lately kept secret. Melt one pound of common rosin over a gentle fire. Add to it an ounce of beef tallow and stir it well. Take it from the fire, let it cool down a little, and then mix with a teaspoonful of spirits of turpentine, and after that about seven ounces of alcohol. The alcohol cools it down so rapidly that it will be necessary to put it again on the fire, stirring it constantly. Still the utmost care must be exercised to keep the alcohol from getting inflamed. To avoid it the best way is to remove the vessel from the fire when the lump that may have been formed commences melting again. This must be continued till this is a homogeneous mass, similar to honey. After a few days' exposure to the atmosphere it assumes a whitish color, and becomes as hard as stone, being impervious to water or air.

Livestock.

Jersey Cattle.

EDITOR CANADA FARMER.—There is no class of animals coming more rapidly into favor in the United States than the little Jersey, unless an exception can be made for the Short-horn, whose dissemination over the broad West is making a permanent marker for the breeders of New England and Canada. But the Short-horn has an old ancestry, and early importations were made from the mother country, and its progress into popular favor has been regular until within a few years, when by the intelligent efforts of Messrs. Thorne, Sheldon, Campbell, and others of the United States, and the breeders in Canada, a fresh stimulus was given to breeding and improving some of the best families, and a great rise in prices took place, which, to some extent, continues. But the Channel Islands cattle, though famous in England a century or more ago, are comparatively a recent introduction into the United States, and their merits as normal butter cows are just being appreciated by the community at large. The earliest importations by breeders were some thirty years ago—though captains of vessels occasionally introduced those they had for use on board—and were styled Alderneys, whether coming from either of the Islands, and it has only been since the establishment of the American Jersey cattle Club, in 1870, that the cattle imported from Jersey, Guernsey and Alderney are properly designated. In fact it is only within a very few years that the different races of cattle, except the Short-horns, have had any recognition in the "States." When the colonies were settled, the emigrants from England, Scotland, Wales, as well as from Holland and other places, brought with them their cows and these became scattered over the country, and thus a mixed breed was formed, only kept up and perhaps improved by English bulls which were from time to time imported expressly by a few public spirited

and far-seeing agriculturists. The progeny of these now constitute the mass of the horned cattle of the country, and are called natives and have maintained a good reputation as milkers and beef stock, but as there was no purity in their blood, no reliance could be placed upon the calves being like the dam, and it has been found impossible to raise up from them a breed of notable butter makers, or even milk producers. Consequently as intelligence has increased among farmers, and their means also, and as men of wealth and education have embarked in agricultural pursuits, systematic efforts have been made to introduce breeds with fixed types, and the result is in addition to the beefy and costly Durham, the milking Ayrshire, the buttery Jersey and Guernsey, the pied Holstein or Dutch cattle, and the diminutive Brittany and Kerry. The Short-horn, Ayrshire and Jerseys have their appropriate herd-books, as well as manifold breeders, and their distinctive qualities having been thoroughly tested, the Jersey is pronounced the normal butter cow, and as such she is becoming more and more estimated for her peculiar qualities, and her money value is proportionately increasing.

At a sale but a few weeks since at auction, in Philadelphia, the prices of a not very select herd averaged about \$300 per head; many valuable animals changed hands at \$500, and Mr. Sharpless' importation of *Milkmaid* from England last year, was not less than \$1,200. The estab-

lishment of the "American Jersey Cattle Club" by prominent breeders, and the sifting of pedigrees under its strict rules, had a perceptible effect upon the value of these animals, which were found worthy of entry, and today the price of "registered" Jerseys is two to one against those not registered. There has been some complaint about the strictness of those rules, especially as affecting importations from abroad, and, at a recent meeting of the Club, it was proposed that it should be left to the Executive committee to decide upon the purity and merits of each animal offered and not have them controlled by the herd-books of the Island of Jersey, or awards of its agricultural societies. As there is no Jersey herd born in England or Canada, animals from these countries are dependent upon the pedigrees furnished by the breeders. "Milkmaid" perhaps the most famous "Jersey" in the United States, was purchased at an English sale in 1874 by Mr. Charles L. Sharpless of Philadelphia, and her pedigree traced back to an importation from the Island of Jersey some twenty years previously, by the Rev. gentleman for whom she was sold. If she had been bred upon the Island, she could only have been entered in our new Register on the certificate of the proper officer of the Royal Agricultural Society of the Island, and this certificate must have been accompanied by her photograph, so that she could be identified on arrival in this country.

The Jerseys which make their two pounds of butter a

much butter as a "native," giving twice the quantity of milk, taking the average quality of the last named animals, and in addition, her calf will always be as good as herself, if properly sired and cared for, like producing like, more uniformly in my experience than among any other class of cattle. As uncle Toby said to the fly, there is room enough in the world for all of us, and, with the increase of population in the United States and Canada, there will be demand sufficient for centuries to come for all the best class of thoroughbred animals we can raise. The past fifteen years have witnessed a great change in favor of all the best breeds and they will continue to grow in favor.

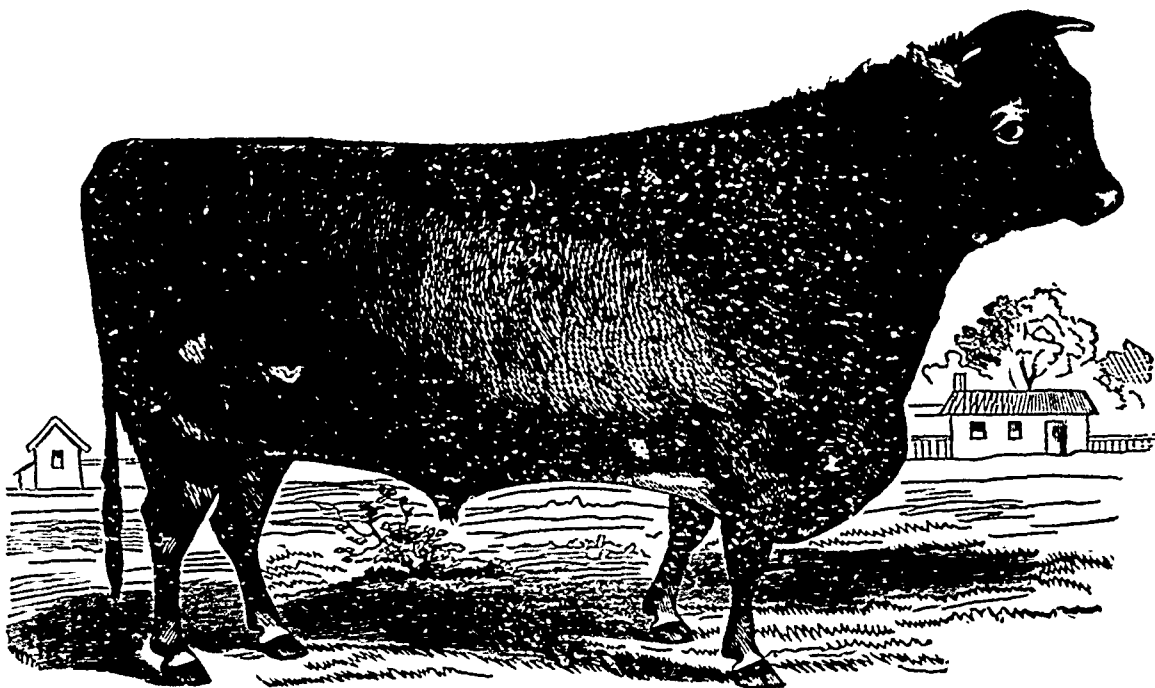
R. GOODMAN.

Lenox, Mass., U. S.

Respective Influence of Sexes.

Mr. B. F. Cockrill, a well-known breeder of Nashville, Tenn., lately contributed an interesting letter to the *Rural Sun* of that place, strongly controverting the often-repeated theory that in its digestive organs the offspring is especially prone to resemble its female parent, while its general framework is mainly controlled by the male. It has been claimed that this theory of the relative influence of the two parents is actually illustrated and proved in experience when the horse and ass are mated, the mule, or offspring of ass and mare possessing the head, voice, and feet of the sire, with

the size of the dam, while the hinny, or offspring of stallion and female ass, will have the head, feet, voice and general contour of the sire, with the reduced size of the ass. This is of course good reasoning if it really accords with the facts of the case. Mr. Cockrill, however—and his opportunities for knowing, from actual observation, should be unusually good—asserts that there is no foundation in fact for the statement—that influences of sire and dam are so completely blended in both mule and hinny that no one can tell one from the other! "The voice of the mule," he says "his color, habits action and instincts, are as essentially different from one parent as the other. The union of the stallion and female ass is so perfectly



Short-Horn Bull LORD BRIGHT EYES, Property of SIMON BEATTIE, Toronto.

day, are becoming quite numerous, and, as they can be milked close up to calving, their average product is much larger than that of ordinary cows; and as they do better than these in the matter of feeding, assimilating grass and hay into butter product without the need of much grain, they are in that respect more profitable. Contrary to the general idea, the Jerseys are very hardy, and stand our New England winters perfectly, increase in size, and, if you will let them, when dried off, fatten up and become good beef. I have one now which, from an ulceration in the womb, I had to let run farrow one season, that is now a model of a dwarfed Short-horn, though she has come in quite recently with a fine heifer calf. The Jersey is emphatically of a mild and gentle disposition, easily handled and restrained, an easy milker, and a very early and prolific breeder. Her butter commands exceptionally high prices in the cities where it ranges from 75 cents to \$1.25 per lb., and, as a cheese maker, her merits are now being tested in Maine, where it is said an article equal to that of the celebrated English Stilton cheese is made at the factory. Mr. Arnold, a leading authority on dairy products, says Jersey milk will produce a pound of cheese for 8½ lbs. of milk, and a great many Jersey cows make a pound of butter from five quarts of milk, the average of numerous herds being 8 quarts for a pound of butter. Single cows have produced 5,000 lbs. of milk in the year. A Jersey cow, giving twelve quarts of milk a day, will make as

like that of his double cousin, the product of the male ass and the mare, as to be indistinguishable by human ken. In the year 1850 I bred a dozen jennets to a thoroughbred son of imported Priam. The following spring I had six mules foaled. In 1851 I again bred these same jennets to the same stallion, and had four mules foaled, three of which lived and attained maturity. I often asked visitors to point out the hinnies from the mules (there being other mules on the plantation), and in no instance did I ever find a man that could distinguish them from other mules. I shipped them, with forty other mules, to my father's cotton plantation in Mississippi, where they did the same routine of duty with the other mules, and remained in all respects perfectly *incog.*, as to color, feet, head, voice and size, to their death. This beautiful *hinnie* theory has been handed down to us from the Romans—name and all—so called from supposition, or false translation, from the verb *hinnio*, to neigh. Other writers have made use of this illustration, to prove some imaginable theory, supposing that they resembled sire in voice, color and outward appearance. But that wisest of all instructors, experience, teaches us the contrary."

Sheep should be tagged before turning to pasture. If the tags are well washed in soft water, after soaking a few days, lumps of manure being thrown out, they may at shearing time be put in the fleeces. Many farmers dispose of them in this way, informing buyers of the fact. They bring more money than if sold by themselves as tags.

When Shall Lambs be Yeaned?

The question "When shall I have my lambs come?" has been a study with me for years, and I have come to the conclusion that there is no time like March. Of course, all men who try to make their flocks profitable, and also have any regard for their comfort, will provide a shed for their protection during the cold weather. If the shed has a door that can be closed to keep them from dropping their lambs in the snow during the cold nights, a larger percentage of lambs can be saved in March than in April, for the reason that cold rains are less frequent in March, and if a storm does come, your sheep can get under shelter, where you will see them often; while in April your sheep may be out in the fields, and a cold rain coming on will chill the young lambs. After the lambs are thoroughly drenched by the rain, the storm will often turn to snow, and the result will be the loss of a large percentage of the lambs. I hold that no good farmer will allow a day to pass without seeing his flock at least twice a day during the lambing season, whether in March, April or May. There will be more or less weak lambs that want help for a short time, or a pair of twins, one of which the mother will not own, and which should be given to a foster mother, if there is a sheep in the flock that can be used for that purpose by reason of having lost her own lamb within a day or two. But you will say "that it is not so easily done, for she won't own it."

In that case make a small pen four or six feet square in the corner of your stable, or on the barn floor where you can shut the sheep and lamb so closely together that the lamb will be constantly in her sight, and then help the lamb to suck for a few times each day, and you will surely win every time. I have never failed in a single instance. Now, how much better and cheaper all this can be attended to during the early spring days when we are not doing much but chores, than it can be in the hurry and rush of our regular spring work when we are ploughing and fitting our ground for spring crops. With my own Cotswold lambs, I am happy to say, I had more than ordinary success this spring. Out of seventy-eight lambs dropped I now have seventy-three fine ones living, and I have had twins enough to make the number of lambs equal to one each for the ewes. *Cor. N. Y. Herald.*

Lambs and Calves.

Now for the calves and lambs, and there is no interest with which farmers have to do where the "ounce of prevention" pays better than here. Be sure and have the cow gaining when the calf is dropped. Give a warm, dry room, with a good bed for "lying in," a light but generous diet afterwards, with no ice water; treat her with gentle kindness, and above everything else, keep her from cold draughts of air, and you will find that it will pay ever so much better than doctors and farriers, after your cow has gotten out of sorts from want of proper care (when she most needed it). A cow that is gaining when she calves and is taken care of at and after the calf is dropped, is almost sure to do well; and such a one is all ready to commence her season's work of producing butter-stock. It has been my invariable practice, for more than twenty years, to feed my cows lightly before calving, with ears of corn, unless they are in good grass; and I have not had one retain the afterbirth in all that time.

So too, care pays when the lambs are dropped in cold weather. Every man that has a considerable flock should have two or three small, warm pens, into each of which he should put three or four sheep a few days before they are to lamb; and if the weather is cold, he should look after them once or twice in the night, as there is really no more need of loosing a lamb than a calf.

It is sometimes the case when a sheep has twins that she will own but one, unless she or they have help. Usually, if she is put in a very snug pen immediately after the lambs are dropped, she will accept the situation. If one stubbornly refuses to own her offspring, just put her head between two stakes driven into the floor of the pen and let her be there. I never knew one I could not subdue. By all means have a nursing bottle on hand and feed the lambs just enough to keep them hungry and smart; and if the sheep are poor milkers, give them shorts and potatoes with plenty of salt, sulphur and water. Cut the tails pretty short at three days old, if the lambs are smart, but within the first week usually. Keep off the ticks, and the lamb will be fit to sell in season for the dam to get in good order for winter, and a sheep that comes to the barn fat, is about half wintered. —*Ger. Telegraph.*

Advantage of Breeding.

An English exchange obtains the following from a statement of a trial in this country, of feeding highbred alongside of scrub steers. Two years ago I purchased one hundred calves. They were of all grades. At the same time I had a few refuse thoroughbred calves that were not such as I desired to keep as breeders, and consequently turned

them out and wintered them with the lot I had purchased. They were so kept until a few weeks since (all together) when fifty-one choice steers were selected and sold. Two thoroughbred short-horns were included. The lot averaged 1370 pounds. The short horns were again weighed to see how they compared. One weighed 1570 pounds, and the other 1600 pounds or about 14 per cent. more than the average of the whole lot, including themselves. One of the scrubs was then re-weighed and made 1150 pounds, or about 23 per cent. less than the short horns. This lot were all three year old steers, and had the same fare from calves. The purchaser of these cattle placed the value of the short-horns at \$1.50 above the value of these common steers, which at least would be 30 per cent. Now, 30 per cent. in value, and 23 per cent. in size, would make 58 per cent. in favor of the short-horns. This advantage is due entirely to the superiority of the short-horns as a breed, their keeping being the same from calves. And this is not quite all; for a part of the scrubs are yet unsold, not being fit for market.

Feeding Experiments at the Model Farm.

Pigs.

In our April number we published the method and results of a five weeks' course of pig-feeding at the Guelph Model Farm, observing at the same time that the College authorities purposed following out these experiments to a more extended time. We have now before us the details of the full test, which lasted fifteen weeks, and which, for purposes of comparison, have been divided into three periods of five weeks each. The animals in pen 1, it will be remembered, were fed on raw peas and water; in pen 2, on boiled peas, and in pen 3, on house refuse and wheat middlings. It was also seen that the cost of feeding in pen 1 was 12-7 cents per day, and that the total gain of weight in five weeks was 95 lbs.; cost of feeding in pen 2, 11-2-7 cents per day, increase of weight 72 lbs.; cost in pen 3, 8 cents per day, increase 115 lbs. We now proceed to tabulate the succeeding results, taking the fifteen weeks into account at once.

| Pen. | Weight on entry. | Weight in 15 weeks. | Increase. |
|------|------------------|---------------------|-----------|
| 1 | 252 | 505 | 253 |
| 2 | 252 | 462 | 210 |
| 3 | 217 | 485 | 268 |

showing that house refuse and wheat middlings, which promised so well in the first stage, failed to make that promise proportionately good in the end. Not only so, but other results of the early test materially changed as the experiment was prolonged. Boiled peas, for example, which, at the end of five weeks, seemed to be attended with the least increase of weight, proved ultimately to have produced the largest proportionately. Had the results of the first five weeks' course held out in every case, the increase in pen 1, would have been $95 \times 3 = 285$ lbs.; in pen 2, $72 \times 3 = 216$ lbs.; and in pen 3, $115 \times 3 = 345$. Pen 2 alone, it will be observed, reached and outstripped this proportion, pen 1 ranking next, and pen 3 last. Viewing the results from a purely cash stand point, pen 3 stands first for clear profit, as may be shown thus:

| Pen. | Cost of food. | Gain in lbs. | Cost per lb. gain |
|------|---------------|--------------|-------------------|
| 1 | \$12.75 | 253 | 5 1-25 cents. |
| 2 | 11 85 | 210 | 5 1-0 " |
| 3 | 8 40 | 268 | 3 1-7 " |

The cost per lb. gain, however, for the first five weeks was, for pen 1, about 4 1/2 cents; pen 2, 5 1/2 cents; and pen 3, about 2 1/2 cents, showing that, with a continuation of the experiment, while the cost of feeding in pen 2 decreased, in pens 1 and 3 it was very materially increased. From the data given therefore it is impossible to deduce any very definite theory other than this: that for a brief period house refuse seems the most profitable food for pigs, but it declines in value as the time extends.

Sheep

The object of the sheep-feeding experiment was to test the comparative merits of oats, peas, a mixture of food and oil-cake. For this purpose, four animals were enclosed in as many separate pens, (one in each) marked 2, 3, 5 and 6. Those in pens 2 and 3 were 38 weeks old; No's. 5 and 6 were rising two years. Besides the feed already mentioned, each animal got pea straw, bran, turnips and hay. They were all half-bred Cotswold wethers. The following is the tabulated result.

| Pen. | Wt on entry. | Wt in 15 w'ks. | Food. | Value. | Wool. |
|------|--------------|----------------|----------|--------|--------|
| 2 | 131 | 162 | Oats | \$1 65 | 15 1/2 |
| 3 | 132 | 170 | Peas | 2 67 | 15 |
| 5 | 215 | 250 | Mixed | 3 24 | 18 |
| 6 | 2 0 | 251 | Oil cake | 4 05 | 15 1/2 |

Estimating the wool at the same value per lb. for each sheep, we find that oats occupy the first place as food, mixed food second, peas third, and oil-cake last.

Plank Floors Ruinous to Horses.

Cannot some genius invent a kind of stable floor that can be kept clean without too much labor, and which will not ruin the feet of horses standing upon it?

Our horses have not much to do in the winter season and we have noticed a tendency in them to become lame, but as they got over it upon driving, we paid but little attention to the matter. The past winter we have kept but one horse, and as a public convenience ran between our place and office, we have preferred to patronize that, and let our horse stand in the stable. After the sleighing disappeared and the roads became bad he had but little exercise, and we noticed that he was becoming lame. Supposing that he would improve as soon as spring work commenced, we paid but little attention to it, until he became so lame that he could not strike a trot, and his limbs seemed weak and tender, although we could find no sore or tender spot, nor were his limbs swollen. We consulted a veterinary surgeon, who could neither find cause for lameness, nor prescribe a remedy.

We determined to try an experiment. We made a fence enclosing a small plot of grass, and turned him out, cutting grass for him. Now for the results. For three or four weeks before turning him out, he had been getting lazier and lazier, until he became unable to trot. In one week from the time we turned him out, he could trot off quite lively, and now he has nearly recovered. He seemed to be lame in every foot, and especially in his hind feet, and we have no doubt that standing idle on a plank floor caused his hoofs to become dry, hard and contracted, so that they pressed upon the tender frog. If any of our readers know of a substitute for plank floors, that will obviate the difficulties we have presented, we should be glad to hear from him. —*American Rural Home.*

Sheep Shearing.

To wash or not to wash? This depends somewhat on the weather in May and early June which cannot be foretold. If the spring weather is moist with frequent showers, sheep with heavy fleeces suffer extreme debility and loss of flesh, while those which have been shorn shake themselves after a shower and resume feeding, and come up at shearing time fat and strong. But fleeces "in the dirt" no matter what their condition, must suffer a shrinkage of a quarter or a third, which is frequently an entire loss to the farmer, and usually quite too much. Fleeces washed well in June, and running ten to fourteen days in hot weather, will often shrink as much in cleansing as if they had been taken off in the dirt in the cool days of early May. If shorn at the barn and kept up for a week, they will then need no further housing except in case of storms or very cold weather.

On the whole it would seem that a medium course between the two extremes in common practice is preferable. If the sheep are washed as early as possible in May, and shorn soon after, the results are good. —*Vermont Farmer.*

THOROUGHBRED STOCK.—A writer in the New York Times puts the question plainly, in saying if a farmer is raising cattle for beef, and he can add two hundred and ninety pounds to the carcass of each by the time it is ready for the shambles, by the use of a short-horn bull, it will certainly be profitable to him to pay a good price for such a bull. This is the average result of using thoroughbred bulls on the native cows of the country, as estimated by the best stockbreeders; and this two hundred pounds is clear gain, for it is produced by no greater consumption of food. If the use of a thoroughbred ram on a flock of ewes increases the weight of fleece one pound on the average, certainly more than "five in a hundred could make it pay;" whether more than five would or not, is another question. And so with hogs. The difference between the common breed of the past, and the improved breed of to-day, is beyond comparison.

METHOD OF FEEDING.—For two months past, says a writer to the Vermont Farmer, I have practised feeding at 5 o'clock in the morning. Hay first, and roots and bran after the hay is eaten. Turn out and water about 8 o'clock, and return to the stable after a short time out for drink and exercise, but not long, unless the weather is fine. I feed all the roots and bran for the day at one feed.

The second feed of the day is at 2 p.m., hay only and all they will eat until 4 p.m., at which time I water and return to a warm stable for the night. I think my fifteen cows do better by this method than to feed three or four times, as I have done heretofore. I sell milk and am thus able to know when the cows are doing their best. I consider one peck of roots, one quart of corn meal and three quarts of bran, together with all the June or autumn cut (rowen) hay they will eat, as good, liberal winter feed for an average-sized milch cow. My mowings are all cut twice in the season. Would be glad to cut it before it is fairly headed out. Grass is never cut too early, but mostly too late. Cut it early and cut the second time. The cheapest feed that I can raise is dried grass and fodder corn. Roots cost me most, but they are very valuable. I shall raise more instead of less. Bran is worth all it costs for feed, and also all it costs as a fertilizer afterward.

The Dairy.

Cheddar Cheese-Making in Factories.

(Concluded from last month.)

I am well aware that it is not possible to break the curd as finely with the American rake, as with the Cheddar breaker, the former leaving it in large lumps from which the most careful scalding fails to separate the whey, and, as we all know, unless this is effected in the vat, it never will be in the press. Each lump of the coarser curd will retain moisture in its centre; while that which is more finely broken does not, and receives the full benefit of the scalding. The retention of the whey in the former case is evidently the reason why the American system produces a greater weight of curd per gallon of milk than the Cheddar.

But to return, the breaker is removed after sweeping the curd as much as possible to the upper end of the vat, and the mass left for a half-hour, at the end of which time the vat is tipped, the whey drawn off with a syphon, the curd collected with hand shovels to the upper end of the vat, and laid in two large piles, with draining-spaces between each other and the sides of the vat. It is at this stage necessary, in the earlier and later parts of the season, to cover it by some means, to hasten the development of the acidity. And now judgment comes in and rules fail, nobody having yet invented the instrument so much needed and so often wished for, which will register the amount of acid present. During the developing process it is cut into three or four large blocks, turned and piled, due care being taken to arrange it so that the whey may easily drain away from it. When the acid is sufficiently developed, it is again cut into similar blocks and laid apart throughout the vat, to drain yet more, when it will soon become brown and slightly crusty. At this stage it should tear into flakes, and present to a certain extent a spongy appearance, though it should be neither too flaky, nor too porous. When sufficiently dry, it is ground in the curd mill, salted at the rate of 2 lbs of salt to 112 of curd and put into press. The following morning it is taken out, the original press cloths removed, the bandage substituted, and the cheese returned to press, until the next morning, when it is taken out, ironed, and carried to the curing room, having been under pressure about 45 hours.

Having disposed of the cheese, we will now turn our attention to the whey butter manufacture. After lying in the vats during the night, the whey is skimmed. The cream should be thin on the surface and of a fine, clear color. I have frequently found it so thin that it had not formed a skin, but would, if you put your finger quietly into it, break away over the surrounding surface for several inches and test the skimming abilities of the butter maker to the utmost. I have filled a galactometer with whey from the vat, and after allowing it to stand 24 hours there has been only a film around the edge of the tube, and not sufficient in the centre to more than slightly dim the surface. Now out of this fine cream is made the butter of which I spoke in my last, and it is really astonishing what a quantity can be produced from it. And here let me protest against the fancy some have, that the whey should lie two days or more, to throw up as much cream as possible. It is a great mistake, very little more bulk of cream is gained, and the quality is entirely lost. While it may be advisable to allow milk to lie for more than one day, it certainly is erroneous to suppose that the same is the case with whey.

Immediately after skimming, it is scalded in tin pails placed in water, which is kept boiling by steam, which should be turned on gently, as violent ebullition is unnecessary. Though judgment has much to do with deciding the correct temperature to which the cream should be raised, yet I may say that when it has reached from 130° to 180° it is sufficiently warm. I give much scope, but the great secret here is thorough scalding, 20 minutes at 130° being vastly better than 10 minutes at 180°. A small quantity of salt is stirred into the cream while scalding, after the completion of which operation it should be poured into large tin pails, provided with taps, until they are half full, the remaining space being filled with cold water. Next morning the whey will be found to have

collected with the water at the bottom of the pail, and must be drawn off through the taps in a small stream, that no cream may accompany it. The cream can then be poured into the "standing" pails to await the operation of churning. It will be found, as a rule, that the cream under this management will be at a correct temperature when going into churn, and no artificial heating or cooling will be necessary. It should be churned until the butter separates and assumes the shape and size of bullets, when the buttermilk should be drawn off, and a quantity of cold water poured in, in which it should again be churned until the lumps are fewer and larger, the buttermilk again drawn off, more water poured in, and the operation completed by a few more turns. By this means most of the buttermilk is separated from the butter, which, placed on a sloping table, soon drains itself of all that remains, and is easily made up. The salting of course is a matter of judgment, on which you are as well informed as myself.

I have endeavoured, in describing the process of cheese and butter manufacture as pursued in our Cheddar factories, to explain them in the simplest manner, imparting all the information possible under the circumstances, but should there be any point on which it is desirable that greater light should be thrown, I shall be pleased to furnish the needed information, meanwhile wishing that the foregoing description may commend the system to the notice of the Canadian dairymen.

JOHN OLIVER.

Brailsford, near Derby, England.

Hardin's Method of Setting Milk.

The controversy in regard to setting milk—whether in deep or shallow vessels—has been quite animated of late. A late issue of the *Country Gentleman* states that "the dairymen of Eastern Pennsylvania are experimenting with the method of setting milk proposed by Mr. Hardin, with no little care, since his recent explanation of its merits before the Experimental Farmers' Club. Mr. Ezra Michener reports a trial of the system to the Bucks County *Intelligencer*, from which we summarize his conclusions as follows:—1. That the Hardin cans give the best butter. 2. That they will raise all the cream there is in the milk. 3. That they produce all the butter that can be made from the milk. 4. That the labor they require is "about half that of the pans, in everything except churning." 5. That as the bulk of cream they yield is increased, the labor of churning is greater. 6. That "a very fair statement would be a saving of one-third the labor by the Hardin method." 7. That the saving of fuel and attention necessary under the pan system is worth at least \$1 a week, or for five months say \$20.

"This is about as strong a statement for the Hardin system from an entirely impartial source as we remember to have seen. In fact, however, the yield of butter in Mr. Michener's trial was one pound from twenty-nine pounds with the Hardin jars, against thirty pounds of milk to a pound of butter from the shallow pans—but this difference he ascribes mainly to failure in maintaining an equal temperature for the latter. In summer, with the temperature of both kept as nearly as possible at the proper point, he doubts if there would be any perceptible difference in the yield under the two systems. He adds that in another trial with the Hardin cans, he made at the rate of one pound of butter from 27 3-25 pounds of milk."

Butter in France.

If our dairymen need a spur, an eye-opener, a lesson which speaks volumes in three words, here is one at the head of this article. Butter is actually brought from France and sold by the New York dealers. And this is thus because there is an actual scarcity in the market of good butter put up in an attractive shape for small consumers. When we know that one dairyman gets \$1.15 a pound for his products, another \$1, and another 75 cents the year round, at his dairy door, it is easily seen that it will pay to bring butter across the ocean from France, if it is only good and shapely enough to suit the fastidious purchasers who will have something nice, whatever it may cost. All this butter is made from choice cows, choicely fed on clean sweet food; the milking is done in the cleanest manner. The milk is handled as carefully as though it were nectar, the cream is churned with clock and thermometer, the butter is worked with skill, and is made up in shapely cakes, which do not require to be cut when brought to the table. Compare then, this cake—hard, golden yellow, sweet, fragrant and tempting to all the senses—with an unsightly chunk, which is cut out of a greasy keg, and smells of old age and rancidity, and is made from ill kept cream from cows siltily lodged and carelessly milked, and is churned anyhow, and the difference is amply accounted for.—*N. Y. Tribune.*

Bitter Butter.

A lady correspondent of the *Maine Farmer* gives her views as follows upon this subject: Simply covering pure sound cream in a clean tin pail will not of itself cause bitterness nor fermentation in the cream it contains; on the contrary, keeping it from contact with the oxygen of the air, would have a tendency to retard changes, rather than hasten them. Cream is very seldom bitter in the summer, nor would it often be in winter if the milk were kept at a temperature as high as 65°, day and night. It is impossible to state just what causes bitterness in each specimen of butter or mess of cream. Sometimes it may be caused by weeds or poor feed eaten by the cows, but much oftener it is indirectly caused by a low temperature of the milk during the rising of the cream. Perhaps it would be more correct to say that a low temperature is the exciting or immediate cause, just as cold may be the exciting cause of a fit of sickness in the human patient.

It must be remembered that milk is a compound substance, and that it is subject to constant changes from the moment it leaves the udder until it is digested in the stomach of man or animals, or until it is entirely decomposed by the usual process of decay. Milk contains not only fat, curd, sugar and water, but also several essential oils which may add to or take from its agreeable flavor, according to the conditions they may be in. It also often contains germs of fungi which, under certain conditions, may injure its flavor. These little vegetable growths are liable to increase with great rapidity, when the conditions are favorable, and thus to destroy or entirely change the character of the milk growth, and in the summer, souring tends to counteract the germ. As milk is often kept in warm rooms, the souring process begins so soon that the milk is protected from the effects of germ growth. Heating or freezing milk will also prevent germ growth for the time being. That change in milk which produces bitterness can go on under a much lower temperature than is required for producing sourness. So, without attempting to explain in detail all the different changes to which milk is subject while the cream is rising, we may perhaps make the subject a little clearer by comparing the two conditions of sourness and bitterness with a railroad track and its turn-outs. Temperature is to milk as a switch to a railroad track. If the temperature is low, but not low enough to prevent all action, which would be at or near the freezing point, the milk will go off on the track towards a condition of bitterness, just as sure as there are any fungoid germs in it, but if the temperature is high enough to send it towards a state of acidity, bitterness is escaped. We seldom hear any complaint of bitter milk, cream or butter in warm weather. It is when the days begin to be cool in the fall or early winter, and before the milk is removed to winter quarters, that the questions begin to come in, "Why don't the butter come?" and "What makes the cream bitter?" It is possible there may be milk so pure that a low temperature would not cause bitterness in forty-eight hours, but we believe such milk is very scarce. The only perfectly sure preventive we have practised is to heat the milk to 130° as soon as it comes in from the stables. People who do that seldom have any trouble of this kind.

An Extraordinary Cow.

The region about Oxford Depot, Orange county, N.Y., is undoubtedly the land of milk and honey. I believe the fact is generally conceded, but I wish to show the account of one small cow belonging to Samuel Marvin, a farmer of that section who keeps a dairy of thirty-five cows, all bought out of western droves. Said cow is called the "Brag Heifer." She calved Jan. 6, 1875, and from that time the total weight of her milk for one year was 6 tons, 882 lbs. During the winter months she was fed one scoopful of soaked wheat bran and 2½ quarts of meal, each morning and a scoopful of brewers' grains and 2½ quarts of meal each evening, and all the hay she would eat, and when on grass she was fed two quarts of meal every day. She was dried up in February last, having taken the bull August 6th, 1875, and should calve about May 6th, and should no ill luck befall her, "she'll do it again." This statement is no guess work, but taken from Mr. M's farm book, and can be verified by affidavit, should any old foggy doubt it.—*Cor. Turf, Field and Farm.*

BEETS FOR COWS.—Last year I raised a lot of mangolds and carrots. The mangolds were gathered first and put in the cellar; afterward the carrots were gathered and corded up on top of them, so that when I began to feed them to my cow the carrots came first. The cow gave about her usual quantity of milk, excepting the usual shrinkage on the accession of cold weather and being put upon dry fodder. Fearing that the beets would not keep as well as the carrots, and also thinking that they possessed better milk-producing qualities, I was anxious to get at them. Accordingly I removed part of the carrots and commenced feeding beets, when, to my surprise, my cow began to fail of her milk, until the deficiency reached about one-third. Wishing to test the matter still further, I changed back again to carrots, when her milk increased to about the usual standard. The quantity fed was about the same in either case—about a half bushel basket three-quarters full. If there was any difference it was in favor of the beets.—*Cor. Rural New Yorker.*

Veterinary.

Inflammation of the Lymphatics.

EDITOR CANADA FARMER.—One year ago past in February, a two-year-old colt of mine got lame in the hind leg while running about the yard. His leg swelled from ankle to thigh to such an extent that I could not tell where the injury was. On being put out to grass he got well again; the swelling disappeared entirely and I worked him lightly all summer. About the middle of October last it returned, however, though not to the same extent, and it gradually grew less till the first of March, when it again made its appearance afresh. Thus it continues to come and go ever since. I bathed it last winter with strong brine, hot; the winter before I bathed it with saltpetre dissolved in hot vinegar with the above results. Please say what it is and what I should do with it. Will it be likely to continue an eye-sore for life?

Ramsay, Ont.

P. W.

The disease you describe is inflammation of the lymphatics. We would recommend you to turn out the animal to pasture for a time and give him occasional doses of diuretic medicine, 2 drachms saltpetre, and 2 drachms resin, say once or twice a week. When put to work again feed him moderately and let him be regularly exercised to prevent a recurrence of the disease. Should it again appear, in all probability it will end in a permanent thickening of the limb, which, although rather unsightly, will not necessarily incapacitate the animal for ordinary work.

Black Leg.

EDITOR CANADA FARMER.—I wish to ask for some information about black-leg in cattle, and the cure, if any. I had two yearlings die in March last. They first got lame in the hind legs; next day the hip, and region over the right kidney and along the back, as far as the shoulder, were much swollen. In about thirty hours after the discovery of the first symptoms, they died. I thought the trouble black-leg.

My next cow died yesterday morning. She never showed any signs of sickness; gave a pailful of milk the night before, and ate her hay and turnips as usual. She was never sick before to my knowledge. When opened, she was full of yellow matter, and the fat and flesh around the entrails had apparently turned into a yellow jelly. The matter that ran off from the outside of her entrails more than filled a large wash-tub, and I don't believe there was a quart of blood in her whole carcass. I set down this disease as yellow water. Please publish the remedy, if any.

A SUBSCRIBER.

Chatham, Ont.

Black-leg is a disease most difficult to treat, and is therefore to be obviated rather by prevention than cure. It is most generally due to some well-marked exciting cause, as a too generous diet, or the reverse. As a means of prevention we would advise you to feed your cattle moderately on the best description of food. If the young cattle are in high condition, a dose of purgative medicine will be beneficial. Whenever symptoms of the disease are observed, send for a skilful practitioner, as the treatment will depend largely on circumstances which his eye only can detect.

Shoeing Horses.

(Concluded from last month.)

With regard to the theory that the shoe should in every case have a bearing on the sole as well as on the wall, for the following reasons I do not think it is unexceptionally correct: 1st, a well-formed hollow or concave foot, when in an unshod or natural state, has very little, if any, connection with the ground, as far as the sole is concerned, the wall and frog being the principal, and, in many cases, the only surfaces in immediate contact therewith; and yet the foot maintains its healthy condition, with not the least symptoms of lameness occasioned by the non-contact of the sole with the ground, which is certainly very surprising, if it is really necessary that the sole, when the hoof is in a shod state, should always be subjected to the pressure of the shoe. 2nd, on flat or pumiced feet, where the sole really does come in contact, more or less, with the ground, we find that these feet, instead of being benefited by such a privilege, are always, to a greater or lesser extent, damaged by it. In fact, animals possessing this kind

of foot are incapable of progressing with any degree of satisfaction, unless when shod, and that too with ordinary seated shoes, which have no bearing on the sole. Perhaps it may be said that a pumiced foot is a diseased foot, and on this account is incapable of sustaining sole-pressure. Well, this I admit, and shall merely mention flat, healthy feet as examples, and shall say that the nearer a foot approaches to flatness, the less adapted is it to go on a hard, or even a soft road, without being shod, which I think shows very plainly that the sole is a comparatively tender portion of the foot, and not by any means calculated to sustain an equal degree of pressure with the wall.

There is in the healthy foot a certain degree of elasticity in connection with the insensitive sole, and if this elasticity is destroyed (which it certainly must be to a great extent if the shoe is allowed to rest on the sole) the sensitive structures of the foot must suffer more or less from the consequent concussions. I think, then, that a shoe which has no bearing on the sole, is calculated to give better general satisfaction, than one that has; and accordingly I think that the ordinary seated shoe, when properly forged, is the shoe best suited for draught horse wear. But very unfortunately this ordinary seated shoe, as it is termed, is sometimes made with an extraordinary seat, and sometimes without any seat whatever. Now, in making this shoe, the seated portion should always be made wide enough to cover, not only the wall, but also the connection between the sole and wall. It should be made to fit the foot in every particular, neither too large nor too small. The weight of the shoe should be in proportion to the size of the animal. The toe and heel caulks should be of equal lengths and should never exceed half an inch. Very much damage is often done to the limbs and feet of horses by wearing caulks of too great length, and also of unequal length. I think that toe clips, especially on the shoes of draught horses, are very beneficial, as they very materially assist in keeping the shoe in position on the foot. I know they are condemned by some as being injurious, but during twenty years' experience as a horse-shoer, I have never observed any bad effects from them.

With regard to applying a hot shoe to the foot in fitting it, I think, that to fit the shoe properly, it is quite necessary to do so, and if done judiciously, it certainly does the foot no harm. If the shoe is at a red heat, an application of two seconds duration is quite sufficient to mark the inequalities, if there are any, on the hoof. And when by this means the surface of the hoof and that of the shoe are made perfectly to correspond, the hot shoe should again be applied for two or three seconds, to thoroughly seat itself. This gives the shoe a far better bearing than could possibly be given it by either knife or rasp alone.

W. A. DUNBAR V. S.

TORONTO.

Foaling Time.

Among false presentations, the hind leg presentation is the only one which requires an adjustment, and our experience is that it offers little or no impediment to delivery. In nearly all other forms of mal-presentation the rule is to place the fetus in the natural position, with the forelegs presented and the head pointing between them, if possible. To do this in many cases requires all the skill, patience, strength, and endurance of an experienced practitioner, and the aid of such a one should always be obtained if it is desired to save the lives of the mother and offspring. The amount of mischief which is done by the unintelligent use of force in the attempt to assist delivery is incalculable; and most practical men would endorse the opinion that when it is not absolutely clear to the attendants what should be done, the best thing is to do nothing. As to the time when the foal may be put on the pastures, the weather must guide the breeder. Certainly the best place for mare and foal is a paddock with a shed in it for shelter. A foal so placed will be able to shift for itself much earlier than one which has been kept in the straw yard or stable, and at the age of seven months will be nearly independent of the dam.

A further question as to the proper age for castration can only be answered conditionally. Everything depends on the growth of the foal. Some animals are sufficiently advanced in form by the age of 18 months to justify the operation; two years old will be the average time, and in weakly animals a delay of six months or a year even is to be recommended.

The spring of the year, or autumn, should be selected for the operation, and the colt should be turned out again immediately afterwards. Animals which are kept shut up after castration often suffer from congestion and die, while those which are turned out and compelled to move about instead of being allowed to mope in a corner of the field, usually do well.—*Ag. Gazette.*

TANSY TEA is said to be a sure remedy for bots in horses. Experiments tried upon bots show that while they resist the action of almost every other substance, they are quickly killed by tansy.—*American Farmer.*

INFLAMED UDDER.—A correspondent of the *American Agriculturist* gives the following as a successful mode of treatment for inflamed udder: "To relieve an inflamed udder it should be well bathed and fomented with warm water, several times a day. If there is difficulty in drawing the milk, a solution of carbonate of soda or saleratus should be injected with a common syringe into the teat, and milked out again repeatedly, until the milk comes freely. The alkaline solution dissolves any milk that may have clotted in the udder, and which stops the flow. This relieves the inflammation, which is greatly increased by the absorption of the milk in the diseased glands."

MEDICATING A PIG. At a recent meeting of an English Farmers' Club, Prof. McBride spoke of the difficulty of administering medicine to a pig. He said: "To dose a pig, which you are sure to choke if you attempt to make him drink while squealing, halter him as you would for execution, and tie the rope end to a stake. He will pull back till the cable is slightly strained. When he has ceased his uproar and begins to reflect, approach him and between the back part of his jaws insert an old shoe from which you have cut the toe leather. This he will at once begin to suck and chew. Through it pour your medicine, and he will swallow any quantity you please."

HORSE THROWING UP HIS HEAD.—Examine the mouth closely, and I think you will find a carious tooth, or some disease of the teeth. If you find a diseased tooth, you will follow precisely the same rules as you would were the case your own. The diseased tooth should be properly extracted. Another cause of this head shaking is pointed teeth (not a disease); examine the edges of the grinders, and if you find sharp points on them, you require a tooth rasp and a proper person to use it. Examine also the cheeks, and if the teeth are sharp you will likely find them lacerated, hence the throwing up the head, and I have known many horses act as if crazy on account of pointed teeth, in all of which cases the rasp was the remedy.—*Country Gentleman.*

REMEDY FOR FILM IN THE EYE.—Take a half tablespoonful of fresh butter, just churned; melt it until it will run, then pour it into the horse's ear, the opposite one from the eye affected; in twenty-four hours after, wash the eye with cold water thoroughly, and if the film is not removed repeat the remedy again; let the horse rest until the eye gets strong. This is a safe remedy, and has proved to be a sure one. The application of the cold water and the rest are doubtless the curative agents; the melted butter in the ear might just as well be omitted. Film is the result of inflammation; cold water and rest, especially in a cool, dark stable, are excellent palliatives for inflammation, and possess the advantage of being at the same time perfectly innocuous.—*Cor. Ohio Farmer.*

TENDER MOUTH IN HORSES.—Horses having any tenderness of the mouth are likely to bolt their food unmasticated, and it acts as an irritant in the stomach, causing a good deal of pain and inconvenience. Treatment.—The removal of this source of irritation by a cathartic is the first step toward our treatment; for this purpose we administer a ball composed as follows: Barbadoes aloes, five drachms; powdered ginger, two drachms; linseed meal and syrup a sufficiency. After the immediate effects of this have passed away the animal may be fed on boiled oats and corn meal, mixed, for two weeks, with one of the subjoined powders in it; sulphate of iron, two ounces; nitrate of potash, two ounces, carbonate of soda, two ounces. Mix and make sixteen powders. This ailment may arise from acute indigestion. It is, in that case, necessary to change his food and attend carefully to his diet. Give him boiled oats and bran or shorts, and if you have them, carrots. He should have sufficient clean hay to keep the stomach in a normal condition.—Put a handful of charcoal in the water he drinks.—*W. Rural.*

A NEW PARASITE OF THE HORSE.—A lecture was recently given at the Agricultural Club in Berlin on a recently discovered parasite of the horse, the *Strongylus armatus*. Careful examination, which has taken place at the Veterinary College, Berlin, shows that about ninety-four per cent. of all horses are more or less infected with this hurtful parasite. The *Strongylus armatus*, whose mouth (when the parasite is of full growth) is provided with sharp prickles which facilitate a speedy piercing of the skin, passes through a triple stage of development. The eggs laid in the colon, the abode of the fully developed animal, are carried out with the excrements, and pass from thence to the stages of embryo and larva. This larva is brought, in a manner which has not hitherto been explained, again into the horse, and establishes itself firmly in the foremost mesenteric artery, but wanders, after attaining full development, into the colon. Here cotton takes place, and the course begins anew. While in the mesenteric artery, the *Strongylus armatus* is, in the first place, the cause of aneurism or dilatation of the artery, and, in the second place, produces trombi, clots of coagulated blood, which often attain such dimensions that the artery is completely stopped up, or that pieces detach themselves from them, which, on their part, likewise lead to stoppage. In both cases the horse dies of colic. Unfortunately, the remedy for curative application has yet been discovered.

The Poultry Yard.

Raising and Picking Geese.

In a late number of your valuable paper, a young farmer wants the advice and experience of some person who has had experience in raising and picking geese. I am now nearly sixty years old, and have raised and picked geese ever since I was large enough to hold a goose in my lap. I will give you the results of my experience. In the first place I try to keep my flock as near equal as possible (as many ganders as geese), so that they will mate equal in the spring. Geese are not like other fowls; every gander has his own mate, although sometimes one gander will have two geese, and one goose will have two ganders. Geese are very easily raised, requiring but little attention. After the goslings are a week old, feed them on corn-meal dough, with a little salt in it, until they can eat young grass. Care should be taken to give them shelter from hard rains, as they are easily drowned previous to the time they begin to feather. They want nothing but grass and water in the summer. Feed grain in winter, and they are all right. In the picking process, I pick about every seven weeks, if the feathers are ripe, which can be told by catching one and plucking a few feathers from it; if the quill of the feather is clear, they are ripe; if the quill is full of blood, they are not ripe. Pick nearly clean in warm weather, but in winter not so close. Care should be taken to give them warm shelter in winter after picking. Pick all the small feathers and leave all the large ones, except four or five under each wing, which must be plucked, or the wings will droop. The yield of feathers will be about one-quarter of a pound to the goose each picking, when full feathered. *Rural World.*

Hens that Don't Set.

The non-setting varieties of fowls comprise the different kinds of Hamburgs, Spanish, Leghorns, and Polands, and also some of the French fowls, yet we often meet with individuals of the foregoing breeds which are medium sitters. Non-sitters, if well bred, will not give one confirmed case of sitting among fifty birds, though they sometimes sit for a few hours or a week. These correspond to the sitting fever of the incubating breeds. The instances of fowls sitting steadily, although belonging to a breed of pure non-sitters, show reversion to the primitive type when incubation was universal. A cross between two different breeds of non-sitters will produce a race that will sit as regularly and persistently as any fowls. Some crosses between breeds are very desirable, but non-sitters should be kept pure, or the trait which constitutes their principal value will be lost. Where many fowls are kept it is better to have the larger part consist of some non-sitting breed. A great saving may be made in a sitting breed to produce a few good mothers. The rest, say three-quarters of the whole of your stock, should be of some breed of non-sitters. It is as easy to take care of 200 non-sitting hens during the warm season as 100 of a sitting variety. *Poultry World.*

Eggs by Weight.

Parties claim that hens that lay the small eggs will lay the greatest number. Now just see what a premium we are paying for the production of an inferior article. We still notice, and this by experiment, too, that the shells of two pounds of meat from the small eggs weigh nearly double that of the large eggs. We will try to explain our idea: For instance, one woman brings us four dozen eggs that weigh four pounds; we pay her eighty cents for them; she says nothing; it is her due, twenty cents per dozen for her eggs; another comes, has two dozen eggs, we pay her forty cents, weigh her eggs, and find she has four pounds, and she does not complain—twenty cents per dozen for eggs. Now we say justice demands that we pay at least as much for the two dozen that weigh four pounds as we do for the four dozen that weigh four pounds, while the shells of the four dozen weigh much more than the shells from the two dozen. Difference in these figures are intended for extremes, yet it is of every day occurrence that we find them both. Our opinion is that the price should be based on the rate of one pound to the dozen eggs. *Cor. American Grocer.*

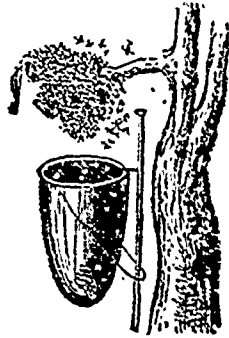
Best Breeds of Fowls.

We extract the following from the *Agricultural Gazette*. There can be no possible doubt but that cross-bred Game and Dorkings are infinitely superior as table fowls to Brahmas or Cochins. A Game cock and Dorking hens will produce early maturing birds, taking size and quality of flesh from the mother, plumpness and hardiness from the sire, whilst there will be a striking absence of ossification arising from the smallness of bone. I commenced keeping

poultry in December last, and hearing, or rather reading, so much in praise of the famous Brahmas, I procured eight pullets and a male bird of the best prize strains; but having always had a fancy for Game fowls, I also bought sixteen Game hens and pullets. I may mention that I obtained the fowls from several different sources, so that they may be considered fair representatives of their respective breeds. Now, what is the result? The sixteen game hens have laid 202 eggs, and are now laying at the rate of 8 daily, while the Brahmas have only laid 20 eggs, and for some time past have laid none; besides which, they are in comparatively bad condition and scraggy, whereas the Game are plump and fit to kill, although they all receive the same treatment, and have the run of the farm. I am sorry to say that I am not the only one who has been disappointed in the Brahma as a farmyard fowl. Several of my friends have found both Game and Dorkings, and especially a cross between the two, better and earlier layers than either Brahmas or Cochins, and as table fowls no one doubts the superiority of the former. It remains to be proved whether the Game chickens thrive, and the hens lay as late as the Brahmas, but I shall report progress to you at the end of the year. In the meantime I am decidedly in favor of Game and Dorkings as farmyard fowls, and I have written this letter that others may not be deceived, like myself, by the prominence given to Brahmas at the Crystal Palace and other shows, and in the hope that our agricultural societies may rather encourage useful breeds than mere fancy birds in every way their inferiors.

How to Raise Turkeys.

A farmer's wife who has had years of experience, gives the following as her mode of raising turkeys. In the first place, select a good kind. The autumn, or early in winter, is the most favorable time for that, just before the birds are sent to market. Keep them well during the winter. In the spring, just before they begin to lay, put them in an inclosure, where it is most convenient to have their nests, and where they cannot get out. After they have made their nests, they may be set at liberty without any fear of roaming or straying. Next, take good care of the eggs.



Bee-Swarming Bag.

They should be gathered carefully every day and placed between layers of flannel or cotton, in a place of uniformly cool temperature, and turned over every day. As soon as the birds are hatched, feed them with warm bread and milk, well peppered, with boiled eggs added, or thickened with cooked corn meal, or wheat middlings, which is better. A little care in these matters will repay the efforts. Before I knew how to take care of the eggs, I set thirty eggs one year, and but one hatched. The next year I set forty eggs, and nearly all of them hatched and the birds lived.

A FAMILY of twenty-four hens and two roosters will do well in a rail or pole hen house twelve feet square and eight feet high. More than this number will not be so productive in the same house.

FLAVOR OF EGGS. — This is what the *Southern Plantation* says on the flavor of eggs: "There is a very vast difference in the flavor of eggs. Hens fed on clear, sound grain, and kept on a clean grass run, give much finer flavored eggs than hens that have access to stable and manure heaps, and eat all kinds of filthy food. Hens feeding on fish and onions flavor their eggs accordingly, the same as cows eating onions or cabbage, or drinking offensive water impart a bad taste to the milk or butter. The richer the food, the higher the color of the eggs. Wheat and corn give eggs the best color, while feeding on buckwheat makes them colorless, rendering them useless for some confectionery purposes."

SOME GOOD FARMERS think the common barnyard fowls just as good for profit on a farm as fancy varieties. Upon such we wish to impress the necessity of constant selection each year of those to be kept for future breeding. One who would follow this rule for ten years should have a flock of fowls fit to exhibit, and his profits during the ten years will have been much greater than by the common plan of keeping any fowls you may happen to have. The flock is reduced every year by killing; let those for market always be the most undesirable in form, etc., retain those that have been the healthiest, hardiest, most thrifty growers, and the finest in form. *Western Rural.*

The Apiary.

How to Find the Queen.

This is the most difficult part of the work for a beginner, yet a little practice makes it very easy. We often wonder, after we have found five or six black queens (in one hour) and introduced as many Italians, how we could look three or four hours for the first queen without finding her. Use a veil, and do not smoke the bees unless they are very cross. Open the hive without the least jar—take out the first comb, look it over quickly, and set it in an empty hive close by—proceed in this manner until you find the queen or have removed all the combs—then look the bees over carefully that are left on the inside of the hive, keeping them running from one side to the other by stirring them with a quill or breathing on them. A queen will often sit still right before your eyes without your seeing her, but will be seen as soon as she moves. So you should always keep the bees moving that you are looking at, by breathing upon them. Proceed to look the combs over the second time—you need not hurry, as the bees will hang on the combs in clusters or bunches, and the queen will be hid among them. The object of hurrying the first time through, was to see the queen before she could hide. Hold the combs perpendicularly before your face, breathe on the bees and make them run around on the opposite side—then turn the combs and drive them again. Set the combs, as fast as you are through with them, in the old hive just as they were, and if you have not found the queen yet, close up the hive and wait an hour, and try again. Do not think you will injure the bees by handling them so much, for the practice will be of more value to you than the injury to the bees, as they will work just as well half an hour afterwards. *Am. Bee Journal.*

Hiving Swarms in High Trees.

A writer to the *Gardener's Chronicle* writes: I have used for some time for this purpose a bag made with stiff black lino, stretched. Around the mouth I attach a little very thick wire, to prevent it closing when being used: the bag is then fastened or nailed near the top of a long pole made of deal wood, about 9 feet in length and 2 inches in thickness, or like a clothes prop, but at the summit, about 6 inches above the bag, I nail a bit of wood to prevent the pole from splitting, as well as to act as a hammer, to beat or shake the bough on which the swarm is settling. The illustration will explain it far better than a merely verbal description. To the wire ring, if desired—although it will act far better without—a string may be tied, and held in the hand of the operator, and, when the bees are shaken into the bag, by pulling the cord they are prevented from escaping. I make use of it thus: Having got it in readiness, when the bees are observed to begin clustering, of course the first thing to be attended to is the hive, and the table on which they are to be placed for a few minutes after hiving, before they are finally removed to their permanent stand. Then suddenly shake the bough with the end of the pole, the bees will drop into the bag—very few will be left on the branch after a vigorous shake. Slowly bringing them down to the table, hold the bag for a few minutes beside the hive, which should be slightly raised on the side nearest the bees, to allow of free ingress. The bees, seeing a home in readiness, will not be long in taking possession of the new tenement. You need not fear securing the queen at the first shake, and if any of the bees are at all disposed to take refuge again on the bough, lay across it a smoking or smouldering rag, which will quickly drive away every bee to the hive below. The table should be placed beneath the tree, if possible. It will not take long to hive them in this easy way. I have succeeded in securing them, persuading them to settle in the new home, and removing them to the stand in 15 minutes; in half-an-hour afterwards they have commenced working as if nothing had happened.

BEE SMOKERS. — Fearing there may still be found a few who are deterred from keeping bees from fear of stings, allow me to describe a smoker easily manufactured by any one with a little ingenuity. It is a modification of the Quimby, and though quite as effectual, may be made at a trifling cost. To a two-ounce tin box solder on one side near the bottom a small tube four or five inches long, leading to the inside; opposite this in the bottom of the box punch one half-inch hole and cover with perforated tin or fine wire-cloth. This box should be attached by small wrought iron nails or screws to a small pair of bellows made of one-fourth of an inch board, and covered with sheepskin, having a hole about three and a half inches from point to correspond with hole in bottom of box. Our own instruments are five inches wide by eight inches long, with spring holding them open attached to the inside, so that they can be worked with one hand. When wanted for use, the box may be filled with a little roll of cotton batting, dry decayed wood or other material. *Cor. Bee Journal.*

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

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

The Canada Farmer

TORONTO, CANADA, JUNE 15, 1876.

Canada at the Centennial.

The Canadian display at Philadelphia exceeds anticipations, surprising even Americans into an acknowledgment of its superiority. In furs and raw materials, the Dominion stands almost unrivalled; her agricultural and other industrial machinery is unsurpassed, while in many of the higher branches of art she will be able to hold her own with the most advanced nations. She is the only country that feels justified in sending out musical instruments in rivalry with those of New York and Boston. Her marble work, elegant furniture, boots and shoes, pottery, &c., are all attracting attention and eliciting encomiums on every hand. We have little doubt too, that when the proper time arrives, she will give an equally good account of herself in agricultural products, roots, fruits, grain and vegetables, the special exhibition of which is to extend off and on from July to November. Her list of stock entries recently completed, leads to the expectation that she will not be behind hand in that department. The Commissioners have made requisition for 300 stalls, and as free transportation home is granted by the railroads, and the occasion offers an unprecedented opportunity for the sale of animals while on show, the display will, no doubt, be choice. The short-horn, Hereford, Devon, Galloway, Cotswold, Southdown and other interests are to be well represented.

Altogether Canadians may justly feel proud of the exhibition, which, should it fail in all other respects, has already accomplished for them one great object, viz. that of placing their country in its proper light before the world.

The English Meat Markets.

A reference to the last report of the English Board of Trade shows a large and steady improvement in the importation of certain classes of animals into Great Britain. For purposes of comparison the transactions of the first quarter of 1874 are contrasted with those of the same period this year, as follows:

| | 1st Quar. 1874. | Value. | 1st Quar. 1876. | Value |
|---------------|-----------------|-----------|-----------------|-----------|
| Oxen & Bulls | 15,314 | £ 504,973 | 29,855 | £ 643,530 |
| Cows | 5,115 | 100,562 | 8,746 | 166,898 |
| Calves | 4,176 | 20,926 | 3,891 | 15,545 |
| Sheep & Lambs | 125,923 | 241,965 | 203,380 | 418,811 |
| Pigs | — | 91,111 | 5,001 | 17,333 |

Showing a remarkable increase in beefs, sheep and lambs, with a falling off only in the matter of calves and swine. It will be observed likewise that the increased supply is more than met by the increasing demand, for prices, instead of falling, have gone up. Oxen and bulls in 1874, averaged about £19 a head; this year, with nearly double the importation, the average is £21 10s. Cows have held their own, while sheep have advanced from £2 4s. in 1874, to £2 12s. in 1876. Passing on again from these to the imports of dead meat, we find an increase of 57, 571 tons bacon over the quantity imported during the first three months of 1875. Salted beef, increase nearly 9,000 tons; and beef, fresh, or slightly salted, over 7,000 tons. Commenting on these returns, and on the fact, too, that the demand for tinned meat has decreased, showing that Englishmen must have their beef in the joint or steak, the *Farmer*, English, adds. Australia is too far from our market to furnish the supplies fresh. From Canada the transit is shorter than from any other country that can supply the market with meat; and in feeding beef for shipment to England, and in making more cheese of the best quality, the *Canada Farmer* will, for the future, realize his greatest profits.

Sunstroke

EDITOR CANADA FARMER.—The approaching hot weather induces the thought that it will be well to guard against the dangerous effect of sunstroke. I some time ago read of a gentleman who had been affected by this malady, and found that whenever afterwards he ventured to go into the sunshine, he was seized with a distressing headache. He covered his head with a green umbrella, thinking by that means to avoid the heat of the sun, which he imagined to be the cause; but without its producing any relief. He found much to his surprise on his going out one night into the bright moonlight that his head was similarly affected, and he thought of the words "The sun shall not smite thee by day, nor the moon by night, Ps. cxxi, 6. On reflecting on the subject, he concluded that it was not the green rays of the sun that produced the effect, but that it was the yellow rays as reflected by the moon that affected him. He therefore determined to try the experiment of covering his head with a yellow material, so as to absorb the yellow rays, and much to his delight he found that by wearing this yellow covering, he was perfectly secured from pain. I think it would be wise to follow this gentleman's example, and as prevention is better than cure, it may be well to introduce the fashion of wearing a yellow muslin round the hat, with the ends hanging down behind, covering the neck and spine, which are liable to be affected as well as the brain. Turmeric yields a cheap yellow dye, and even a straw hat may prove of great service.

J. F. WILKEY.

Exeter, England.

Blue Lights for Heating Purposes.

A new light theory, based on experiments conducted by General Pleasonton, of Philadelphia, is attracting attention. Briefly stated, it is, that the sun's rays, passing through panes of alternate blue and plain glass in a room or hot-house, will raise the temperature within to an extraordinary height. Gen. Pleasonton, who is a great student of the science of Optics, observed the phenomenon first about three years ago in one of his green-houses, which had been covered partly with blue glass, and which, on bright, sunny days, appeared to generate a much higher degree of warmth than the others aside it. Testing the disparity on one occasion with the thermometer, he found the temperature within this green-house to be 110° while without it ranged about 31°. Speculatively ascribing the result to the presence of blue lights, he followed up the theory, and found it amply sustained by additional experiments. In a grapery, covered with alternate layers of blue and clear glass, he found that the temperature, through the day, ranged from 100° to 115°; when outside, at the same hour, it ranged from 32° to 65°.

During the winter (1872), which in Philadelphia was one of rigorous cold, he records that two ladies of his family, with a residence on the northern side of Spruce street, had placed blue colored glass in one of their windows, in which was likewise plain glass; and the result was that when the sun shone on these two colors in the same window, the temperature of the room was raised so much as to render it necessary for them to do without a fire altogether, though it was mid-winter. If, however, they kept up the fire, they were obliged to let down the other windows in order to obtain relief from the excessive warmth. There have been further experiments made in France and Italy, based on these discoveries, all of which, if true, prove the soundness of his inferences. And a German savant asserts that it is a discovery of an influence proceeding from light that is destined to produce the most important results on the comfort and happiness of mankind.

Houses of Compressed Earth.

A cheap, comfortable, and durable house may be constructed of compressed earth. Get your foundation walls up three feet or more above the surface of the ground so as to be out of the winter's snow. Have your door jambs and window frames all ready, and then you may begin to build up your walls with earth, dry earth, not wet, but just as you dig it up from the inside of your walls to make your cellar. If you wet your earth you will find, that as the wall dries, it will crack, from its parting with the water. But if you use dry earth and ram every inch down

tight, it will make a strong wall, so durable that if it was made when Adam was a little boy, and care taken to keep it dry, it would be standing now, for earth is a thing that does not decay. Well, now I will describe how to proceed with erecting these earth walls. They should be two feet thick at least, consequently the foundation, whether of stone or brick, should be of that thickness. Prepare planks of sufficient length for the walls that are to be built. They should be two inches thick and from one to two feet in width. Two of these planks will be required for each wall, and iron bolts with screws and nuts must be prepared sufficiently long to reach across the foundation wall, say 2 feet 2, and bolt the under and top edges of the planks together at convenient intervals. Thus a trough will be formed by these planks on the top of the foundation wall, which is to be filled up with the dry earth, and every shovelful well pounded down with rammers. When the earth reaches the top of the planks, the nuts are unscrewed, and the bolts knocked out, and the planks are raised in like manner to the top of the wall, the bolts re-adjusted, and so you go on as high as required, all round the building; taking care to build in the door and window frames in their proper places, and in a proper manner. Sills for resting the joists on should also be built in, and the roof should overhang so as to shelter the wall as much as can be. After the house is built, it may have a coat of plaster, or it may be smoothed off and the following water-proofing may be applied with an ordinary whitewasher's brush. Recipe—proportions as follows: 12 ounces of white curd soap dissolved in 1 gallon of water, to be laid on in a boiling state with a brush, so as not to froth or lather. Let it remain 24 hours to become dry and hard. Then dissolve 8 ounces of ground alum in 4 gallons of water to be laid on in a similar manner. This should be done in dry weather. Such walls as these are peculiarly suited to the Canadian climate, as earth is a bad conductor of heat, consequently they are warm in winter and cool in summer.

Some years ago a friend of mine built a row of neat cottages in this manner at Wollington Somerset. He was so satisfied with them that he said he should not think of building with any other material. They were so cheap too in their construction, as under an intelligent foreman unskilled labor was equal to the task.

J. F. W.

Lime Kilns and Burning.

EDITOR CANADA FARMER: Would you be kind enough to give me, in the columns of the CANADA FARMER, a few hints on the construction and management of a lime kiln?

W. C.

Loch Lomond, N. S.

Select, if possible, the face of a low hill, mound or embankment, which rises say 6 or 8 feet above the level, and in it make a funnel-shaped excavation of from 3 to 4 feet diameter at the bottom, to 12 or 15 feet at the top. Line this cavity with a compact wall of stone or brick, observing to leave in front an opening of 4 or 5 feet in height by about 1½ or 2 feet in width which is to serve the double purpose of a feeding-place and damper. The "eye" or keystone of this opening requires some caution in adjustment. The height of wall is to be regulated by the capacity of the kiln. In filling in the charge prior to burning, the first or lowest layer is of the most importance. It is constructed around the bottom of the kiln and against the sides of the damper, concave below to serve as a fire-place, convex above, somewhat after the manner of an inverted tea-cup, and most securely keyed to sustain the pressure of the superincumbent charge. The concavity or fire-place should be large enough to hold 8 or 10 good-sized sticks of cordwood. Across the damper too, at a height of about a foot from the ground, an iron bar is usually inserted on which the ends of the wood may rest, and under which the ashes may be conveniently scraped away. Having filled in the charge, light your fire and keep it blazing hot until the burning is completed. See that no intervals of cooling are allowed during the process, or they will largely augment the trouble of burning. A kiln of about 200 bushels should be sufficiently calcined in 100 hours, perhaps less; everything depends on the uniformity and intensity of the heat applied. The description just given is that of the cheapest and most ordinary style of "home made" kiln. A method of burning lime without a kiln was published in last year's volume of the CANADA FARMER, page 102.

Liability of Seedsmen.

The "Dutch Cabbage" case, an account of which appeared in our volume for 1875, page 210, wherein the plaintiff, having purchased inferior seed and lost his time and crop, had prosecuted for and obtained heavy damages, is supplemented by another decision recently rendered by Chief Justice Beasley, of the Court of Error and Appeal, the highest tribunal in the State of New Jersey. The case, which has occupied the New Jersey Courts for the past six years, originated in a dispute about twenty-five cents worth of turnip seed, and has involved an expense of over ten thousand dollars. The seed was purchased and paid for on the representation of the seedsman that it was a variety which would produce early turnips. The turnips, however, proved to be late, and of poor quality. Mount, the plaintiff, based his claim on the ground that he lost a valuable crop through false representations, and recovered \$200 damages in the Justice's Court, although the defendants succeeded in showing that they believed their seed to be of the quality they represented, and that no fraud was intended. The case was then appealed to the Court of Common Pleas, and there the first decision was confirmed. Still dissatisfied, the defendants took it to the Supreme Court, which, two years ago, gave a further decision sustaining the first. And finally, as a last resort, the case was heard in the first court mentioned, where all former decisions were ratified. From this last there is no appeal within the State, and the probability is that its decision, viz., that the seedsmen were bound to furnish such seed as was ordered, and that filling the order was equivalent to an endorsement of the quality, will operate beneficially in leading to the exercise of more care in the selection of seed by those who keep it for sale. At the same time, if every man who fails to get a crop from his planting can recover from the seedsman damages to the full amount of his failure, few will be willing to engage in the business of selling seeds. The class of delinquents who specially needed the caution, peripatetic scamps who have no concern but to fill and pocket the money, will not be much benefited by it, for they can rarely be found or reached by a legal process to procure redress.

Farmers' Boys and the Farm.

EDITOR CANADA FARMER: Please allow me space to make a few remarks with reference to the above subject, and more particularly as it bears upon the present generation of Canadian farmers' sons who, having received a tolerable education, may also be blessed with parents who are able to assist them to small farms. How long will some of these half-educated young men remain upon their land ere it is offered for sale? They desire to get into business that pays better and that will enable them to play the gentleman, without hard work and without running the risks of bad crops, bad seasons and other drawbacks. The young lad determines to sell out, but cannot always find a purchaser who is willing to give a fair price. He cannot content himself to wait, however, and, sooner than plod on as before, rents the place, raises funds by a mortgage on it, and then seeks the post of telegraph operator, store clerk, or any other kind of "gent," hoping and longing for the time when he can sell, redeem his mortgage, and go into business for himself. But as time goes on, and his own rents, taxes and family expenses become due, together with the interest on his mortgage at the rate of 10 per cent. or more, he finds his capital is on the whole reduced, and regrets that he did not sell for one-third less for cash, and lay out his money at the interest he has to pay. The farm rent, he discovers, does not pay interest and taxes, and at the end of a few years he is poorer than when he began. Thus is the position of many at the present date, especially farmers' sons, who think that if they can only get into some office as an agent, a clerk, a section boss on the railway, anything in fact to obviate farm work, they would be much better off. If furnished with a horse and sulky, they will even travel an entire horse rather than put out their hands to honest labor, so that if you desire to hire help, you must look beyond them for some old-country men who have been trained to work all their lives, and who have perhaps expended the savings of years at home in paying their way out here. These men are, however, honest, faithful and reliable, and, however poor they may be on arrival, they generally reach a position of independ-

ence and even wealth in this country. I will give one instance which came within my own observation. An Englishman, a shoemaker, came to this country with barely his clothes, and military clothes at that. He began his trade in a small shop, working late and early for a few years, and then married a girl who was able to add to his little capital. Soon afterwards he purchased an acre of ground in town on which he built himself a comfortable house, and was able to pay for both. Accumulating more means by his honest industry he next had a neat barn erected and also started an ashery, to which latter, along with his trade, he gave his attention until he raised a family of seven children; and as soon as the eldest could hold a plough, he bought a hundred acres of land, which he also paid for. Next followed an excellent frame house with cellar kitchen, fine out-buildings fitted up with steaming apparatus for stock, a thrifty and profitable orchard, and in brief, every comfort and convenience one could wish for. Several of his sons he has now established in places for themselves. He has given them all a good education, and one or two of them are learning trades. Hoping they will follow the example not of the general run of Canadian farmers' sons but of their father, I am,

PETER SHISLER.

Bertie.

The Crops—Country Stores, &c.

EDITOR CANADA FARMER:—Not much fall wheat is raised in the N. riding of Grey, except on the Indian Peninsula. Wherever the ground is dry, the wheat looks well, but where the land is level and wet, most of it has to be ploughed up and resown with some other crop. Clover has been very generally winter-killed, so that the ground must either be ploughed up and sown with some other crop, or harrowed over, resown with clover seed and rolled. I find the practice of rolling the grass land early in the spring has an excellent effect. The weather has, on the whole, been favorable for spring operations. The land ploughed last fall was more friable and in better condition for spring work than I have known it for some years, as we generally have plenty of snow in this part of the Province. We have had some warm thunder storms which have brought on the spring grain well, and also the grass seeds which promise to be a better catch this year than since 1866, which proved a showery season, so that, although the grass seeds took well, the fall wheat was badly affected with rust. The solar influences which are said to have occasioned the changeable weather which has so generally prevailed everywhere during the last twelve months, appear to be still in force, and sudden atmospheric changes are still the rule. The thermometer has ranged from 82° to 47° these last few days, 89° to-day, 1st June. Some of the farmers around here are through seeding grain, potatoes and roots, except turnips. In 1874 I seeded down a few acres of wheat with alsike clover and timothy; the clover took well but the timothy failed, so that immediately after harvest I reseeded the stubble with timothy and allowed it to take its chance. The seed was good and came up well; we had plenty of snow that winter, but last spring, which with the heavy rains in May, the cold weather and drought in June, I gave up for lost. But this spring it is coming up thick and promises to be an abundant crop. This township (Sarawak) had less rain in June last than most other places, and which with the drought and severe June frost the hay crops proved a failure. In fact it was generally admitted, that last year, owing to the cold backward season, the heavy rains in May, and severe drought in the first half of June, appearances indicated a generally deficient harvest, and the country was on the verge of a panic. Providentially the rain was sent in time, and a generally abundant harvest was the result. The country is, however, not out of danger yet. The towns and villages are overcrowded with petty stores, many of them, I am sorry to say, started by farmers who, in their haste to make money, have sold or leased their farms and gone into business, for which neither by previous training nor business education they are at all qualified, and the first generally deficient harvest will send probably three-fourths of them into the hands of official assignees, and the panic that would follow would be more than that in 1866, because there are so many more petty stores now than there were then. If the wholesale merchants generally would gradually contract their credit

system as regards these country stores, the weaker ones will fail first, but the evil effects would not be so sudden. The farmers, however, are the main stay of the country, and to them I would suggest that instead of spending their money on expensive pianos, and allowing their wives and daughters to ape the fine city fashions, they would act wiser if they began in time to prepare for a rainy day, which must come sooner or later. Country stores may go down by the score, wholesale merchants may fail, banks may come down with a crash, but so long as the majority of our farmers are able to pay their way, the commercial storm, come when it may, will blow over, and the country again will recover, to pursue a new and, I trust, safer path to prosperity. The Mark Lane reports indicate that the superior quality of the wheat from India, which the low price of labor in the country allows to be laid down in London at 40 shillings per quarter, will tend, unless interrupted by a general war, to drive Canadian and American wheat out of English and Continental markets. In view of this probable danger, would it not be wise for our Canadian farmers to turn their attention to raising more live stock for the purpose of supplying the English markets with beef and mutton. Horses would prove a profitable class of stock for the English market, if due care were taken in the selection of breeding animals. The advice given by the Roman poet, Virgil, to the young farmers of his day is not inapplicable now.

"The generous youth who, studious of the prize,
The race of running coursers multiplies,
Or to the plough the sturdy bullock breeds,
May know that from the dam the worth of each proceeds."

Increased stock means more manure, better crops, so that even if prices continue low, the increase of acreable produce may make amends for it. I look to the order of patrons of husbandry to promote these objects, which they will do, if they only adhere faithfully to their avowed principles of action. I am not sorry to find that the Granges are increasing so rapidly, and hope their members will adhere to their determination to adopt the cash system as much as possible, as that is the only sound basis for farmers to act upon; and when it is generally adopted, the too numerous loan companies now existing will soon find their present profitable dividends grow "small by degrees and beautifully less"—"so mote it be."

SARAWAK.

Farmers' Accounts.

EDITOR CANADA FARMER:—Notwithstanding all that has already appeared on this subject in the CANADA FARMER and elsewhere, there is not at present, I verily believe, one farmer in five hundred throughout the country who can say to a nicety how he stands from year to year, what such and such crop cost him to raise, or how much profit he gained from it. At a rough guess, and in a sort of general way, he may be able to tell that his wheat paid better than his potatoes, his oats than his turnips or vice versa, but that is all. How much better any one paid than another he is unable to say, nor can he give figures or statements to show cause why any more importance is to be attached to the cultivation of special crops, etc. Now I can fancy nothing more interesting to the country at large, as well as to the individual, than just such knowledge as this, for, until it is put in a practical shape, it will be simply impossible to arrive at full and reliable statistics of our agricultural standing. I had for several years been engaged in farming 100 acres of land in this country, but some years ago, led away by the generally received impression that it was hard work with poor pay, I quit it and accepted a salary of \$450 per annum in another less laborious situation, fondly deluding myself with the belief that I was bettering my condition in every way by the change. And the delusion grew upon me for upwards of four years ere I got my eyes opened by just such a system of accounts as I have above foreshadowed. I could not help observing from year to year that, with the most rigid economy, after paying house rent, taxes, household and other incidental expenses of myself and family, it took almost the last cent of my salary to make ends meet. Add to this also that I had to work or at least to "be on hand" every work day of the year, in other other words, I was never my own master except on Sundays and perhaps two or three holidays which were allowed me in the twelvemonth. Now on the farm I was, to a large extent, director of my own affairs all through and had besides more to lay by for a

runy day, at the close of each year, taking one with another. The end of it was that I threw up my post and went on the farm again. Farmers, as a rule, are slow to believe that they are doing as well as others on salaries. Let them book their income and expenditure and they will then know the truth. But how? Well, my plan last year was to designate all my fields under crop by the letters of the alphabet, A, B, C, etc. A was a wheatfield of twenty-seven acres, and I opened an account with it, charging it first with ploughing so many days, seeding, harrowing, and harvesting, threshing and hauling to market, and crediting it with cash receipts for the quantity sold and the same rate per bushel for what remained. I followed the same plan with B, a hay field, C, an oat field, D, a barley field and so on over them all, and, having made up my balance sheet at the end of the year (which you know was not a very favorable one) I found myself just \$215 better off than if I had stuck to my genteel situation. This year I am going still more minutely into details and, it spared, I shall furnish the FARMER with the result in the fall. Meantime, earnestly advising all my brother farmers to go and do likewise, I am

FARMER.

Trowbridge.

Fruit, and Other Notes

EDITOR CANADA FARMER:—As for the fruit prospects in this part of the Province, I can at present only state, that plums, as far as I can learn, will be a failure, although pears and apples promise good crops. Most fruit trees produce well every other year, and those trees which bore well last year, will not bear much, but those which didn't bear last year have plenty of blossom buds now. Still some of my dwarf pears, planted eleven years ago, which were long in coming into bearing, bore so well last year that I had to pick off great numbers of the young pears as soon as they were well set, and if they set well this year I shall again have to pick off at least half, if not more, of the young fruit. Amongst them I may mention the Oswego Beauty, a good bearer, but of inferior quality, the Passe Colmar, good quality, but my soil is hardly rich enough for really first-class fruit. From most of the others the labels were broken off before the trees were set out, so that I only know that they are late fall and winter pears, and of good quality. These I procured from Rochester. I have also from the same nursery two standard trees, one a fall pear, small and poor, which I am regrafting with Flemish Beauty; the other, a summer pair, dead ripe the first week in September, of medium size and good quality. Flemish Beauty does well here, but unfortunately I allowed the only tree I had of that variety to overbear some years ago, and I fear I shall lose it now. The worst of these American nurserymen is that in the printed forms for orders with which they furnish their customers, they insert a clause to the effect that if the kinds ordered are not in stock, others equally as good shall be substituted, and, under cover of this, some very poor varieties are often sent. Amongst the Dwarf Apple trees I received were some Baul's Janet, and on referring to the catalogue of the nurserymen from whom I received them, I found them described as being good in the South, but bad in the North. All I can say for this variety is that they come into bearing early, bear abundantly every other year, and the fruit may be kept till June, and only then becomes mellow. Another peculiarity is that if any of the young apples shrivel up, they do not drop off the tree as is the case with most other varieties, but hang on all winter. I have partially regrafted them with better varieties, and shall continue to do so until they are all regrafted. I also procured some Dwarf trees from a Hamilton nursery, apple pears, and quinces, which have on the whole proved satisfactory, except the quince, three out of four of which soon died out, and I fear the last will also follow the others this year, although it produced fruit last year. I planted them six years ago, but some bore fruit for the first time three years after they were planted; some for the first time last year, and others promise to begin bearing this year. Of all the varieties I had, the Seckel proves to be best adapted to this part of the country. The White Dogeau produces well. The Beurre Diep fruited last year for the first time, a good pear, but most varieties were smaller than usual last year. The Bostique and Beurre Giffard promise fruit this year for the first time. I gener-

ally found that those trees which are longest coming into bearing, prove the best in the end. An agent for some Meaford nurseryman paid me a visit a few days ago. He had some very fine canned fruit with him, amongst the rest some pears about the size of goose eggs, but these I found were grown in Ohio, and fine specimens of the Goose Plum, but I was not goose enough to order any. They are a fine looking variety, if one could only be sure of the trees proving true to name. I was also shown a nicely coloured drawing of the Poplar Peach, so called because the tree naturally grows in the shape of the Lombardy poplar. It is represented as a free-stone peach, ripening in September. Can you tell me whether this variety is worth cultivation or only a humbug? The only sure way we are likely to raise peaches here is by planting them in boxes, and laying them on their sides in the fall, and covering them for the winter. The Poplar peach, from its peculiar shape, ought to be suitable for this purpose if it be a good variety. Our county council have a by-law in force imposing a license duty on all peddlers; to evade this law one agent is sent round to take orders, and another to deliver the goods. Now, I want to know which is the pedler, the man who takes the orders, or the man who delivers the goods, and if either is neither, can the county council legally alter the by-law so as to include these two classes of gentry? If they can, I would take care that the by-law should not become a dead letter so far as I am concerned at least. In this section of the country we are not troubled with the curculio or the apple tree borer. As for the borers, if I found them paying attention to my apple trees, instead of trying to get them out, I should prefer to keep them in by plugging their holes tight and cutting off the plugs level with the wood, so as to allow the bark to grow over the holes and exclude the wet. As the borers, like ourselves, cannot exist without air, they would be suffocated. Here I am inclined to indulge in fine writing, and in the use of Latin and Greek derivations, which I regret to find is now becoming common even in agricultural papers, I should write *asphyxiated*, instead of the old English word *suffocated*, which will be more generally understood. In the February number of the FARMER you have given an extract from the *Poultry Bulletin*, containing a Latin quotation, which I am inclined to think was *Greek* to most of your readers. Had the writer of that article quoted a well-known line from Burns, that "Facts are stubborn chiefs that wunna lie and daurna be disputed," he would have been more generally understood. This indulgence in fine writing is simply owing to vanity on the part of the writers, who are evidently desirous that their readers should perceive that they have been at school and learned something; but if this rage for fine writing and the habit of using slang terms both in writing and conversation is continued much longer, our good old Saxon English will be soon consigned to the list of unknown languages. What do you think of a high school teacher stating in a note to a young friend that she had an *awful* pile of letters to answer? This is teaching the young idea how to write with a vengeance; nevertheless it is a fact. If some enterprising person would publish a pocket edition of a dictionary of the slang terms now so commonly used even among the educated classes in this country, the demand would probably prove so great that he might make a fortune.

SARAWAK.

JUST as we go to press a note reaches us from "Sarawak," stating that his report of the failure of the plum crop, indicated above, was based upon incorrect information, that the failure will be but partial, as in many places the plum trees are covered with blossoms.

ED. CANADA FARMER.

AT A RECENT MEETING of the Massachusetts Horticultural Society, an interesting paper was read from the pen of Professor Kirtland, Ohio, speculating upon possible crossings and unions between different kinds of trees, and giving an account of a curious hybrid between the black oak and western hickory. A quantity of hybrid nuts had been collected under a hickory tree overspread by a large black oak, some of which the Professor examined. Externally they resembled the ordinary hickory nut in every particular, but, when cracked, they split longitudinally in halves, and exhibited instead of the usual hickory kernels perfectly formed acorns of excessively better taste, with well defined stems, all complete. The phenomenon was explained of course by the ovaries of one set of blossoms being impregnated by pollen from the other set, and the fact led Professor Kirtland into some apparently feasible theories as to the possible results to agricultural of crossing the apple and wild crab, the quince and pear; the apricot and plum &c.

Locusts as Food.

In the annual report of the Commissioner of Agriculture and Arts for Ontario, recently to hand, we find the following remarks by Prof. Riley: "Whenever the occasion presented, I partook of locusts prepared in different ways, and one day I ate of no other kind of food, and must have consumed, in one form and another, the substance of several thousand half-grown locusts. Commencing the experiments with some misgivings, and fully expecting to have to overcome disagreeable flavor, I was soon most agreeably surprised to find that the insects were quite palatable, in whatever way prepared. The flavor of the raw locust is most strong and disagreeable; but that of the cooked insects is agreeable, and sufficiently mild to be easily neutralized by anything with which they may be mixed, and to admit of easy disguise, according to taste or fancy. But the great point I would make in their favor is, that they need no elaborate preparation or seasoning. They require no disguise, and herein lies their value in exceptional emergencies, for when people are driven to the point of starvation by these ravenous pests, it follows that all other food is either very scarce or unattainable. A broth, made by boiling the unfledged *Catopteni* for two hours in the proper quantity of water, and seasoned with nothing in the world but pepper and salt, is quite palatable, and can scarcely be distinguished from beef broth, though it has a slight flavor peculiar to it and not easily described. The addition of a little butter improves it, and the flavor can, of course, be modified with mint, sage and other species, *ad libitum*. Fried or roasted in nothing but their own oil, with the addition of a little salt, they are by no means unpleasant eating, and have quite a nutty flavor. In fact it is a flavor, like most peculiar and not unpleasant flavors, that one can soon learn to get fond of. Prepared in this manner, ground and compressed, they would doubtless keep for a long time. Yet their consumption in large quantities in this form would not, I think, prove as wholesome as when made into soup or broth; for I found the chitinous covering and the concious parts, especially the spines on the tibia, dry and chippy, and somewhat irritating to the throat. This objection would not apply with the same force to the mature individuals, especially of larger species, where the heads, legs and wings are carefully separated before cooking; and, in fact, some of the mature insects prepared in this way, then boiled and afterwards stewed with a few vegetables and a little butter, pepper, salt, and vinegar, made an excellent *fricassé*.

Education of Farmers' Sons.

EDITOR CANADA FARMER:—Your valuable paper for May, which reached me ten days after date, contains two communications respecting education for farmers' boys, on which I must beg leave to make a few remarks. The first of these is from Reader, which you have already so efficiently answered, that I have only to observe that the best reading book "Reader" can give his son, is the Book of Proverbs, which will not only accustom his son to good sound English, but also store his mind with wise maxims, which may be of use to him in after-life. A system of book-keeping is published under the sanction of the Board of Public Instruction which contains proper forms for Farmers' books, and the best grammar I know of is Cobbett's English grammar. Furnished with these three books, the boy, if he possesses a fair average capacity, will have laid as sure a foundation for his education in two years than he would be likely to acquire in double the time in the Public Schools. If as I infer from his letter, "Reader" resides in the vicinity of Owen Sound, I should advise him to send his son to a private academy which is being very ably conducted by a Mr. Tait, where more attention would be paid to the important subject of morality, than is likely to be the case in the Public Schools, as that is a point on which some of the boys who attend them, to say the least, are somewhat deficient. As regards the well written and sensible communications of "Country Youth," it certainly affords a pretty good indication that his education has not been neglected. His remark that "many farmers' sons miss a great deal, because their fathers think the money spent on a library or papers is little better than thrown away" I can confirm from my own experience. We always find that when parents neglect to provide good books for their children, those children are sure to find bad books for themselves, and this accounts for the extensive circulation which the American dime novels have obtained

amongst us, which have proved such a curse to the country. "Country Youth" enquires what I meant by the term Lady? I meant those young city ladies, who care more for fine dresses, balls and parties, and attending operatic performances, however objectionable they may sometimes be, than for the acquisition of those accomplishments which would enable them to discharge in a satisfactory manner the duties of wives and mothers. If "Country Youth" should chance to be in Toronto one Sunday forenoon at the hour when the sound of the church going bell calls the citizens to leave their respective homes, and proceed to those places of worship "where through the long drawn aisle and fretted vault, the pealing anthem swells the note of praise." When even the washerwoman sails grandly to church, thinking herself finer than somebody else, he will see plenty of the young ladies I allude to, at least if there has been no operatic performance the previous night. I have before stated that there are many ladies, who, although they have been highly educated, are yet capable of discharging their domestic duties in a farmer's house as well as elsewhere, in the parlor as well as in the kitchen. On the other hand, I must admit that there are many farmers' daughters, especially in the vicinity of the towns and cities, who care more for ornamenting the outside than furnishing the inside of their heads, and who will never make good wives, for gentlemen, or farmers either. And as for many of our farmers' boys, they are becoming more inclined to attend those petty races which are so fast extending into our rural districts, where they acquire a taste for gambling, than of sticking to their ploughs and cultivators. "Country Youth" appears to have studied the thirty first chapter of Proverbs, in which the wise King of Israel more than two thousand years ago described the necessary qualities of a good wife, much the same in substance, though more at large than "Country Youth" has done. I hope he will find such a one, and if he does, treat her as such a treasure will deserve to be treated. If our school system is defective in many points, still it is productive of good in training up so many female teachers (I will not affront them by calling them lady teachers), who, when they become wives and mothers, will be qualified to attend to the early education of their children, which should always commence at home.

SARAWAK.

PROFESSOR RILEY, the celebrated American entomologist, at a recent beekeepers' convention at St Louis, stated that bees do not extract honey really-made from flowers, but make it. The nectar lying in flowers, says the Professor, could never be manufactured into honey, no matter how manipulated by the hands and minds of men; but it is taken up by the bees and passed through a state of semi-digestion and excretion, resulting in honey, yet still retaining in part the flavor or perfume of the flowers from which the nectar has been extracted, by which we determine one kind of honey from another. This view has since been corroborated by a chemist and botanist of Louisiana, who has fully described the changes undergone by nectar in its elaboration into honey in the bee's stomach. At the same meeting Prof. Riley intimated, in reply to the query: Do bees injure fruit? that they do, but only in seasons of severe drought, and when urged by necessity. The fact however is no derogation to the usefulness of the insect, for its utility as a pollinizer more than counterbalances all its depredations upon fruit.

By the exercise of most scrupulous cleanliness and the selection of the very best fats, certain English firms are now manufacturing an article of oleomargarine or artificial butter which, under its own proper name, is commanding a higher price in London than the best American or Canadian butter. No attempt is made to disguise the fact that it is oleomargarine pure and simple. It is on the contrary widely advertised as such and placed by dealers in competition with the genuine article, and, we are informed, with the results stated. When American butter was quoted in the London market at 90 to 125 shillings, this abnormal mixture brought from 90 to 130 shillings per cwt., the latter figure being about the highest reached at any time in England for the best quality of Canadian or American butter. From these facts we are led to conclude either that English oleomargarine is exceptionally good, or American butter exceptionally bad. There seems no reasonable grounds of doubt but that, in the hands of scrupu-

lously conscientious men of the most refined sensibilities and cleanly habits, properly selected fats may possibly be distorted into something else that will look and taste like butter. But with such an extensive field for operations, so many different varieties of fat producing animals from the mouse to the elephant, and considering with all the tendency of speculative mental development in this money-making age, the genuine old-fashioned butter is in all cases and at all times to be much preferred. There is little danger of it being ever crowded out of the market by its artificial rival.

Window-Sash Fasteners.

The fastener here illustrated possesses the double quality of preventing the opening of sashes from the outside, and also their rattling by the wind. A spring band or latch A, is screwed at its flattened end to the sash frame. Its middle portion is bent towards the window frame, and its lower end carried outward to serve as a handle. In the middle part is a perforation which locks, by the spring action of the latch, on pins arranged along

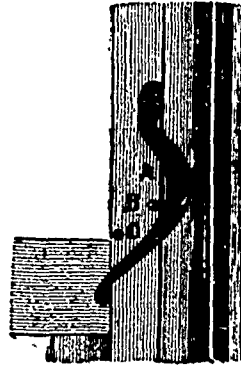


FIG. 1.

the frame, and one of which is shown at B. By releasing the latch, the sash may be raised or lowered; and by catching the former over the pin, it is retained securely in the required position. A stop pin, C, placed on the sash, back of the spring latch, defines the rearward motion of the latter, so that it clears the pin on being released without being thrown back too far and thus impairing the efficiency of its spring.

A still simpler one is shown in Fig. 2. The fastener is made of cast-iron, about three inches long, an inch wide, and three-sixteenth of an inch in thickness, with a slit or opening extending along it diagonally as shown. This is laid on the sash, against the right-hand side of the frame (or the left, if the fastener is inverted) and, while held in

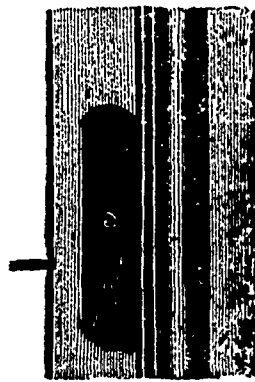


FIG. 2.

this position, a single screw nail is inserted through the slit at its upper end, and fastened securely into the sash, yet not so tightly but that the fastener may play up and down upon it with facility. The contrivance is then complete. When the screw is at the top of the slit, or the fastener as low as it can get, sash and all will slip upwards and downwards readily. If, however, it is desired to retain the sash in any position, the lower end of the fastener is pressed by the thumb or finger against the frame, and the window, but not the fastener, allowed to slip downwards, when the whole will become wedged, as represented in the engraving. The notch at the lower right-hand side is of use when the window is closed for the night, to slip over the head of another screw in the frame, near the bottom, at the same time that the screw represented is at the upper end of the slit. The window is thus secured against any possibility of opening from the outside.

THE OHIO GRANGERS, moved by divers cases of sheep-worrying and other nocturnal depredations by roaming dogs, have brought their influence to bear on the legislature, and the result is a dog law which contains, among others, the following provisions: 1, That dogs are not property in Ohio, but common nuisances, and subject to a tax of five dollars. 2, That it is unlawful for dogs to run at large, and owners "who permit them to go off their premises" be fined five dollars. 3, That anybody be authorized, and constables and marshalls obliged, to "kill any dog found running at large" with a bounty of two dollars on each animal so killed. Upon all which the English *Agricultural Gazette*, after voting the case a pretty hard one for the dogs, remarks: We are afraid only the celebrated "yaller dog," so well known in the States, will be able to stand it. He is ugly, but every one knows he is tough—decidedly tough—and if this be the spirit of American legislation, the existence of an animal which has been a profound mystery to many, may be satisfactorily explained on the now well-worn—not to say worn-out—theory of the "survival of the fittest."

THE UNIVERSALLY RECEIVED impression that all plant food is taken up originally in the fluid state, and afterwards elaborated by natural processes into plant substance, has recently been questioned by Professor P. B. Wilson, of Washington University, Baltimore. He had fertilized some wheat fields with a sort of infusorial earth found near Richmond, Virginia, which, on examination under the microscope, presented a mass of beautifully formed particles or diatoms, that had once, at some remote age, composed the shells of minute marine insects. Subjecting the wheat crop to a similar test, he found these same forms in large quantities in the straw, and hence deduced the theory that minutely pulverized silica is taken up in a free state from the soil by plants, and assimilated without further change. The announcement is certainly startling and will require much more positive evidence than this to satisfy science that it is correct. Some portions of the straw the professor treated with nitric acid and then subjected the remains to the microscope, when he discovered that only particles under a certain degree of fineness were present, and the inference drawn was that the larger ones could not ascend the sap-pores of the plant. Should his theory prove to be correct, it will revolutionize the entire field of agricultural lore, and open many new channels of enquiry and research.

Cold and Sleep.

Cold, writes Dr. Fothergill, is often a cause of insomnia. If insufficiently clad, so that the cutaneous vessels are not relaxed, sleep is rarely sound, when attained at all. It is only when stupefaction from the cold occurs that the dangerous coma-sleep comes on, which is often fatal. With many persons sleep is unfavorable if the bed be not warmed previous to their entering it. In these cases the arteriole contraction induced by the contact with the cold bed-clothes does not pass readily into the opposite of relaxation, and so sleep does not come on. This state of affairs is very commonly met with among the aged, and most so in those who suffer from some form of heart disease. In such cases it is not only desirable to warm the bed and the nightclothes, but even to administer some hot fluid, all the better for containing alcohol, when the patient has got into bed, if any sense of chilliness remains. In the young and healthy the chill of getting into bed, however, is often of great service in inducing a subsequent relaxation of the cutaneous vessels, and thus conducting to more perfect cerebral anæmia and sounder sleep. Few persons will have failed to note the deep and usually refreshing sleep which follows any disturbance during the night which has exposed them briefly to cold. At other times an increase of the body-temperature is the cause of disturbed sleep sometimes amounting to sleeplessness. This is most frequently seen in febrile states, where a delirious condition takes the place of natural sleep. After the temperature has been brought down by the application of cold a fever patient will commonly fall into a refreshing sleep until a return to a fever temperature disturbs it. In slighter conditions of restlessness, associated with too great a body temperature, the dissipation of a certain amount of superfluous heat by getting out of bed and drinking a draught of cold water will usually be followed by sound sleep. At other times, throwing off some of the bed-clothes will achieve the same end; though, if the amount removed be too great, wakefulness may follow from a low temperature being brought about. With some persons, if the rest is disturbed, it is sufficient to protrude an arm or a leg from under the bedclothes so as to secure more loss of heat, and sound sleep will follow.

Properties of Fuel—Wood.

The wood we burn is composed chiefly of three elements, oxygen, hydrogen, and carbon, in various proportions. Of these, oxygen adds nothing whatever to its value as fuel: that depends upon the other elements; hence, the more oxygen, the less there can be of the other substances, and the poorer the wood. Oxygen and hydrogen are both gases. Neither has ever been liquified or solidified. Carbon on the other hand, is a constant solid, and it is this property that makes our fires stationary. When wood is newly cut, it contains from twenty to fifty per cent. of sap or water, the quantity varying with the kind of wood, and with the season of the year. Exposed to air for a year, wood becomes air-dried, and parts with about half its water; fifteen per cent. more may be expelled by artificial heat; but before it loses all its moisture, it begins to decompose or char. The presence of water in fuel therefore diminishes its value as such in two ways; it hinders and delays combustion, and wastes heat by evaporation. If one hundred pounds of wood contain thirty pounds of water, there is left but seventy pounds of combustible material. In the process of burning, one pound will be expended in raising the temperature of the inherent water to the boiling point, and six more in converting it into vapor, making a loss of seven pounds of real fuel, or seven-tenths of the entire combustible force. Besides this dead loss of about ten per cent. of fuel, the water present is an annoyance, by hindering free and rapid combustion. Equal weights of different varieties of wood in similar conditions produce equal quantities of heat, but it will not do to purchase wood by weight, owing to the varying quantities of its moisture. It is usually sold by measure, but even equal bulks will be found to vary in this latter respect, as much as equal weights. A series of careful experiments conducted by Prof. M. Bell, has been tabulated as follows, showing the heating values per cord of several American woods—shell-bark hickory being taken as the standard, and marked 100.—

| | |
|--------------------|-----|
| Shell bark Hickory | 100 |
| Pignut | 95 |
| White Oak | 82 |
| White Ash | 77 |
| Dogwood | 75 |
| Scrub Oak | 73 |
| White Hazel | 72 |
| Apple Tree | 70 |
| Red Oak | 69 |
| White Beech | 65 |
| Black Walnut | 65 |
| Black Birch | 63 |
| Yellow Oak | 60 |
| Hard Maple | 60 |
| White Elm | 58 |
| Red Cedar | 56 |
| Wild Cherry | 55 |
| Yellow Pine | 54 |
| Soft Maple | 52 |
| Chesnut | 52 |
| Yellow Poplar | 52 |
| Batternut | 51 |
| White Birch | 48 |
| White Pine | 43 |

The hardness of wood depends upon the density of its fibres, or rather of their packing. The same species of wood is not always of equal density. Those trees which grow in the forest, or on low wet lands, are not nearly so consolidated as their conferees in the open fields or on barren soils, where growth is slow and retarded.

During the process of combustion, heat is evolved in two ways; first by flame, second by red-hot coals. Soft woods are much more active in the first stage than hard, and hard woods are more active in the second than soft. The soft wood burns rapidly, with a voluminous flame, leaving but little coal; while the hard produces less flame, but yields a larger mass of coal. The cause of this is, partly, the free admission of air through the spongy texture of the soft wood, but it is mainly due to chemical composition. Pure woody fibre (lignin), from whatever source, has the same composition, oxygen 10 parts; hydrogen 10; and carbon 12. — in other words, there is just enough oxygen in it to unite in combustion with the hydrogen and produce water. But in most woods the fibre is impure, especially in the softer kinds. In hard woods, on the other hand, the lignin approaches much nearer the proper chemical combination. In soft woods hydrogen is in excess, hence the vehemence of their combustion at first; more carbon is taken up with the hydrogen, producing flame and smoke, and the coal residue is diminished. It is an error however to suppose that soft wood yields less heat than an equal weight of hard. It burns more quickly, to be sure, but the heat evolved is intense, much more so than that of hard wood in the same time, hence, for rapid and concentrated heat, it is better adapted than the other.

YOUNG.

About Lightning-Rods.

From this time till frost comes, look out for the advent of the lightning-rod man. He will call at the house and enquire for the owner, and is never so happy as when informed that he is absent. This gives him an opportunity to scare the women folks, who are very likely to be "afraid of thunder." He will represent the danger of living in a house that has no lightning-rod attached to be so great that they will not "sleep nights" till one is put up. Having talked for an hour, he will leave a tract, half of which is devoted to statistics of mortality from lightning, and the other half to the advantages of the celebrated patent, spiral, tubular, double-and-twisted thunder-exterminator.

He calls again in a week and expresses his surprise that the house is standing and its occupants are alive. The head of the family is ready for a trade, for he fears that the female member of this household will die of fright if the house is not equipped with a lightning-rod before the next thunder cloud appears. He signs a skilfully-worded contract, by the terms of which he obligates himself to pay so much per foot for a sufficient amount of rod to protect the building he occupies. Of course the lightning-rod man being an expert at the business, is constituted sole judge of what length of rod is necessary. He roughly guesses that about fifty feet will be required.

The next visit is for the purpose of putting up, the celebrated lightning-demonisher and thunder-tamer. A survey of the house is now made for the purpose of seeing how many feet of rod the signer of the contract can be forced to pay for. You may depend on the lightning rod man to figure this very fine. He understands how to bend the rod round the eaves of the house, how to carry it to the extreme corner, and how to attach it to the most distant chimney. He is engaged in selling rods by the yard and he has no notion of disposing of a scant pattern. When measured up with all its crooks and turns it is found to be about three times as long as was originally supposed.

If this was the only swindle connected with the transaction there would be less cause of complaint. But it is not the only one. The rod is generally sold for four or five times as much as it cost. Most of the claims for the efficiency of the rod, the ability of the point or points to attract lightning, and for its peculiar method of attachment to the building are fraudulent. Some smart fellow got a patent on some particular turn or twist in a piece of fragile metal that could not support itself and used it for the purpose of selling an article almost entirely useless.

Every electrician knows that the fewer turns, twists, curves, angles, and joints there are about a lightning-rod the better it is for the purpose for which it was designed. The truth of the matter is there has been no essential improvement on the original lightning-rod as brought out by Dr. Franklin. That was a straight continuous bar of wrought iron secured to a building by attachments of wood or metal. It was a very inexpensive and simple contrivance, but it conducted electricity better than most of the new-fangled humbugs that have taken its place.

The cheapest way to procure a good lightning-rod is to buy a bar of round iron three-fourths of an inch in diameter and of the requisite length to reach ten feet above the highest point of the roof, to extend over the roof on the most direct line to the ground and to continue into the earth till permanent moisture is reached. This can be secured to the chimney, the roof and walls of the building, by means of iron staples. The tip of the rod should be cut in the form of a screw so as to fit into a polished point that can be obtained in almost any hardware shop. Sometimes points may be obtained that will fit over the end of the rod.

Instead of a round iron bar a strip of iron one inch wide and a fourth of an inch thick, may be used, and in some respects it is superior. This strip may be pierced with holes and tacked directly to the building and chimney, or it may be secured by staples, or by pieces of iron bent over it and secured by screws. Whenever kind of conductor is used, it is advisable to paint it of the same color as the house, so it will not act to disfigure it. The paint will protect it against the action of the air and rain, and will not essentially injure its conducting power.

At present, all persons versed in the laws that regulate the passage of electricity look with disfavor on any attempts to insulate a rod by means of pieces of glass. On the other hand they advise connecting the rod directly with the building, and particularly with metal eave-spouts or other metal surfaces about the exterior of the building. The old idea that electricity only passes over the surface of a substance is abandoned. It is now accepted as a fact that electricity in motion pervades the entire substance of the object through which it passes. This dispenses with the argument in regard to tapes and ribbons of metals as conductors of electricity.

The matter that demands most attention in putting up a lightning-rod is the connection it forms with the earth. This is the thing to which lightning-rod men give the least care, as digging in the hard earth is not the kind of occupation they prefer. It suits their purpose better to sink a crowbar into dry sand and to drop the end of the bar into it. The end of the rod should reach permanent moisture, or else it should extend into a pit filled with charcoal, coke, or scrap iron, either of which constitute very excellent conductors of electricity.—Chicago Times.

Good Roofs.

S. E. Todd gave the following information upon this subject at a late meeting of the Farmers' Club of the American Institute. He said: "For several years I have been experimenting with cheap roofing materials. There are about a score of patents for making cheap roofs, the basis of the material being coal tar or pine tar. Hence, if it is desirable to collect the water that falls on roofs into cisterns, the coal tar will taint and color the water to such an extent that it will be unfit for culinary purposes or for live stock to drink. I have tried the asbestos roofing, and can say that if such roofing is put on properly every year, it will prove durable for a lifetime. The same is true of the plastic slate roofing. The numerous failures to make a satisfactory roof with plastic slate and the asbestos material have occurred through the use of unseasoned roof-boards and unsuitable foundation to receive the plastic material. The asbestos roofing consists of cheap and coarse burlaps (very coarse bagging cloth), coated on both sides with a thick coat of coal-tar cement, to both sides of which are pressed firmly roofing-paper, thus making a roll resembling leather. I employed such roofing to cover a lean-to and some bay windows. The roof was perfectly tight until the roof boards began to shrink. In many places the boards shrank to such an extent that the roofing was cracked sufficiently to leak. After the boards had ceased to shrink the leaks were repaired by laying another coat of the roofing on the first coat. But this kind of roofing will require one or two coats of cement every year. About two years ago I covered a new barn in part with the asbestos roofing, and the remainder in the following manner: A roll of burlaps was procured in New York, which cost about 1 1/2 cents per square foot. After the roof-boards had been on a sufficient length of time to shrink all they would, the burlaps were nailed on with carpet-tacks. It would have been a great improvement if we had placed two thicknesses of newspaper beneath the burlaps to catch the tar. After the burlaps were nailed on, a heavy coat of coal-tar was applied. As soon as the tar had become dry, a plastic covering was prepared by mixing fine sand, sifted, with the coal-tar, until the mass was about the consistency of mortar which is employed for plastering walls. A thin coat of this cement was spread evenly over the tarred burlaps. As I made a mistake of purchasing a quality of burlaps that was judged to be sufficiently firm for the purpose, I found it necessary to nail on another covering of the burlaps, which was tarred and then cemented. By this means the roof was rendered tight. By the application of one coat of coal tar annually, I feel confident that this roof will last as long as the boards on the side of the barn. I have used gypsum (land plaster) to mingle with the coal-tar, and have also employed the regular plastic slate-roofing. But experiment has proved that the finest quality of sifted sand, when mingled with coal-tar, will produce a plastic equal to any other material. The cost of good shingles and tin for covering a roof will vary from six to twelve cents per square foot. If one makes a roof of good burlaps of firm quality, or of good gunny cloth (a strong and coarse sacking), and covers it with a coat of coal tar, and then with a coat of tar and fine sand spread on with a plastering trowel, he will have a cheap and durable roof that will cost, in the vicinity of New York, not over two cents per square foot, besides the labor of putting it on, which will not exceed half a cent per foot.

Doing up Fleeces.

The following on doing up fleeces gives the best directions for the work. It is from the Michigan Farmer — The wool buyers prefer to have the fleece loose, light to handle and elastic. In Ohio, the wools of which State are always quoted from two to three cents higher than Michigan wools of the same quality, the fleeces are rolled up, not packed, and tied across twice one way and once the other, and hence are loose, light and elastic. A Jackson buyer, well known, who buys large amounts of wool both in Michigan and Ohio, every year, tells us that he can afford to give two or three cents more per pound for the wools he buys in Ohio than those he purchases in this State, solely because of the difference in the tying up in the two States; as he can get more in the eastern market for wools that are put up in Ohio than he can for the Michigan wools, and when, in fact, the Michigan wools are sometimes the best in quality. The proper way, he says, is to lay the fleece on the table, turn in the head, tail and flanks, and roll it up, commencing at the tail end, tying it with two strings to keep the roll in place, and then with one string across the ends. This is sufficient. A fleece thus tied is light, easily handled and examined, and can be felt all through. It does not need a very thorough examination to determine whether there is anything in it that is not wool."

Fattening by Machinery.

A writer thus describes the artificial fattening machine used by some poultry-breeders in France: "Imagine the top of a round tea-table divided off into sections, with a partition between each section, and a board in front with a half-moon-shaped aperture in it. In each of these sections an unhappy duck or chicken is confined by a chain to each leg, and under each is fitted a tray, which receives all the dirt, and is emptied daily. Through the centre of this structure goes a round post, and there is a series of such tea-table tops to the roof of the building, each with its divisions and its imprisoned fowls. At stated intervals a man comes round with a somewhat complicated machine fitted with a kind of thin gruel, and fitted with a pipe at the end of a long Indian rubber tube. He introduces this pipe down the throat of a duck, presses down a pedal with his foot, and a certain quantity of food is forced through the tube into the creature's craw, a disc above showing exactly what amount he is to use and how much food passes. This process is gone through with each fowl till all are fed, and it is repeated four times a day for ducks and three for chickens. Two weeks will suffice to fatten ducks, and three weeks are necessary for a chicken. Apart from the necessary confinement of the birds, the process does not seem to be at all a cruel one, as the amount of food forced down their throats is not excessive. The ducks which I saw fed did not seem to suffer in the least, and, in fact, when they saw the man approach most of them became clamorous for immediate attention, and plucked at his clothes as he passed, with eager beaks."

LIME TO THE ACRE.—Lime, in itself, is not generally considered a fertilizer or food for plants, while potash is. Carbonate, or quicklime, as it is usually called, when applied to sandy soils, does little more than hasten the decomposition of whatever vegetable matter it contains, rendering every particle useful to the plants growing therein, and, as one of our noted agricultural writers long ago remarked, "the principal functions of lime as a manure appear to regulate the condition of the organic matter in the soil, and to facilitate its healthy decay." Good judgment is required in all cases where lime is applied, else it may do more harm than good; but upon a light, sandy soil, containing a moderate amount of vegetable matter, five bushels of freshly-slaked stone lime would be sufficient, or ten to fifteen of air-slaked or gas lime, evenly distributed over the surface. It is better to apply lime in small quantities and frequently, than in large doses and at long intervals.—*L. World.*

Tanning Skins.

Many persons, says an exchange, are often coming in contact with furs and skins which would become valuable to them if they possessed a knowledge of tanning smaller pelts, while from a lack of this knowledge, there being no ready demand, they are compelled to see them go to loss. Inquiries are not made under the apprehension that the process is too complex and tedious to render it practicable; such is not the case, almost all the small animal skins will tan very readily and with little expense.

To Tan with the Fur on.

Nail the fresh skins tightly and smoothly on a board, keeping the skiny side out. If the skin has become dry before an opportunity is had for stretching it, it may be made pliable by slightly wetting with warm water. After the skin has been securely tacked up, proceed with a blunt knife to scrape away all loose pieces of flesh and fat; then rub in as much chalk as possible, and be not sparing of labour. When the chalk begins to powder and fall off, take the skin down and fill it with finely ground alum, wrap it closely together and keep it in a dry place for two or three days when it may be unfolded, the alum shaken out, and the work of tanning is over.

Another Process

is to carefully avoid getting any dirt or blood on the fur before commencing; stretch tightly, and scrape as before; mix two quarts of milk, a teacup of salt, and half an ounce of vitriol. Warm this mixture to something more than blood-heat, but not scalding, and soak the skin in it for about forty minutes, stirring and squeezing it in the warm liquid, that it may absorb as much of it as possible. Press out the surplus liquid, and let dry for a short time, then commence rubbing the flesh side with all your strength across the smooth edge of a board; continue this until the pelt is entirely dry.

Another Method

is to cover the flesh side of the skin, when first taken from the animal, with powdered alum and salt, in equal quantities, this may remain from one to four days according to the thickness of the hide, and then be washed off with warm soap-suds, partially dried and rumped as the above. In rubbing dry, powdered chalk may be used. Afterwards sprinkle with alum and fold up for a few days, when it will be thoroughly cured and very soft.

Without Hair.

For tanning without the hair, the latter may be removed by lino or lye upon the flesh side, and thoroughly washed

in soap-suds, and afterward soaked in paste made of bran; then rub dry, and cure by hanging in a thick smoke for several days, taking care not to get it too warm. This will give a fine, soft and durable leather.

The main item with all the above receipts, after the chemicals have performed the tanning part, is to render them soft and pliable by long continued stretching over the edge of a smooth board.

A Mosquito Guard.

The *eucalyptus globulus* having drained marshes, destroyed malaria, driven away fevers, overcome the most obstinate epidemics, and grown into good ship-timber in the most incredibly short space of time, and in all sorts of climates from the arctic to the tropics, is not yet inclined to stop in its wonderful career. Having already distanced all competitors in the tree line, its motto is still "excelsior," and there is no telling where it is to stop in its beneficent career in behalf of suffering humanity.

A foreign paper tells us that a "distinguished French philosopher" being worried considerably because his mother-in-law could not sleep for mosquitoes, put some leaves of *eucalyptus globulus* in her bedroom, and lo! she has slept soundly ever since! The mosquitoes had hitherto defeated all attempts to circumvent them, mosquito nets, tents and bars of every description, we suppose included. When we remember the numerous almanac jokes at the expense of the unfortunate mother-in-law, we may be lost in wonder at the unusual care and thoughtfulness of this model son; and we regret that we have not his name to hand down to posterity, so that he may share in the future honours that are to be given, no doubt, to *eucalyptus globulus*. All we can do is to imagine what a picture of terror, rage and disappointment will be depicted on the countenance of the New-Jersey mosquito, when she learns of this new terror to her race, and calmly sits with folded hands, waiting for the next valuable discovery in connection with the wonderful *eucalyptus*, during the intervals when not actually engaged in making plantations of the tree itself.—*G. Telegraph.*

Increasing the Chimney Draught.

It is difficult, says the *Manufacturer*, to give a definite answer to such a question without seeing the locality. We can only give advice based on general principles. To secure a good draught, the chimney must be high, hence the very high chimneys constructed in some localities; the width of the chimney should be proportional to the amount of grate surface; if the latter is increased, as is often the case, a chimney which before was efficient, may become deficient. As, however, it is a serious matter to rebuild a chimney, not only on account of the expense, but also on account of the ruinous interruption to the business, other means may be resorted to, or at least attempted. Among these is the blowing upward of steam in the chimney from a high pressure engine; this is the way in which a sufficient draught is secured in locomotive chimneys. If there is no high-pressure engine, air may be blown upward through a properly-shaped nozzle, but not from a fan-blower—this is too weak and continuous; it is much better to have the intermittent strong blasts of a small piston air-pump, operated by the engine. It may also be well to examine the horizontal flues, and see if there are any obstructions or angles impeding the draught, and remove these as far as possible. Also make a thorough examination for leaks in the flues through which the chimney may draw cold air. This has occasionally been a strong impediment to a good draught, causing much loss before it was discovered. Another point is to see if the horizontal flues are perfectly dry; sometimes water gets in when they are low, and this is a most fatal circumstance—the hot air, in passing over the water, heats and evaporates it, and thereby loses so much of its own heat that it has lost most of its strong ascending power. These are only a few points which at present occur to us, and others may be suggested, but they may be sufficient to put you on the track, and we repeat what we have said above, only a careful study of the locality in all its details and circumstances can give you a complete knowledge of the cause.

Stock Notes.

SAVAGE BULLS.—For the removal of savage bulls, have a girth around behind the shoulders; but in place of the rope being fastened to the ring, fasten it securely to one of the forelegs, just above the foot, then, when the bull attempts to run at the men that are leading him, the man behind pulls the rope, and down comes the bull on his knees. I have seen one of the savagest bulls tamed by bringing him a few times to his knees; and another advantage is, the pressure is not all on the ring.—*London Agricultural Gazette.*

Messrs. A. & A. Stewart, of Lobo, and Col. J. B. Taylor, of London, have lately purchased "6 and 7" Duchess of the Valley, from the herd of the late Mr. Carter, of Connecticut.

Mr. Alfred Simmons has recently received, direct from Canada, two young thoroughbred Cotswold ewes. The fleece on them measures fourteen inches in length.—*P. Home Journal.*

SALE OF A PRINCESS BULL IN AMERICA.—Third Baron of Lyonsdale, a splendid two-year-old Princess bull, has been bought by Col. King, of Minnesota, from Mr. D. B. Haight, at 800 guineas.

GOOD PRICE FOR A COW.—For a handsome four-year-old roan cow of the Moss Rose tribe, Mr. Geo. Fox, after keen competition, paid 295 guineas, at a sale in Lincolnshire, England, last week.

A TOTAL OF 3,050 HORSES were exported from England during the past year, of which 258 were sent to Germany, 652 to Holland, 515 to Belgium, 1,238 to France, and 357 to other countries. The value of horses exported from the United Kingdom in the last eight months was £173,982, against £136,819 in the preceding year. To France, this year horses to the value of £63,401, and in 1874 £43,606, were sent.

SALE OF A BULL.—Mr. Thomas McCrae, Janefield, has sold a yearling Galloway bull to Dr. John R. Wood, near Toy Depot, Albemarle County, Virginia, U. S. The animal is a very fine one, and has taken several prizes at the leading Canadian exhibitions. Mr. McCrae has of late sold quite a quantity of stock for distant parts, which speaks for itself as regards the quality of the stock at the Janefield farm.

PROLIFIC AND CONTINUOUS BREEDERS.—We find going the rounds of our English exchanges a statement that a certain breeder of Short-horns owns three cows whose aggregate ages foot up forty-two years, and are still producing regularly. We know of a herd in Bourbon—the Houstondale—owned by Hall & Taylor, which contains three cows whose aggregate ages are fifty-three years, and two of them have just produced and the third is now due to calve.—*Live Stock Journal.*

IMPORTS OF LIVE STOCK.—The Board of Trade returns for the four months ending the 30th April last, show that there have been imported into Great Britain in that period 40,408 oxen and bulls as compared with 37,731 in the same period last year, 11,522 cows, as against 8,419; 7,561 calves, as against 6,611; 298,716 sheep and lambs, as against 249,667; 7,927 swine as compared with 13,277. Bacon and beef also show a slight increase.

CATTLE IN AUSTRALIA.—Some interesting particulars relative to the influence of Short-horn cattle are supplied by the Australian agricultural returns for 1874, which we find in a colonial journal. The return of cattle showed that there were 2,710,374 head of stock in the country. On 522 holdings the cattle are returned as Short-horn; on 44 as Hereford; on 96 as Short-horn and Hereford; on 38 as Devon; on 402 as cross and mixed breeds.

SCRUBS AND BLOODED STOCK.—G. T. Saum, Kellogg, Iowa, writing to the *National Live-Stock Journal*, says that he sold to the Union Stock Yards, in February last, sixty-four head of cattle. All of them were two-year-olds, and had been stall-fed. A portion were natives, and the remainder half-blood Short-horns. The natives averaged 1,236 lbs. (they were good ones for two-year-olds, evidently), and sold for \$4.65 per 100 lbs., making an average of \$57.47 per head. The half-blood Short-horn grades weighed 1,666 lbs., and brought \$6.50 per 100 lbs., an average of \$108.29 per head. This is a difference in favour of the half-bloods of \$50.82 per head.

SHORT-HORN PURCHASES.—Among the Canadian purchases at the sale of the Dodge, off Waukegan, Short-horn herd in Chicago, last week, are the following: Lady May Third, red and white heifer, 1 year old, by Duke of Airdrie, Colonel O'Mally, Wardsville, Ontario, \$300; Maud Airdrie, red and white heifer, 1 year old, by Nineteenth Duke of Airdrie, Col. O'Mally, \$290; Oxford Lass Seventh, roan heifer, 2 years old, by Duke of Erie, Col. O'Mally, \$400; Frantic Twenty-fifth, roan cow, 3 years old, by Fourth Duke of Oxford, Col. John Hope, Markham, Can., \$200; Oxford Frantic, roan heifer, 15 months old, by First Earl of Oxford, Col. Hope, \$130; Oxford Frantic Third, red and white heifer, 7 months old, by Earl of Oxford, Col. Hope, \$100; Oxford Gwynne, roan cow, 5 years old, by Marmion, Simeon Beatty, Toronto, Ont., \$600.

THE SHORT-HORNS.—Mr. Wm. Curtis, a noted Short-horn breeder of Michigan, says he prefers the Short-horns because there is more profit in them; there is more of them. The calves and stock bring more money; they take on flesh faster. The cows give richer milk and the butter is richer. I know this, for I have tried Short-horns for years. They have no superior for beef. They combine more good qualities than any other breed of cattle. They cannot be improved by crossing with any other breed; but the Short-horn improves everything it touches. It is the best known breed for improving native stock, and for this purpose alone they are invaluable. They are kind and gentle, easily handled, good breeders and good mothers, healthy feeders, and I prefer them to any other breed. But I make no war on any other breed. They all have their good points, but the Short-horns, in my opinion, have the most good points.

DEATH OF 4,000 HEAD OF CATTLE.—It is stated that 4,000 head of cattle have died in Utah last winter on account of deep snows, which prevented their getting to grass.

STOCK SALE.—Mr. John H. Holden, Sidney Grange, has sold Ayrshire bull, General Brock (475) and heifer Cora 3d (602) for \$400 to E. R. Cowdon, Esq., Harbor Creek, Pennsylvania.

SALE OF SHORTHORN BULLS.—R. Gibson, Ilderton, Canada, has sold young shorthorn bulls to the following parties: George Frederick to Frank Shore, Westminster; Frankie's Duke to A. J. C. Shaw, Thamesville; and Prince of Bosanquet to Mr. Pollock.

A COW WITH A WOODEN LEG.—An English country paper records the following fact: A young cow on the farm of Mr. Wilson, in Barrowdale, Cumberland, recently broke her leg. It was amputated, and a wooden leg supplied, and she is now stumping about, doing well.

Among the horses to be taken to the Centennial from the County of Huron, will be four belonging to Mr. J. J. Fisher, of Colborne. "Simon Pure," heavy draught; "Young Peacock," coacher, and two colts. All are really fine animals, and will sustain the reputation that section has gained for fine horses.

AN OLD BROOD MARE.—Mr. A. F. Williamson, Aberdeen, Scotland, has a well-bred mare in her thirty-second year, who foaled a few weeks since a fine colt foal by Rinaldo. She has bred regularly for the last three years, and it is said she still looks wonderfully well, and her owner expects her to breed a few more foals.

THORNTON'S CIRCULAR.—We have just received Thornton's circular, from which we glean the fact that there were 2,315 head of shorthorns sold in 1875, at an average of \$513.50, against 2,161 animals in 1874, averaging \$356.90, showing that shorthorns have advanced in England in the past twelve months, one-third in price. The prices of 1874 were far in advance of any previous year.

ENGLISH SHORTHORN SALES.—From Bell's Weekly Messenger we receive the following result of sales occurring in England the third week of March: One hundred and five head of females were sold at fair prices, 25 at Balnesse, March 23d, selling for about \$13,000; 33 bulls sold at good prices; Royal Windsor, white, calved 1869, withdrawn at reserve bid of \$30,000. These sales showed an increased interest in shorthorns, and short pedigreed animals went at low figures.

IMPORTATION OF SHORT-HORN CATTLE.—Mr. F. W. Stone, of Guelph, has recently received ex Circassian, from Liverpool, the following valuable importation of fashionably bred Bates & Knightley Short-horns, viz:—No. 1.—Lady Adèle—roan, calved Nov. 25th, 1869, sire, 2nd Duke of Collingham (23730), dam, Queen of Tyre by Archduke (17316). No. 2.—Damsel 2nd—roan, calved Feb. 10th, 1874; sire, Baron Knowlmore (33057), dam, Damsel by Oxford Don (20451). The above are bred to 3rd Duke of Hillhurst (30975), which was sold at Lord Dunsmore's sale for 3,000 guineas. They were purchased at the Berkeley Castle sale in April last. No. 3.—Oxford Rose—roan, calved Nov. 21th, 1873; sire, Oxford's Baronet (29199), dam, Grand Duke's Rose by Grand Duke 6th (19876), &c. No. 4.—Telluria 14th—red, calved May 15th, 1875; sire, Baron Wild Eyes (33100), dam, Telluria by Oxford's Baronet, &c. The above were bred by Mr. T. Barber, Sproutley Rise, York-shire. No. 5.—Euphony—roan, calved September 4th, 1873; sire, Knightley Wellington (31533), dam, Gossamer 1st by Cambridge (25705), &c. No. 6.—Athalee—roan, calved September 29th, 1873; sire Knightley Wellington (31533), dam, Gossamer 2nd by Cambridge (25705), &c. No. 7.—Lady Fairbairn 2nd—roan, calved June 17th, 1875; sire Knightley Wellington (31533), dam Melody by Blue Gown (28051).

Shorthorn Sales.

As observed in our last issue three great sales came off in this city on the 14th, 15th and 16th inst. At the first of these, Mr. John Thornton, the great English stock auctioneer took an active part. The others were conducted by Messrs Page and Muir. The animals offered were in fair breeding condition, a few only being in high exhibition order. The following are the details of the first two:

Messrs. Cochrane, Beattie and Hope's Herd.

COWS AND HEIFERS.

Table listing various cows and heifers with their respective owners and prices, including items like Sonata, Oxford Queen, and various other breeds.

Table listing various animals for sale, including cows, heifers, and bulls, with prices ranging from \$110 to \$2,900.

BULLS.

Table listing various bulls for sale, including Lord Hillhurst, Lord Bright Eyes, and others, with prices ranging from \$50 to \$2,200.

SUMMARY.

Summary table showing averages for cows and bulls, with total values for 38 cows and 16 bulls.

The Bow Park Herd.

COWS AND HEIFERS.

Table listing various cows and heifers from The Bow Park Herd, including Imp. Waterloo Cherry Duchess and others, with prices ranging from \$150 to \$610.

BULLS AND BULL CALVES.

Table listing various bulls and bull calves, including Imperial Caesar and Duke of Sharon, with prices ranging from \$100 to \$110.

SUMMARY.

Summary table for The Bow Park Herd, showing averages for 26 cows and 9 bulls.

THE INDIANA SALES.—At these sales on the 7th inst we notice that several purchases were made for Canada. The following prices were realized:—

Capt. Meredith's Herd.

COWS.

Table listing various cows from Capt. Meredith's Herd, including Udora 5th, Welcome 2d, and others, with prices ranging from \$300 to \$1,900.

BULLS.

Table listing various bulls from Capt. Meredith's Herd, including Loudon Duke and Oakland Duke, with prices ranging from \$200 to \$1,025.

Summary table for R. Geo. Dun's Sale, showing averages for 40 females and 12 bulls, with total values of \$17,250.00 and \$3,105.00.

R. Geo. Dun's Sale.

It was after four o'clock when the sale of Mr. Dun's stock commenced and only ten head were sold, as follows:

Table listing various cows from R. Geo. Dun's Sale, including 4th Bell Duchess of Plumwood and others, with prices ranging from \$300 to \$1,250.

SUMMARY.

Summary table for R. Geo. Dun's Sale, showing averages for 10 females and 12 bulls, with total values of \$5,025 and \$3,125.00.

J. R. Shelley's Sale, Illinois.

At this sale the stock was in rather poor condition. The following is the list of animals sold for over \$250.

Table listing various cows from J. R. Shelley's Sale, including Vanda 2d, Flattery 4th, and others, with prices ranging from \$250 to \$700.

The next sale was the joint sale of Samuel Dysart and J. C. Lahman, which occurred on Tuesday, May 23rd, at Franklin Grove, Ill., with a very fair attendance.

Table listing various cows from the joint sale of Samuel Dysart and J. C. Lahman, including Sangamon Belle and others, with prices ranging from \$200 to \$500.

Table listing various bulls from the joint sale of Samuel Dysart and J. C. Lahman, including 5th Duke of Forest Hill and others, with prices ranging from \$200 to \$225.

The next was the sale of Wm Stewart, which took place at Franklin Grove, Ill., on Wednesday, May 24th, with a fair attendance, Col. L. P. Muir, auctioneer.

Table listing various cows from Wm Stewart's sale, including Maselle and others, with prices ranging from \$300 to \$900.

Table listing various bulls from Wm Stewart's sale, including 7th Lady Sale of Brattleboro and others, with prices ranging from \$200 to \$1,500.

| | |
|---------------------------|-----|
| Imp. Lady Gunter | 575 |
| Lady Chesterford 9th | 400 |
| Aldrie's Lady Chesterford | 600 |
| Lady Sharon | 425 |
| Flora's Ross | 325 |
| Oxford Lass 7th | 410 |
| Hope of Atha | 450 |
| Miss Wiley of Glen Flora | 325 |
| Mollie Gwynne | 300 |
| Melody Gwynne | 300 |
| Lady May 3d | 300 |
| Lady May 2nd | 450 |
| Madonna 14th | 300 |

BULLS.
 Prince of Aldrie..... \$250
 And the next and last of the series was the joint sale of
 Hon. Wm Smith and Nelson Jones,
 which occurred on the afternoon of same day, Col. J. W.
 Judy, auctioneer.

| | |
|--|--------|
| CONS. | |
| Dove 10th | \$ 475 |
| Miss Molly Bates 3d | 325 |
| Miss Willy 3d | 325 |
| Sally Grainger | 515 |
| Junia | 175 |
| Oxford Gwynne, Simon Beattie, Toronto, Ont | 600 |
| Oxford Bloom 5th | 375 |
| Carlotta 5th | 100 |
| Meadow Lark 2d | 710 |
| Mollie's 3d Maid of Home Park Place | 375 |
| Dove 7th | 525 |
| Lady Belle 7th | 375 |
| Queen of Home | 375 |
| Meadow Lark 3rd | 410 |
| Maggie 2d | 375 |
| Little Maggie | 410 |
| 2d Red Rose of Woodside (a Young Mary) | 1,000 |
| 2d Lady of Atha | 505 |
| Miss Julia | 315 |
| Senator's Miss Leslie | 400 |
| White Maggie | 450 |
| Jennie Turner 2d | 500 |
| Maria Baron (a Young Mary) | 600 |
| Maggie Hughes | 350 |
| Rosette 3d | 375 |
| Luna Hughes | 300 |
| Meda 14th | 325 |

| | |
|----------------------|---------|
| BULLS. | |
| Baron Bates 14th | \$1,000 |
| 2d Earl of Greenhill | 325 |
| John Wiley | 425 |

SUMMARY OF THE ENTIRE WEEK'S SALES.

| | | | |
|----------------------|----------|-------|--------------|
| 25 Females, average | \$65 26 | Total | \$152,600 00 |
| 81 Bulls, do. | 210 63 | do. | 19,435 00 |
| 373 Animals, average | \$115 56 | Total | \$152,035 00 |

SOME COMPARISONS.—We find by comparison that at the Chicago sales the general average on females was \$50 higher than at the May Chicago series one year ago, and bulls averaged just 5 cents more than last year. At the May series last year it will be remembered that the great heads of Avery & Murphy with 23rd Duke of Ardrie, J. P. Sanborn, L. W. Townie, and J. R. Shelly, were sold, and the above facts are certainly favourable for the continued popularity of Short-horns.

The Dodge Sale.
 At this sale on the 26th ult. at Dexter Park, Chicago, 45 cows and heifers were sold at an average price of \$398.36 each, 8 bulls at an average of \$100.83. The highest figure reached was \$1,800, 2nd \$1,525, 3rd \$1,500.

The Durham Lawn Herd.
 The sale of the Durham Lawn Herd of Short-horns, the property of Col. Robert Holloway, Alexis, Ill., took place at Dexter Park, Chicago, May 25th, attracting, as was anticipated, a very large attendance, and the animated competition of many eager bidders. The following are the details:

| | |
|---|----------|
| COWS AND HEIFERS. | |
| 1st Rose of Sharon, J. Hope, Ontario | \$ 3,200 |
| Rose of Sharon of Durham Lawn | 4,200 |
| Aldrie Bell 2d | 1,000 |
| Imp. Wave Duchess | 700 |
| Imp. Waterloo J. | 2,750 |
| Waterloo J. 1st | 900 |
| Duchess J. J. R. Craig, Burnhamthorpe | 1,250 |
| Countess of Cornwall | 1,525 |
| Princess of Atha | 625 |
| Fair Maid of Atha | 210 |
| Duchess of Atha | 270 |
| Rose of Fairholme 4th | 575 |
| 4th Tuberosa of Brattleboro | 3,025 |
| Harriet Bates 3rd | 330 |
| Harriet Bates 2d | 500 |
| Harriet Bates 4th | 500 |
| Harriet Bates 5th | 425 |
| Harriet Bates 1st | 325 |
| Harriet Bates | 730 |
| Roan Duchess of Durham Lawn | 1,200 |
| Roan Duchess 1st of Durham Lawn | 1,300 |
| Roan Duchess 7th of Auvergne | 17,000 |
| Roan Duchess 7th of Bow Park | 3,250 |
| Roan Duchess 10th of Auvergne | 1,700 |
| Sanspareil 12th, Hon. G. Brown, Toronto Ont. | 1,000 |
| Louisa of Glen Flora | 700 |
| Louisa of Burlington | 630 |
| Camilla Louisa | 510 |
| Kitty Clover 3rd | 800 |
| 11th Bell Duchess of Plumwood | 3,050 |
| Mystery | 300 |
| Mystery 1st | 500 |
| Miss Ramsden 4th | 500 |
| Miss Ramsden 8th | 600 |
| Imp. Miss Ramsden 4th | 710 |
| Louisa Duchess 15th | 3,925 |
| Rose Taylor 3rd | 300 |
| Duchess of Illustrious | 300 |
| Duchess of Goodness of Durham Lawn, Hon. G. Brown | 800 |
| Lady Goodness 8th | 1,250 |
| Lizzie Buckner 3rd | 400 |
| Lizzie Buckner 4th | 300 |
| Bright Eyes 8th | 1,500 |
| Bright Eyes 7th | 850 |

| | |
|----------------------|-------|
| Phyllis Goodness | 450 |
| Boston Beauty 2d | 600 |
| Alice Turley 2nd | 400 |
| Oxford Butterfly 4th | 700 |
| Portonia 1st | 140 |
| Imp. Golden Drop 2nd | 1,800 |
| Pineapple 2nd | 600 |

BULLS.
 Imp Oxford Bean 2nd..... \$ 3,500
 Duke of Tuberosa..... 1,060
 Grand Aldrie..... 1,425
 Imp Ranger Prince..... 975
 Golden King..... 600
 From which figures we compute the following summary:
 51 cows and heifers, average \$1,103.02 Total \$56,300
 11 bulls and b. calves, do \$11.09 do 8,075
 62 head, average \$1,032.50 Total \$65,275

THE SHORT-HORN HERDS OF Wm. Pritchett and H. C. Wright, or selections from them, were sold at auction at Louisiana, Mo., a week or two ago. Mr. Pritchett sold 16 females at an average of \$379.37, and 4 bulls, averaging \$122.50—the aggregate of his sale being \$6,560. Mr. Wright sold 22 females at an average of \$165.22, and 7 bulls averaging \$110—his aggregate being \$4,105. The highest prices of the day were \$975 for cow Carnation, and from \$610 down to \$450, for six others, all the property of the former gentleman.

AUSTRALIA.—The private herd book of Messrs. Robertson Brothers, Colac, Australia, gives the following analysis of their recent sales: 7 1st stud bulls averaged £708 15s 0d; 10 2nd stud bulls averaged £133 7s 0d; 14 stud Short-horn heifers, £667 17s 6d; 34 Short-horn bulls, £49 13s 0d; 19 Short-horn heifers, £76 10s 0d; 45 Short-horn cows, £79 9s 0d. Messrs. Richard Gibson & Company, the sale agents, remark, "Four stud bulls by Duke of Brunswick averaged £590 12s 6d, two by Earl of Geneva, £853 2s 6d, one by Oxford Cherry Duke (32016), £892 10s, whilst five stud heifers by Duke of Brunswick averaged £1218, being, we believe, a higher average than has ever been obtained in the world for heifers by any sire. Of the female tribes, two animals from the Letitia family averaged £630, five from Lady Rockingham £630, six from Fanny £788 7s 9d, two Matildas £918 15s, two Roan Sumner tons £831 17s 6d, and four from different dams £367 10s." In this analysis, both sexes are included.

English Sales.

Mr. Lynn's.
 At this sale, conducted by Mr. Thornton on the 10th ult., the following prices were realized. Alexandra, 135 guineas; Elvira 8th, 110 guineas; Farewell, 200 guineas; Queen of the Roses, 110 guineas; Rosy Princess 3rd, belonging to Mr. Snoddin, sold at the same time for 295 guineas.

Leconfield.
 The highest figure reached at this sale, conducted by Mr. Thornton, was £210 for Danthorp Lady 14th; the next £141. 15s. for a roan cow.

Sproatley Rise England.

The highest price of the day was made by Bright Eyes 9th, which was bought by Lord Bective at 300 guineas to join the Underley herd. The two female specimens of the Wild Eyes averaged 282½ guineas, Mr. R. Blezard purchasing the other one, Bright Eyes 4th, for 265 guineas. In the catalogue there were originally four of the Wild Eyes tribe entered for sale, but Lady Wild Eyes 3rd had died since it was issued. The females of the Duchess Nancy tribe also made good prices, the five going for an aggregate of 1,055 guineas. Mr. Seratton purchased no less than three out of the six. The two Tellurias made 175 guineas between them, and the two Waterloo heifers 365 guineas. Two animals were purchased by Mr. Stone for exportation to Canada. The total amount realized by the sale was £3,390. 9s. The females averaged £102. 12s., and the bulls £49. 9s.

Mr. Salt's Sale.
 The highest figures reached at this sale were Duchess Gwynne, 265 guineas; Flavia Gwynne, 225 guineas; Flossy Gwynne 2nd, 278 guineas; Geneva's Minstrel, 500 guineas; Princess Gwynne, 505 guineas; Flossy Gwynne, 100 guineas; Blanche 4th and Dolly Gwynne 3rd, each 130 guineas.

Mr. Lister's Sale.
 Royal Charmer 3rd, 120 guineas; Cactus 2nd, 130 guineas; Fantal Duchess 2nd, 250 guineas; Lord Oxford 7th, 300 guineas.

Stoke Park Sale.
 At this sale on the 15th ult., 3rd Duke of Gloster went for 1,250 guineas; Griselda, 275 guineas; purchased for the Bow Park herd, Canada; Princess Gwynne, 410 guineas; Winsome Duchess, 700 guineas.

Correspondence.

PULLING OR CUTTING PEAS.—Reader, Uxbridge.—If it is your intention to feed peas and vines together, pulling is preferable to mowing. Cattle appear to relish the root, and it is said to be more nutritious than the top.

BLACK FLY ON RADISHES.—Subscriber, Clinton.—Hellebore will effectually destroy them, but there is another non-poisonous mixture specially prepared for the purpose, and for sale by most druggists.

MILKMAID asks: "Can any of your numerous readers inform me if there are any milking machines they can recommend; where they are to be had; price, and any other particulars?" Who can answer?

FAIRFIELD FARM.—Timothy hay is almost universally considered preferable to clover for horses, because of the tendency of the latter to break and become musty and dusty—hence the higher market value of timothy. Clover is best for the soil.

THE PROPER QUANTITY OF PLASTER.—Reader, Galt.—If 50 lbs. of plaster, applied to an acre, produce certain results, it does not follow that these results will be quadrupled by applying four times the quantity. From 200 to 300 pounds per acre is an ample supply for most purposes.

KEEPING TREES PERPENDICULAR.—A. A., Norwich.—President Quinby, of the New York Farmers' Club, records his experience thus: He first set the trees in perpendicular position, so as to keep them in straight rows. After they were set, he went over the grounds and leaned them toward the south-west, the direction from which come the prevailing winds, pressing the earth around them to keep them in position. In the course of the year they had straightened up, and he went over again and swayed them to the south-west again. By repeating the operation three or four years, they became established in a perpendicular position. Other trees, not so managed, lean towards the east.

Patrons of Husbandry.

The following new granges have been constituted since our last issue:
 500 STUMMONS.—Elijah L. Shaw, Master, Middle Simmonds, N.B.; Alfred B. Shaw Secretary, Middle Simmonds, N.B.
 501 SHENANGO.—W. S. Strachan, Master, Cummock; Geo. A. Anderson, Secretary, Cummock.
 502 ROCKWOOD.—David Shultis, Master, Rockwood; John McNabb, Secretary, Rockwood.
 503 DENNASON.—H. P. Baker, Master, Dunganon; Jacob Crozier, Secretary, Dunganon.
 504 GOLDSB. RIVER.—David Ralossan, Master, Hamilton; James R. Cook, Secretary, Hamilton.
 505 BURNHAM.—Lewis Kenny, Master, Drumbo; Thos. Passmore, Secretary, Drumbo.
 506 ROYAL OAK.—Wm. Ford, Master, Comber; R. E. Dolson, Secretary, Tundell.
 507 LEMWOOD.—Walter Laidlaw, Master, Elmwood; John Dirstein, Secretary, Elmwood.
 508 DUKE OF YORK.—Samuel Graham, Master, Wheatly; Wm. Rice, Secretary, Wheatly.
 509 CAVERHILL.—John Caverhill, Master, Upper Caverhill, N.B.; Geo. K. Steep, Secretary, Upper Caverhill, N.B.
 510 BEAR SPRING.—Peter O'Sullivan, Master, Seaforth, Ont.; Michael McCann, Secretary, Seaforth, Ont.

Division Grange.

29. WATERLOO DIVISION.—James Wilson, Master, Galt; A. J. Goodall, Secretary, Galt.

Miscellaneous.

TO RENDER WOOD INCOMBUSTIBLE.—Wash with a solution of chloride of calcium and sulphate of iron.

LEMON JUICE PRESSED into a snakebite wound is said to be an antidote for the poison. Eating a lemon is also recommended.

A HARRISBURG MAN who boasted he'd never seen the horse that could throw him, was lauded in a druggist's show window about five minutes afterward, amid a chorus of "There's aight in the window for you."

A VALUABLE CEMENT for many purposes is obtained by mixing ground litharge with glycerine into a dough. This cement will resist acids, hydrocarbons, and a considerable degree of heat; and it will set under water. J. F. W.

A CEMENT that resists the action of fire and water:—Take ½ pint of milk, mix with it an equal quantity of vinegar, so as to coagulate the milk; separate the curds from the whey, and mix the latter with the whites of 4 or 5 eggs well beaten up. The mixture of these two being complete, add to them quick lime, which has been passed through a sieve; make the whole into a thick paste, to the consistence of putty when used. This cement has been used to close the fissure of an iron cauldron for the boiling of pitch, and which has been in use for five years, without requiring further repairs. J. F. W.

FERTILIZERS—In Georgia the merchants are selling "fertilizers" to the planters to be paid for out of the next cotton crop at the rate of 15 cents a pound for cotton—the price of the staple in Liverpool now being only about 13 cents. Somebody must make by this sort of operation, of course; but who does make, the planter or the dealer? Probably the make is in the making of the fertilizers, a manufacture only too full of ways that are dark and tricks that are vain.—*Grocer.*

ATMOSPHERIC PRESSURE.—Pressure of the atmosphere is now applied to the raising of coal in the Creuzot district in France. The air is exhausted from a hollow tube running along the shaft from the bottom to the top of the colliery. At the foot of this tube is a piston fitted to it, and supporting a cage into which the coal to be raised is put. When the cage is full the air from the mine is allowed to press upon the piston underneath, and there being a vacuum above the piston and the cage, the load is borne upward to the surface. Not only is the coal raised in this way, but the ventilation of the mine is vastly improved, for the contaminated air of the colliery flows up through the tube, bearing the loaded cage above it, while its place is supplied by an overflow of fresh air from the surface.

A NUT FOR DR. DARWIN.—Under this title the *Peterhead Sentinel* writes:—"There may be seen in the possession of Mr. A. Macpherson, naturalist, &c., Bankhead, a *rana* acis or egg prodigy. This curiosity was dropped by an ordinary barn-door chickie, the property of Mr. J. Gill, Woodend. The nondescript is two eggs, i.e., an ordinary sized egg with another complete egg inside. Egg No. 1, or outer egg, was hatched and *toppled* in usual manner for breakfast; but lo! when the spoon and magic pinch of salt was introduced, it turned up egg No. 2, which had found a comfortable nest at the side of the yolk of No. 1. Upon examination, No. 2 is in size and shape like the egg of the swallow, the shell quite hard and properly formed. We believe this is the only instance on record of a complete egg within an egg.

NEW METHOD OF CLEANING WOOL.—*Les Mondes* describes M. Pauline's new method of cleaning wool for which such important advantages are claimed. According to this, a current of air of thirty to forty degrees temperature is passed through the raw wool, followed by a current of hydrochloric acid gas, previously dried and cooled. In this way the wool is not affected, but any vegetable substances adhering to it are speedily and entirely decomposed. After this has been effected, a current of air is passed through to dispel the hydrochloric acid gas, and the temperature is gradually raised to one hundred and thirty degrees, to complete the destruction of the various vegetable matters. This being done, a current of air charged with ammonia vapor is then passed through, in order to get rid completely of any remaining traces of hydrochloric acid, and the operation is accomplished.

A BABOON MOTHER.—Mr. Hazely in his African lectures vouches for the following: A woman belonging to a settlement of about 150 souls went one day to gather some wood and left her child on the ground to take care of itself. While the mother was gone a female baboon appeared on the scene, and spying the child approached, and began to fondle it. The child was allowed to partake of the baboon's milk, which deprived it of any appetite for its mother's. When the mother returned she noticed that the child was carefully covered over with leaves and had lost its hunger. This was done for several days before the mother ascertained who performed the unthankful act. When the mother did find out the doer she induced the man of her tribe to lie in wait for the baboon the next day. The animal noticed the men raise their weapons to fire and began to wave her hand, or paw, as if asking them not to kill her, and at the same time pointed to a young one at her breast. But the natives killed her. No sooner had they done so, however, than the male baboon put in his appearance, and, by a loud shout, summoned others of his tribe to the spot. Then in a body the animals attacked the natives and forced them to flee to their huts for safety. One of the baboons tracked them to their settlement and the next day they were visited by about 500 baboons, who assaulted them with coconuts and compelled them to run away from their homes. The animals kept a watch over the huts for several days and prevented the natives from returning to their dwellings.

The *Pinecastle Herald* has been informed that a piece of iron, hung in fruit trees, will effectually prevent the ravages of frost. A piece of horseshoe was hung in a cherry tree in an orchard, and the yield was abundant, while in three adjacent trees the fruit was entirely killed. "This is important, if true, and will cost but little to test the truth of it," says the sage editor of another journal. Certainly very important, if true. Not being true, it is very important such ridiculous notions should be "scotched" if not killed. A reaping hook stuck on a pole, it is said, in some districts effectually warns off all the hawk tribe from the vicinity of the poultry yard. Horse hair turns into eels in the water. Swallows and cuckoos, during winter, hang by their bills in a dormant state in rocky caverns. Vipers swallow their young at the approach of danger. And among other popular fallacies, there is a man in the moon doing penial servitude for life, for gathering sticks of a Sunday. As he appears to be stationary to child eyes, he is not supposed to be the "Wandering Jew." The *Pinecastle Herald* appears to be very ill-formed indeed.—*Eng. Farmer.*

It is an interesting fact that our word daughter, when traced back, through the Greek *thugater* to its source in the Sanscrit *duhitri*, is found to be equivalent to milkmaid, showing that it was the duty of the Indian maidens to milk the cows. It was no doubt considered a highly honorable office, since the cow, the most valuable animal to a pastoral people, soon came to be endowed with supernatural attributes.

A NEW PROPERTY OF MILK.—A correspondent of an English daily paper, says: "There is one circumstance respecting the peculiar properties of milk which I have not seen alluded to in the newspaper articles on the subject, but which seems an additional proof of its power of attracting and absorbing impure matter. I allude to the practice of placing a saucer of new milk in a larder, in order to preserve meat or game from approaching taint. It is said that not only does it answer that purpose, but that the milk after a few hours becomes so bad that no animal will touch it."

A PLAGUE OF MICE.—The English *Agricultural Gazette* draws attention to an extraordinary plague of mice which has now prevailed for months in Teviotdale and Eskdale, and which is believed to be owing to the reckless destruction of hawks and other birds of prey by gamekeepers and others, thus disturbing the "balance of nature," and causing such an increase of the vermin that "the consequences to the farmers are likely to be very serious." The Duke of Buccleuch has now given orders that hawks and other predatory birds are to be preserved, but it will be some time before the mischief can be undone. The lesson may bear a far wider application than this particular case.

THE FARMS IN ENGLAND.—Reference to the big farm in Illinois—40,000 acres, 18 corn, 5 oats and flax, and the rest in grass—has recalled a notice of the *London Spectator*, from the *Domesday Book* of Scotland, which has a list of those landlords who each own more than 20,000 acres of land in that country. The result is that one man alone, in his own and his wife's right, holds more than a fifteenth of the entire area of the Kingdom, and twelve men own nearly a third; a proportion probably exceeding anything in Western Europe. No less than 106 hold more than 50,000 each. The 11 who own the largest amounts of land are: The Duke of Sutherland, 1,176,343 acres; Duchess of Sutherland, 149,879 acres; Sir J. Matheson, 106,070 acres; Mr. A. Matheson, 220,432 acres; Duke of Buccleuch, 432,153 acres; Earl of Seafield, 306,000 acres; Mr. Evan Baillie, 306,000 acres; Earl of Stair, 270,000 acres; Duke of Athol, 131,000 acres; Sir K. M. Kenzie, of Gairloch, 164,680 acres; Macleod, of Macleod, 141,700 acres. The old idea that the Duke of Sutherland owns an entire county is not true, but the Duke, with his wife, the Countess of Cromartie, owns more than the entire surface of any county in England, except Yorkshire and Lincolnshire.

LANGUAGE OF ANIMALS.—The acuteness of the sheep's ear, it is said, surpasses all things in nature that I know of. The ewe will distinguish her own lamb's bleat among a thousand, all bleating at the same time, and making a noise a thousand times louder than the singing of psalms at a Cameronian sacrament in the fields, where thousands are congregated—and that is no joke either. Besides, the distinguishment of voice is perfectly reciprocal between the ewe and lamb, who, amid the deafening sound, run to meet one another. There are few things which have ever amused me more than a sheep shearing and then the sport continues the whole day. We put the flock into the fold, set out all the lambs to the hill, and then send the ewe to them as they are shorn. The moment that a lamb hears its dam's voice, it rushes from the crowd to meet her, but instead of finding the rough, well clad, comfortable mamma which it left an hour or few hours ago, it meets a poor, naked, shrivelling—a most deplorable looking creature. It wheels about, and uttering a loud, tremulous bleat of perfect despair, flies from the frightful vision. The mother's voice arrests his flight—it returns—flies, and returns again generally for ten or a dozen times, before the reconciliation is made up.—*James Hogg.*

Catalogues, &c. Received.

THE "POULTRY YARD AND MARKET."—This is a valuable little work of eighty pages, issued by the Orange Judd Co. It professes to treat the whole poultry question from a commercial standpoint.

We have received the monthly reports for March and April of the United States Agricultural Department.

ATTENTION has been called to the fact that inasmuch as salts of Hypophosphites are more readily absorbed by the system, they are better indicated as auxiliaries with which to improve the blood, and generally to cure wasting diseases, than all other preparations from Phosphorus.

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