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THE CANADA FARMER.

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Agriculture.

Salting Soaked Hay.

An ardent disciple of Mr. Mechi the great English agriculturist, narrates a somewhat novel recent experience with soaked hay, an experience which, if true and correctly reported, must prove of importance to farmers generally on both sides of the Atlantic. His theory, briefly stated, is that hay which has become soaked in curing, in other words practically destroyed, may be made available for food the following year by thoroughly salting at the time of curing, doing it up in ricks, and letting it stand over. The writer says:—We treated a second crop of clover thus three years since. It was lovely to look at as it grew, it was abundant, and cut in the fairest weather; but of course August is never responsible for its temper, and so before we could carry it in we got it well soaked, and that, unhappily, at the most destructive period—that is, when it was fully half dried, and lost, consequently, sugar with every wash.

Well, there was nothing for it but to put it together under all chances in a rick. Nice, black, foggy stuff it was, too The very hinds held their master in contempt. The bailiff was beside himself with disgust. Still, as our rule is, we persevered; we were obstinate. Well, the winter came, and I tried it before a few things. They would not even pick it over. "Might do for young Irish things that don't know any better, brought up on bog juice and rushes," an inspecting friend observes. We are obstinate, we observed, and so we merely gave orders that the food be changed, and the convict rick be left alone. After a while, one bright morning, we found a cowman littering a yard with our experiment, and sneezing vigorously as the dust flew up his nose. Whose order was this? Oh, between them they had thought it was of no good for anything, and so, although there was plenty of legitimate straw about, they must needs go and interfere with my pet stuff. It is just one of those stupidly superfluous performances which rustics, the best of them, are given to. It fired my wrath at once, and I astonished their weak nerves; and had the satisfaction of finding, 12 months after, this black sodden stackling (it was not a large one) intact, with only wanting to be thatched anew.

This season we were short of hay, and out of the purest obstinacy, I obliged the shepherd to carry up with me, or it would not have probably been properly done, an armful of this frightful fodder. The sheep were upon swedes. The flock rushed up at once on our arrival, and to my delight no less than their attendant's astonishment, they pitched into the racks at once, and never left them until they had consumed every scrap, picking even the bones. I did nothing more than to give the order to bring them more. The result was that the hateful stack was clean eaten up; that it lasted some six weeks, that the sheep throve on it, and the shepherd confessed his sorrow when it came to an end.

Moral of all this.—When you have been obliged to salt an inferior lot of hay, give it time to be thoroughly impregnated with the flavoring. Salt keeps working on in the dark for ages. A wooden floor on which it has been once laid will keep weeping for years. And it so too keeps on extending its influence in the stack. Anyhow the first year nothing would touch it. The mildew was too strong. The second year the flock greedily devoured it. Pe it remembered that it had not been allowed to grow coarse and fibrous. It was cut in its succulent bloom, only the weather had washed it at its worst stage.

Has this experiment ever been tried in Canada, and with what results? If not, will some of our readers test it next season—they will have ample opportunities, or the season will be a very exceptional one—and acquaint us with their success?

Protecting Drains.

At the outlets of all tile drains it has been my practice to use two or three joints of terra cotta pipe in order to prevent the water from finding its way out below, as it usually does when the tiles are continued clear to the outlet. I have always found them to answer the purpose very well, but I have recently received a lesson as to the proper protection of these outlets which may benefit some of your readers and lead them to adopt the proper precaution, at a less cost for the experience than in my own case.

At the intersection of all lateral, or side drains, with the main drain, I always build a brick trap or box which not only shows (when opened) the condition of each of the three drains which open into it, but also serves effectually to stop any sediment or small obstruction which may pass down This "trap" requires for its construction from eight to twelve bricks and is an excellent investment, and I would advise its use in all drains. A damp spot on the line of the main drain led to the inspection of the nearest "trap," where it was found that some obstruction below prevented the escape of the water brought in by the two side drains, of two-inch tile; and, as the leading or main drain was of three-inch tile, it was evident that the obstruction was of more than ordinary consequence. By digging trial holes along the line of the drain the point of obstruction was soon found, and in removing the tile the whole shell of a common water turtle was found. It was evident that he had entered the drain at its outlet, and passing up had become wedged between the sides of the tile and, unable to go forward or backward, had died there. A sudden flush of water, caused by a rain, lifted the front of the shell and closed the drain by as nicely fitting a valve as could have been placed there by a skilful machinist We now run three iron rods across the terra cotta opening, but find it difficult to make the holes to secure them. Can any of your readers give me the best plan either of making round holes, or of protecting terra cotta outlets in some better manner?

Another long line of three-inch tile being opened at its lowest "trap," in order to form a connection with a newly dug drain of two-inch tile, showed that while the main drain could carry the water brought in by the small tiles, yet it could not carry the added stream, and farther that our usual plan of "flushing" the drain by collecting the water and allowing it to pass down in a body, was ineffectual.

By examining the drain, as in the former case, we soon located the trouble, and I found that a vigorous plant, known to us as Iron weed, and to the botanist as *Veronica nova-eboracensis*, growing in the loose soil of the two-year-old drain had sent its roots down twenty-five inches to the tile, thence down more than ten feet with the current and up the drain for a distance of six tiles, and also into and down from each joint. A single root entered the joint and expanding into hundreds of minute hair-like divisions soon partially filled the three-inch tile. When removed, some of the pieces were three feet long, and one, now dried and on my desk, is two inches wide by one inch thick. These acted as so many strainers, and collecting the sediment which came in from the new drain, soon filled the tile.

Of this plant Dr. Michener in his Manual of Weeds says, it is "a worthless and troublesome weed in moist bottom lands Being a rank perennial, the proper means is to destroy the root either by ploughing or grubbing. The grubber is much the most effective weapon." By the liberal use of the scythe and hoe we hope to prevent a repetition of this trouble. With these two exceptions our drains work finely, and we now have a good crop of corn (the best in the field) on land which never was ploughed before, and which two years ago was too wet to take a team on. One rotation of corn, oats and wheat will usually pay all expenses, beside the abatement of a nuisance and eyesore which has existed ever since the land was first farmed.—*Country Gentleman.*

Sowing Clover on Sod.

Throughout the West red clover is regarded as a very uncertain crop. But our summers and winters are unfavourable to its growth and preservation. Unless it is well established in a soil quite retentive of moisture, there is great danger of its being destroyed by the protracted droughts that are liable to occur during July and August. The lack of snow for a winter covering is also very unfavourable. The crown of the roots is directly exposed to the action of the frost which often kills it to a point below where it sends up branches. The alternate freezing and thawing of the ground during the spring brings the roots to the surface where they are washed by the rain, dried up by the sun and wind, and chilled by the frost. Under such a combination of very unfavourable circumstances, it is not at all wonderful that the raising of clover is very hazardous.

Fortunately our soil is excellent for the production of clover. It requires no manure but a sprinkling of plaster to produce a crop. Western clover-seed ranks high in home and foreign markets on account of its fullness and the freedom from the seed of weeds, especially Canada thistles Clover seed has been very high for a series of years, and it promises to remain high in this and in foreign countries. Clover is of the first importance for keeping up the fertility of the soil and for preparing land for a crop of wheat. It is also very useful for dairy cows, not only in its green state, but in the form of hay. An acre of clover will make more milk than an acre of any of the cultivated or wild grasses. In hay pasturage there is nothing that will compare with red clover.

Given a good soil but a very unfavourable climate the question rises, how can we successfully raise clover? The ordinary method has been to sow it with grain after the land has been for one or more years in corn or other cultivated crops. The soil having been ploughed and cultivated for a series of years is, as a matter of course quite loose, and in the best condition to throw out the roots of the clover and leave them to be killed by the causes we have enumerated above. Of late it has been discovered that this was the wrong way to raise clover for most purposes, especially for pasturage. Experiments have shown that the evils we have spoken of may be prevented by sowing clover-seed on a well established sod. The plan is to scratch the ground with a harrow early in the spring, to sow the seed, and when the plants are an inch or two high, to apply plaster as a dressing. The sod prevents the roots of the clover from being thrown out of the ground by the frost, while the leaves of the grass afford a very good protection during the winter. As the roots of the clover die, they enrich the soil and stimulate the growth of the grasses. By means similar to the above, we have had clover growing for a number of years on a piece of prairie that was never ploughed.—*Chicago Times.*

Clawson Wheat.

A vigorous discussion about this variety among our cousins over the line has called forth the following remarks from Hon. George Geddes, of Fairmount, N.Y., whose high authority had largely tended to introduce it into various States of the Union. They will be read with interest by many of our Ontario farmers. Mr. Geddes writes thus to the *Michigan Farmer*.—"We can raise, under ordinary circumstances, from twenty-five to fifty, and sometimes one hundred per cent. more bushels to the acre than we can of any other variety. It will stand harder winters, harder freezing and thawing weather in early spring, and will resist insects and rust better, judging by all the years it has been raised here, than any other kind of wheat, and when threshed and cleaned it is as handsome a sample of white wheat as I ever saw, and I have seen wheat in Michigan.

We eat of this wheat, unmixed with any other, and pride ourselves on our good bread Sometimes the same grist-mill grinds and bolts it better than at other times, but when we have had occasion to find fault, the miller has never once charged it upon our wheat. This is the experience of our neighbours who raise their own wheat.

The merchant millers here, that they may have uniformity in their brands of flour, mix several kinds, such as they buy from time to time. A little Diehl is still raised here, so is a little Wicks, and some Treadwell, and much Clawson. Our merchant millers mix these, and put with them quite often some spring wheat. One miller of much experience told me to-day: "Five or six kinds are ground together, just as we can buy it."

While it is true that in the Syracuse market Clawson, Diehl, Treadwell and Wicks are quoted at the same price, and the same price is usually paid for each of these varieties, it is my opinion, from extensive enquiries made of the merchant millers, that a cargo of first quality Diehl wheat would for some special purpose sell there for from 3 to 5 cents per bushel more than first quality of Clawson, and I incline to the opinion that Clawson is not so hard in the berry, and quite likely requires more skill and judgment on the part of the miller than some varieties having a harder berry.

Now the Board of Trade may, as asked by the paper you sent me, "squelch" this wheat at Detroit; but while it continues to be what it is now, the Onondaga wheat growers will not only grow this wheat, but sell it at full

market quotations for the best wheat that is bought and sold here. It may be that Michigan cannot raise as good wheat of this kind as we do. That point I cannot determine. Dr J. H. Jerome, of Saginaw City, may have some raised from Michigan-produced seed, he having raised this kind of wheat for two years.

I will only add that quite likely there will be sown ten bushels of Clawson wheat in this vicinity to one bushel of all other varieties this fall, and I think, Mr. Editor, that after you have read this paper you will think that I was doing no wrong in speaking well of this Clawson wheat when it first appeared.

Can its original good qualities be kept up, or must it deteriorate, as have many other good varieties? Some of the farmers here are using mills for cleaning the seed that grades it so that only the largest and perfect kernels are sown. We hope by this grading to prevent this falling off in good qualities.

Dr. Jerome also writes to a subsequent number of the same paper that he has been very successful with the Clawson. He says:

I did not measure the ground accurately, but sowed, as near as I can judge, the same breadth of the previous year of the Treadwell. The bulk of straw at the harvest did not vary to exceed one load, being packed in the same bay each year. Of the Treadwell I threshed 250 bushels, and from the same bulk of straw, as above, from the Clawson, 318 bushels. My estimate of the ground sown each year was eleven acres. The berry was very fine, and at the State Fair contrasted favourably with the best quality of Michigan white wheat, as many of your readers who visited the fair will doubtless remember. We have used the flour during the year with entire satisfaction, and, as my wife says, without having once failed of good bread.

Stooking or Topping Corn.

The Massachusetts Agricultural Report gives the following experiments in stooking and topping corn:

Stooking Best

Take three equal rows in the same field, topping two and leaving one untopped, the result was

Produce of untopped row, 9¾ bushels corn in ear, produce of topped and stripped row, 7¾ bushels corn in ear In favour of stooking, 2 bushels. Forty-six hills in which the stalks had not been cut gave 42 pounds 8 ounces dry shelled corn; 46 hills in which the stalks had been cut gave 33 pounds 7 ounces dry shelled corn, or equivalent to 60 and 47 bushels per acre respectively—a gain of 13 bushels in favour of stooking.

Topping Best

Each of the three lots contained four rows of twenty-four hills each, in all ninety six hills Lot No 1 was cut at the ground and stooked September 24 Lot No 2 had the top stalks cut in the usual way September 24 Lot No. 3 was left standing whole until October 29, when the lots were harvested and husked The ears were then spread about six inches deep and remained until December 20. At this date the whole was shelled, and the result was as below:

	Lot 1 lbs	*Lot 2.* lbs	*Lot 3* lbs.
October 29th—Ears ..	143	155½	154
December 20—Shelled corn	111	131	109
December 20—Cobs	16	18	17½
December 20—Shrinkage...	16	6½	11½
December 20—Shrinkage per cent. of ..	12 ..	4	8

Another result is also given

100 hills.	*Cut up whole and stooked,* lbs	*Top stalks cut,* lbs	*Left standing whole,* lbs
Ears	189	200	196
Shelled corn	139	155	141
Cobs	24	26	23
Shrinkage per cent	14	9½	16

Commenting on these experiments, the *Scientific Farmer* says:

Let us assume about 3,600 hills to the acre and an average yield of 50 bushels per acre. We then have for our first series an average gain in favour of stooking of about 11½ bushels per acre. For our second series, in favour of topping, about 15½ bushels per acre. In reality, however, the yield appears to have been larger in the second series of experiments than in the first, and it is, therefore, probable that the stooking experiment shows the larger gain. We may assume, however, until further informed, that the results of these two processes on the amount of grain are not proved the one superior to the other. Rough experiments on the feeding value of the fodder from early stooked corn convince us that it is worth certainly double that from topped corn, for feeding to milch cows. Why cannot we have some experimental results reported to us this fall? Will not some of our farmer friends contribute some experiments on this point, by topping and stooking the corn growing on equal areas, and noting the results.

The Aftermath.

The *Western Farm Journal* says.—Years ago, it used to be the practice at the East, to mow the aftermath, or second crop of the meadows, in September, or else feed them closely before winter *In the West*, where land is plenty and cheap, the second growth has generally been allowed to grow at will, and remain on the surface during winter. Sometimes the after-growth is exceedingly heavy, and in such cases cutting just before hard weather sets in is beneficial, since the grass may then lie as a mulch during winter, and in the spring it may be raked so as not to interfere with mowing and gathering the next crop. If fed closely after mowing, or if cut much before the growing season is over, the roots are consequently weakened, and, if persisted in, the succeeding crops will show the results of this bad practice.

If stock can be obtained sufficient to eat this aftermath quite late in the season, without the tramping and uneven feeding that must ensue from the ordinary way of pasturing, it might be quite as well to eat it off as to mow it, except this: the meadow would not receive the benefit from the mulch during the winter This mulch is far more important than is generally supposed. In the first place it acts as a blanket to the soil and roots. Shading the earth causes a deposition of nitrogen from the air, and it keeps the soil cool and of equable temperature.

Under ordinary circumstances, or, if the aftermath is not exceedingly heavy, it so decays before the next mowing season as not to interfere with the operation of hay making. In other words, it has become manure, and goes to enrich the roots of succeeding crops of grass. Thus, if this annual mulch has been left on the soil, it will be found not only that the succeeding crop of hay is enough better to pay the value of the grass left, but also, when the sward is again broken up there will be a rich layer of humus soil that will tell favorably upon succeeding crops. The sun beating upon a naked soil renders it infertile. Nature's best cultivation is mulch. We may not constantly take from the soil without replacing And one of the worst systems practised upon meadows is to keep them closely mown or pastured bare.

Troublesome Weeds.

The kinds of weeds that are troublesome under some systems of farming, disappear or do but little damage under others. This fact is often an important item in deciding what kind of crops should be grown. Years ago, when wheat was the main dependence, and occupied the land every alternate year, the wheat field was filled with red root. In those days, especially on sandy soil, farmers unanimously voted this the most pestiferous weed in existence. On some large farms hundreds of bushels of red root seed were cleaned out of wheat, and the growing of this crop became almost impossible from this cause alone. Since the advent of the midge, and the change from exclusive wheat-growing to mixed husbandry with corn and other spring crops, red root has become less troublesome, and is now rarely thought of. Some farmers, within a few years, have thought that they could now renew their old policy of growing wheat each alternate year, and they are troubled again by the appearance of their old enemy. This year I think red root has been generally more plenty than in many previous seasons. Probably last fall was unusually favorable to its growth

The change, now generally in progress, from grain and clover to grass and dairy, dismisses for the time some of the farmer's old enemies, but unfortunately introduces him to some new ones already here and waiting to receive him. Quack grass is little likely to be so much noticed when land is seeded to permanent pasture or meadow as when ploughed every other year. In fact, I am a little afraid that the prevalence of this weed is one reason for the general desire to quit ploughing and seed the land to grass Under the policy of ploughing most of the land—often more than could be well cultivated—quack has increased enormously, and very few farms of one hundred acres are entirely free from it. Farmers hereabouts have not learned the knack of your correspondent, Mr. Ives, in managing and utilizing this weed. We all regard it as the greatest possible nuisance in all cultivated crops.

The common rag-weed has become a great nuisance, especially in stubble ground after harvest. It is the most accommodating weed I know, and will adapt itself to any soil. In a sterile or hardly packed soil, it may be only ten or twelve inches high, or even less, but full of seed the whole length of the stems. When the soil is rich and mellow, it spreads itself like a tree three or four feet high, with widely extending branches Sometimes when clover is thin it will appear the second year, but rarely causes much trouble in clover meadows. If pastured it will injure the feed, crowding out the clover which is cropped by cattle, and wherever eaten by cows will impart an unpleasant taste to milk and butter. This weed can be kept in check by clean culture in hoed crops and by liberal sowing with clover when seeded. A thick mat of clover will keep down all annual weeds, and greatly check most others. In permanent grass rag-weed causes little trouble, the seeds, however, remain dormant, ready to grow when the land is ploughed again.

Wild carrot is, however, a plant of totally different character. It has become very common, and where land is left unploughed two or more years, it will be one of the most troublesome weeds. It is a biennial, and very hard to get rid of where it exists in large quantities. Cutting with a scythe has to be repeated at frequent intervals, and after all, the chances are that some will escape, as it will seed very near the ground if cut often. Johnswort and teasel are also often bad weeds on farms in permanent grass.

Weeds in pastures are especially bad for the dairy, for cows will frequently crop them by mistake when growing with other herbage. If there is to be increased production of dairy articles, only the "gilt-edged" will bring a remunerative price. We shall come to this in time with milk as well as butter and cheese. The milk of some cows is worth twice as much as that of others, or sometimes of the same cow when fed on different food. I have heard that a farmer who supplied unadulterated milk to a milkman, had his product criticised by the latter because the cows were fed liberally with beets, which produced great quantities of thin milk that would not bear watering. He was very particular to get rich milk, not to give a treat to his customers, but that he might sell more water and increase his own profits. Sometime people will learn to detect the difference in quality of milk aside from its richness, and then the dairyman whose land is free from weeds can sell his milk at a premium —*Cor. Country Gentleman.*

What Kind of Barns.

The old method of making hay was to let it lay out several days and keep it continually stirring until it was thoroughly dry, and had more the semblance of chips than grass. The improved practice is to cut with a machine, ted it a few times, and draw it to the barn the same day. If such wilted grass is not allowed to get wet, it is found to keep quite as well as the former dried hay, especially is this the case where the barns are comparatively tight. Recent experiments are reported, in which the freshly cut grass—cut after the dew was off—was allowed the sun but a couple of hours, during which the tedder went over it once, and was then raked up and housed in a building, clapboarded, tight beneath, plastered inside, and with slight ventilation, which was at once closed tight and not opened till winter, when the grass came out fresh and bright as the day it was put in. A farmer on the Berkshire hills had a short hay crop which he determined to make go as far as possible. His barn was well sheathed, without cracks. The grass was all cut early, just before blossoming, and housed the same day as cut. While carting the hay the barn doors were kept closed, save to admit the teams, which were unloaded with the doors shut. Access of air was prevented so far as possible thenceforth. The hay was closely packed in the mows. The testimony of the farmer and all his neighbors is that this crop of hay was brighter and fresher the next winter, and was more nutritious—the cattle eating less of it—than any previous crop. We might cite numerous similar examples. There is nothing in this contrary to science or sense. The over-heating of hay will only take place by the action of the oxygen of the air in the presence of moisture. Remove either and the heating will not occur. Remove the moisture and the grass becomes dry hay, less digestible, and minus some of its nutritive and aromatic qualities. It is better economy to keep out excess of oxygen, and have cured grass for fodder There is a great saving of labor too in housing hay the same day as cut, which of itself is a strong argument for the system. Every wetting by dew, every hour's sun after the grass is wilted, lessens the value of the fodder. We can take advantage of the idea by providing tight barns, and keeping them closed until the hay has gone through its "sweat," which is a slight fermentation which drives off excess of moisture without injury to the hay, if excess of oxygen is not permitted in the meantime.—*Scientific Farmer.*

Sow Sparingly.

Oats is a far better crop than many are willing to acknowledge. Its capabilities ought to be better known. I have noticed for a score of years that it has been the practice to sow oats in the spring, and somewhat late at that; then when it begins to show a few well-formed grains the crop is cut for fodder. It takes quite a number of days to dry it so as to pack with safety. It is after all a light, *flashy fodder.* Having sown from two and a-half to three bushels to the acre, it grows so slender that an ordinary rain-storm causes it to lodge, which puts a stop to its maturing, and besides thus, if grass-seed has been sown with the oats, it is sure to be killed on every spot where

the oats has lodged; and should it not lodge, the density of the crop will suffocate and destroy the grass. With fifty years' and more experience it is found that there is a better way. Ripened grain and fodder is more valuable than the half-grown and sun-wilted.

Sow oats as soon as you can; well-work the land; sow not more than one and one-half bushels to the acre; sow whatever grass-seed you choose with your oats; let it grow till it is ripe and you will find that none will lodge with very few exceptions. The reason is, the stalk having sufficient space is supported in an upright position. The cluster of oats on a single stalk can be counted by dozens. These if left to ripen, will produce thirty or sixty fold, if not a hundred. The fodder being a full grown and ripened straw, with many of the smallest grains left on, is as valuable for horses as first quality hay. The grain and the straw are each worth as much as the whole crop by the other method. Your grass, too, being sowed early and having the sunlight, as it will where the grain is sowed thin, will live and flourish. You will have no reason to complain of inferior seed, or summer droughts. Grass-seed on dry land should be sown early in the spring.

These few hints are based on actual experience of three score years.—*Cor. Germantown Telegraph.*

Broadcast Sowing, How to Do it Properly.

If the land is ploughed in beds from twenty to forty feet wide, no farther guide is required for sowing. Walk down the right hand water furrow, about three to four feet from the furrow; return on the other side up the bed in the same way, and thus a 20-foot bed is sown, the width of an ordinary cast being 10 feet. If the bed is 40 feet, walk down as directed above, return along the middle of the bed, leaving the ridge from three to four feet from where you walk; turn at the end and walk down the other side of the ridge, and return along the other water furrow. If the land is ploughed round, it is advisable to draw a light furrow every 10 feet, or poles may be used for guides, although the furrows are better, because the sower is not interrupted by having to replace the poles. Take a two or two and a half bushel bag, place in as much seed as can be carried without inconvenience; at the mouth of the bag have a tolerably long and strong string tied to the end of the seam; take hold of the other end of the seam, including a handful of the seed, and tie the string round this, leaving a space between the two ends of the bag of about six inches. Do not tie in a knot, but wind the string around twice and then make a half knot, shoving it close up; thus the string is easily untied and still perfectly serves the object. Now place the bag on the ground before you, crosswise; take hold with the left hand behind the corner where the grain is confined, and with the right hand just below where the string is attached to the mouth of the bag, raise it high enough to pass the six inches of string over your head, thus hanging the bag around your neck. Now close up the mouth of the bag with your right hand, pass your left arm under the bag, give it a sudden lift so the bag is laid in the hollow of your left arm; then by proper movement distribute the grain in the bag so that an equal proportion of the grain in the bag rests behind and in front of your left arm which supports the bag. Now open the mouth of the bag by taking hold of the edge of the bag with the left hand and let the grain run forward so that it can easily and without hindrance be grasped by the hand. After having placed yourself in position for sowing, you have to commence by taking half a handful to sprinkle at the end.

You are now ready to commence sowing. In grasping a handful of seed out of the bag, move your arm circular, keeping the elbow well off from the body Remove your hand with the grain in, in the same manner, and throw your hand well back at your right hand side, twisting your wrist so as to present the closed palm of your hand to the front. As soon as your hand has reached as far back as to straighten your elbow joint, throw your arm forward and bend it gradually until it reaches the mouth of the bag. This movement must be quick and decisive. When you commence the forward movement of your arm, gradually open your hand containing the seed, so as to describe a half circle with the seed. Right here is where you have to pay the very closest attention, watching the seed so as to scatter it evenly over the whole surface. The easiest and least tiresome way to sow is to make a throw each time you place the left foot ahead, thus throwing every other step. Sowing thus, you will be ready to grasp a handful of seed out of the bag just when you place your right foot in front, and have your hand in position at the moment when your left foot is placed in front, making the second step. There is another mode of sowing two rows by throwing at every step alternately, twisting your body to the right and left as far as possible; but I do not see any advantage in this method, as with a single throw you can make a full round, while by the other practice you only reach one end in the same space of time. Some throw at every step, but this also I do not favor, as the seeds are very apt to be too thickly scattered. A well-practised broadcast sower need not measure his seed; it is regulated, as we may say, by itself.

Those seeds which require a less quantity to the acre are round, plump, and smooth. The sower cannot, without exerting himself, grasp more than the exact quantity required. Such seeds as oats, which require a double quantity, are smaller and rough, permitting the sower to grasp nearly twice as much as of wheat, rye or barley. But the sower has another regulator at his power. If he wants to seed heavy, grasp as big a handful as practicable and *shorten* the steps, and make the throw two feet narrower; if desired to sow thinner, make longer steps and throw a foot or two wider. When I was a farmer's apprentice, hand sowing was exclusively practiced, and to learn to sow was one of the principal achievements. It was also one of the main tests of a young man's ability in farming.

Buckwheat makes an exception from the above rules. In sowing buckwheat, grasp the seed in such a manner that the flat of your hand strikes the seed at the same time as your half-closed fingers. Thus only a little more than half a handful will be obtained. To sow grass seed is still a more difficult undertaking. I prefer doing it with the "Cahoon" seeder, a little handy instrument buckled round the waist. If it has to be done by hand, proceed as described above, substituting a tin pan for the bag, only grasp the seed with the fifth and fourth finger closed in the palm of the hand, and the third finger partly closed; this for clean seed, such as clover, timothy, etc. Where the seeds amount to half a bushel or a whole bushel to the acre, only one or two fingers are closed.

Although the even distribution of the seeds is a difficult matter, especially of grass seeds, still it can be accomplished. The worst obstacle is the wind. In high winds no sowing should be done. But it cannot be always avoided to sow in some wind. Then the sower has to make his calculation and take his observations. If, for instance, the wind comes from the right hand side, he may be obliged to walk on the edge of the water furrow instead of three or four feet off; and, if the wind comes from his left hand side, he may have to walk six or eight feet from the water furrow. Has he head wind, he must throw his seeds very low to prevent them from being carried too far to the rear, and if he has the wind on his back, he must carefully observe not to scatter his seeds too wide on either side.—*Cor. Country Gentleman.*

Sources of Waste.

The sources of waste on the farm are far more numerous than one, at first sight, would suppose. The waste of time in the busy season of the year is one of the most important items, not the time devoted to lounging and idleness, for few thrifty farmers are guilty of that, but the time lost from the want of proper planning of work, the failure to accomplish the greatest amount of work with a given expenditure of time and strength. One man divides his farm into small lots, and if he should calculate the time he loses in turning about in ploughing, in mowing with the machine, or in raking, he would be astonished to find how much of life, and of physical energy he is wasting in this simple matter of turning about, how much more efficient his work would be, if it were planned on a different scale. Let us get rid of such a multitude of division fences and so save the land they occupy, and the waste of time they occasion, to say nothing of the fact that they harbor innumerable weeds and bushes, insects and injurious animals.

The waste of manure by neglecting to take proper care to apply proper absorbents, and to prevent wash and drainage, is something enormous every year. We lose about as much as we save, on the average, throughout New England, and we make it up in part by buying fertilizers at a high cost. Isn't it better to stop the leaks, to use more muck, more plaster about the barn, more loam in the pig-pen, and to collect more leaves for bedding for cattle? Isn't it better to save the ashes, to pick up and save the old bones about the place and to build the compost heap with a thousand things that are going to waste?

The waste in making and mending fences that are unnecessary, is very great. The fences and walls on farms in this State alone cost nearly twenty-five millions of dollars, and the average annual cost for repairs exceeds four millions. But this is not all. The loss of time caused by small lots, and the loss of land and crops, would make a still greater sum, a very large part of which might be avoided by the removal of division fences. We are not obliged to build fences to keep cattle out, but only to keep our own cattle in; and hence the expensive fences along the highway might, in many cases, be dispensed with.—*Massachusetts Ploughman.*

Chestnut Planting.

We observe in the *Country Gentleman*, in answer to an enquiry for directions for planting Chestnut orchards or groves, that the editor, in reply, commences by stating that the seed should always be planted where the trees are to remain, but does not give the reason therefor. Now, having had large experience with the Chestnut, we claim that the position taken by the aforesaid paper is at variance with the experience of our best growers, and that the failures which would ensue by planting the nuts directly where the trees are to remain, exposed to the depredations of animals, large and small, domestic and wild, for the first year or two of their existence would be greater than if nursery-grown trees of reasonable size were planted.

We are aware that some varieties of trees transplant with greater difficulty than others. But we do not place the Chestnut, either American or Spanish, in the difficult class. We claim to have grown and transplanted more American Chestnut trees than any one firm in the United States. We have transplanted one-year seedlings, and all intermediate sizes, up to seven feet high, and never made a failure. Although we have, in some instances, planted very late in the spring, even after the trees were partly in leaf, our experience demonstrates that they will transplant as easily as any other nut-bearing tree, and possibly as any fruit tree on our soil, which, we must admit, is peculiarly adapted to the growing of Sweet Chestnut.

In soils not as congenial, it would be far more difficult to rear from the seed than to succeed by transplanting, as all know who have had experience in the rearing of seedlings, not of Chestnut only, but of most forest and fruit trees that the most precarious time is in the germination of the seed and carrying the young seedlings through the babyhood of their existence. As familiar examples we would cite evergreens, Larch and Mahaleb cherry seedlings, and, in our humble opinion, it would be just about as sensible for agricultural journals to recommend the planting of the seeds of these where the trees are to remain as to recommend such treatment for Chestnut. We have many times imported Spanish Chestnut trees from France and planted on our own grounds, and with as uniformly good success as we have experienced with other forest trees, or even quince and pear stocks.—*New York Times.*

Sub-Soil Draining.

Heavy, clay soils are the best in the world, if brought under proper cultivation. They retain moisture and fertility better than light, loamy or sandy soils, and have what we farmers term "substance" in them, to a much greater degree. The difficulty with clay sub-soil is, that undrained, it retains too much of the water that falls on it, rendering it cold, soggy, and unfit for the best results. Underdraining takes away the only objection to this kind of land. Without making it "leachy" like the light soils that are deficient in clay, sub-soil drainage makes it light, porous, mellow, and warm, early and easily worked, and multiplies its productiveness to a remarkable degree. A field in my possession, of ten acres, consisted of this kind of land—a close, heavy, tenacious clay. It was uneven, abounding in low spots—just low enough to prevent surface water from running off. These spots retained most of the water that fell on the field, until it passed off by evaporation. Hence, cultivation was always delayed, in spring, from one to two weeks, and when accomplished, did little good. The same tenacity which prevented early ploughing, existed throughout the season, and these spots never produced much, in consequence. Grain would be "scalded" out, and grass would not do well on them. In very favorable years, however, with an early spring and just enough rain during the season to suit such land, it would produce excellent crops. Every farmer who owns clayey sub-soil land of this nature, knows that I am writing the truth.

Well, I drained this field, in such a manner that every low spot in it was thoroughly tapped. It cost me considerable; I did not keep an account of it, as much of the work was done by myself and two sons, and at odd spells, when other work would allow. The drains were of stone, three feet deep, generally, and carefully laid. This was six years ago, and since that time it has yielded, at least, one-fourth better crops than before. I can plough it a week or two weeks earlier, an advantage which alone is sometimes worth the crop for that year, and the low spots formerly so unproductive, in wet seasons especially, are now the best parts of the field. It is more easily cultivated, breaks up easily, and is light and friable all the season. We complain about wet and dry seasons, but we are slow to avail ourselves of the remedies which both science and practice have demonstrated will render us comparatively independent of the seasons.

It is impossible to make these low, wet lands loose, and mellow and porous, without drainage, and it is impossible to get good crops unless the land is loose and mellow. It is claimed that undrained land is best in dry seasons, but it is all a mistake. Land that needs draining will bake and pack hard in a drouth. Dig it up and it is dry as powder, while the drained soil of the same kind is moist and mellow. It admits the air and condenses the moisture in it, and brings up by capillary attraction, the moisture below.

It is strange that farmers cannot see this. I have a neighbor who stoutly maintains that drainage, except in swamps and where water stands on the surface, will not pay the expenses. Others admit all that is claimed, but never put in a foot of drain, notwithstanding. In this whole township I know of only two farms that have any underdrainage at all, and those two but very little. And yet it is all a tough, clay sub-soil, that never will produce half what it is capable of till it is thoroughly underdrained. I am putting in tile as fast as I can spare the means, and only wish I had commenced long before I did.—*Cor. Ohio Farmer.*

Fall Fertilization.

We are in the habit of fertilizing our land in the Spring for our Summer's crop, and if it is judiciously done, it is a success. But there is another principle which I have experimented upon, that I am pretty certain is of greater advantage, it is the application of manure in the Fall rather than in the Spring or Summer, and for the reason that it favors the plant during the Winter, when it so much needs it It serves not only as a protection, which is considerable, but helps in the vigor which it imparts to the plant. Plant growth must continue during the Winter or the plant dies; and it frequently dies from what we call exposure, when, under the same circumstances (of exposure), the plant, with the aid of a stimulant, might have survived My experiments lead me to this conclusion. The vigor of the plant is increased, and according to the extent of the increase will be the capacity of resistance. A plant in poor soil, having little growth, must have a corresponding small measure of growth during the Winter, which reduces it at the best to a very low state, and a little beyond this destroys the plant.

Hence our poor and exposed knolls suffer most. If rich, there is less effect from the frost and the drying winds. To feed our grass lands and wheat fields in the Fall, therefore, must be a benefit, and this we find to be the case The best time to feed a meadow is after the crop is removed or any time during the Fall so that it is early enough to start the growth. Once started, the stimulant will not yield its hold till it has accomplished its purpose with the plant, which will be done the following Summer, in the meantime favoring it during the Winter. It is our rich or well manured soils that are the warmest soils, the live soils, that have the most vigor, they will stand the most abuse, and life is tenacious in them. Let us, then, manure our land not only to grow our crops, but to keep them through the Winter. It is a benefit to our grapevines, our berry bushes, strawberry plants, shrubs, trees, &c., as well as our wheat fields and grass lands Impart the Fall feeding and forcing; the growth then will be established, and with the first chance in the Spring will put forth a little earlier for the stimulant, and bearing up the better under the first severe weather; it is a help all through, and a loss nowhere if the manure is on hand, as it certainly may as well do its work on the land as to be in a pile, or scattered about around the farm But even if a fertilizer is purchased, there is but the slight loss of the interest on the investment, the benefit, I hold, being much more than this I have seen some fine effects on late-sown timothy, the stimulant sustaining the young plant against severe weather, which it seemed almost impossible to withstand. In all cases the application should be made early, so as to have its influence on the plant. It will be sure not to relax its grasp, however severe the Winter may be - *Cor. Country Gentleman.*

Weeds in Pastures.

Some time ago a letter was addressed to the Irish Press by Mr. Donnelly, the Registrar-General, on the great loss which the agriculture of the country suffers through the great prevalence of noxious weeds; he estimates this loss at one and a half million sterling; from observations which we have made from time to time through various districts in Ireland, we are fully of opinion that it has not been overstated, and should be inclined to say that it is really under the mark At present there are innumerable pasture fields even in our best cultivated districts which are a national disgrace to a country calling itself agricultural. It is difficult to keep these weeds in check or to stamp them out when allowed to run on for a few seasons so as to become established. It is most desirable that pastures should be laid down in a cleanly manner, and afterwards every effort made to eradicate weeds as quickly as they appear. For the information of our correspondents who have recently queried us on this subject, we offer a few remarks on the simplest way of getting rid of the weeds which prevail most in pastures Thistles just now form a marked feature These, with the ragweed (*senecio jacobæa*), the leaves of which, when young, are much relished by sheep, even to the extent of their keeping it eaten down, will in cattle pastures of dry, loamy soils, make a very strong show with its yellow blossom; hence its common name of yellow weed. The several families of the dock tribe, the common sorrel (rumex acetosa), and the common brake or fern, are found in abundance on our upland pastures, while the low-lying districts abound with rushes of both hard and soft varieties (juncus conglomerata and effusus). All of these, with the exception of the rushes, will succumb after cutting them close to the root for two or three years, with either spade, hoe, or the common scythe, at the time their flower buds begin to form. Rushes are not so easily conquered, since they require continual cutting. On grazing land, one cutting in spring with another by the end of summer, keep those fields pretty free from them. Meadowing such fields acts very beneficially for the same purpose. The grasses generally being of quick growth, exclude from these the air essential to their development, but where these occupy much space, more than cutting is required. The soil must be drained, and such fields finally put under the plough for the thorough eradication of this tribe of plants. On poor pastures, the numerous families of the ranunculus form a conspicuous part. There are innumerable varieties of smaller weeds which appear in pasture and meadow, but are so insignificant that we no longer dwell on them. Besides the herbs we mentioned as weeds, we have a very large proportion of our grasses, which, though not quite so noxious, are as injurious to the soil and useless as cattle food, such as the soft brome grass (*bromus mollis*), Yorkshire fog or white hay (*holcus lanatus*), and creeping soft grass (holcus mollis). It is singular how these weedy grasses have established themselves in our pastures and meadows, and are even purchased largely by farmers in their grass and seed mixtures, when they inadvertently pay large sums for the sweepings of hay lofts. Pastures producing these weeds need breaking and sowing with a profitable mixture as if they were only yielding either rushes or heather. There are two more weeds which demand particular attention. The first is couchgrass (*triticum repens*), which, in fallow land, is one of our greatest enemies, and can only be removed by careful picking during the several tillage operations, and by laying down this land in a clean state to pasture for a few years, by which time the other grasses so closely plant or thicken that it becomes extinct. In strong, moist soils, the colts-foot (*tussilago farfar*) is a weed with a root reaching to a more than ordinary depth. It is therefore, useless to think to eradicate it; the only means of its destruction being effected by observing a peculiarity in its growth, which is that of producing its flower stalk and corrola previous to the leaf. By watching this opportunity, and clipping it off repeatedly, the desire will be gratified, particularly if the land is drained.—*Irish Farmer.*

Drainage of Pastures.

The possibility of over-draining grass land, says the *Agricultural Gazette*, is a point which has been frequently discussed, and is one which it would be well to see settled Opinions are freely expressed upon it in the most excellent correspondence collected upon the subject of laying down to permanent pasture, in the current number of the Royal Agricultural Society's Journal; and some practical men speak in favour, and others against, a thorough drying of grass land by artificial means. We hope we may not be misunderstood, if we express a degree of doubt as to the value of much that is called practical opinion on such a point as this. The opinion of farmers is guided by hearsay as well as by their own experience; and in the case before us the opinion is generally founded upon actual experience of but small areas of land Apart from this there must be a considerable element of uncertainty in comparing the produce of pastures before and after drainage; much more so than, for instance, in the case of the yield of wheat on arable land. Not only quantity but quality of herbage must also be taken into account, and the question becomes further complicated thereby.

We remember some years ago dressing a pasture field with bones, one ridge in the middle of the field being left unmanured for the sake of comparison. This ridge becomes conspicuous from it carrying more grass upon it than any other ridge in the field. Here was a curious anomaly—the unmanured ridge carrying more grass; but the reason was not far to seek, for it consisted in stock persistently refusing to eat the herbage and preferring the sweeter grass grown upon either side Something similar, no doubt, frequently occurs when pasture land is drained, and coarse grasses that made a great show, are displaced by finer herbage. After the trying drouth of 1868, Mr. J. C. Morton took the opportunity of collecting a mass of evidence on the effects of draining pastures, and the balance of evidence was decidedly in favour of thorough drainage. Still there is no doubt that opinion is divided, and we think, allowing these divergent opinions to be alike sound, the difference to be found is the nature of the soil. Let no one be afraid of over-draining clay or even loamy soil; but let caution be exercised and experiments be instituted before light soils are subjected to such an expensive operation. We say this in deference to practical opinion; but for ourselves, we have but small faith in what is called "over-drainage." We have never been able to understand the phrase. We may be wrong, but our idea is that a drain simply allows of the discharge of surplus water, and that surplus water, or water of supersaturation, is better discharged. When a drain has run off the surplus water, it ceases to act.

Again, a drain only acts upon the section above it, and certainly not upon the water existing in the soil below it. Take the case of a drain four feet deep. This drain tends to free the section of soil above it of its excess of water, but it leaves the said section saturated. Secure the discharge of the water of supersaturation, and all is accomplished which drains are capable of. Double or treble your drains, and they can do no more, and hence we say we cannot grasp the idea to be conveyed in the term of "over-drainage." If it means that a multiplication of drains can cause the soil to give a single drop of water which by its porosity and capillary attraction it is capable of holding, we deny the possibility of the idea *in toto*. If it means that pasture land, any more than arable, is the better of holding an excess of water—by which we mean water which would flow away if it only could—we again think it a false view. It is recommending filling up the hole at the bottom of a flower-pot; it is arresting that circulation of both air and water through the soil which science has taught us to value and promote. Do we not yet understand that unless water escapes through the soil (whether by naturally porous rocks or artificial drains) water cannot enter it at the top? The freer the circulation, the better far; by thorough drainage effete, stagnant, injurious water is got rid of, and the fruitful rain is admitted in company with the sweetening, oxidizing air.

There are two possible ways in which land might be over-drained, but neither of them is likely to influence practice on a large scale. The first is by draining to such a depth that the water table reservoir, or supersaturation, should be reduced to so low a level as to be unavailable as a source of moisture, through the agency of capillarity. It is possible to conceive a field drained so that the water table should be sunk ten or twelve feet beneath the surface, instead of only three or four, as in ordinary practice. We say that under such circumstances a field might suffer from over-drainage.

The other condition under which the same evil might be brought about would be in case of the soil of so open, sandy, and dry a character as to be incapable of holding a sufficient amount of water for the use of the plants it supported. Such a soil might require—to refer once more to Mr. Mechi's simile of the flower-pot—the hole in the bottom to be stopped. We believe such cases to be rare, indeed, so as to interfere in no material degree with the view we have already propounded: that over-drainage exists principally in the imagination of those who believe in it.—*Ohio Farmer.*

Dissolved Bones.—In a late issue of the *Queenslander* we recommended dissolved bones as a good fertilizer, and we are now asked: How are bones dissolved? When a bone-grinding mill is not within reach, the bones may be broken up into small pieces; soak them in water, then add 50 pounds of sulphuric acid to every 100 pounds of bones. When the bones are dissolved, they are liable to set solid. To prevent this, mix earth with the mass, and the bone fertilizer is ready for use.—*Queenslander.*

Turning Under Weeds.—I have had better success in ploughing weedy land by putting on a rolling coulter and a moderately heavy chain to the right end of the double-tree, and let the chain extend back to upright or halve of plough leaving chain loose enough to not catch the dirt from mold-board. I have this season turned under weeds as high as my horse's back, and can hardly see them, ploughing six inches deep. The present wheat crop would be better with us to mow and burn the weeds after wilting.—A Farmer, in *Rural World.*

The Growth of Lucerne.—The soil best adapted to the growth of Lucerne is a deep, calcareous loam, rich in manurial elements, and situated at a moderate elevation. The land should be trenched or double dug, and be perfectly free from root weeds of all kinds. The seed is best drilled in rows from 12 to 18 inches apart, during the last week of March or first week of April. The quantity of seed required is 10 to 12 pounds per imperial acre. Care should be taken to secure a fine seed bed. Under favorable circumstances the first cutting will be ready by the middle of May. During the first year the soil should be stirred between the rows by the frequent use of the hand or horse hoe. Digging or deep cultivation between the rows, except by the use of a hand fork, destroys the spongioles of the roots, and retards the vital functions of the plant. If the land is free from twitch little cultivation is needed after the first year. If the soil and climate are suitable, five cuttings a year may be obtained, thus producing a large bulk of valuable food, particularly for dairy stock. The average duration of the plant under culture is eight or ten years Grazing close with sheep at any time, is fatal, as they destroy the crowns of the plants. Allowing the seed-pods to form likewise weakens the aftergrowth. Lime, phosphates and mineral alkalies, are the most suitable manures.—*North British Agriculturist.*

Saving and Curing Seed Corn.—The failure of seed corn to germinate, last spring, was so general that it is evident, that the cause is not generally known, or, if otherwise, precautionary measures were not observed. Every farmer who had a failure in this respect last spring should understand the cause of it and so apply the remedy in the future. Last fall was wet, cold and frosty while seed corn was being saved. These facts would suggest that corn will fail to grow if frozen before it is dried. A fact that has just come to my knowledge substantiates this conclusion. A friend, an intelligent, observing and practical farmer, told me this circumstance: he usually traces up his seed corn and hangs it in his garret—a warm and dry place. He did so last fall with all but one trace, a very nice one. Being in a hurry, he hung it up in the corn house, and there it remained till it was wanted for planting. He said that it was not exposed to sweat or steam from other grain. In the spring, while planting that from the garret, he came to a choice part of the field, and the thought struck him that he would plant that best trace. He did so, and the result was that, while the garret corn came up well, of the trace from the corn house, to use his own words, "not one kernel in ten came up." This would indicate that seed corn should be hung in a *warm* and *dry* place until *dry*, to say the least. Perhaps it would be well for farmers to observe this precaution in saving seed hereafter.—*New England Farmer.*

Horticulture.

Winter Window Gardens.

A lady writes the *Germantown Telegraph*.—In city or country some one sunny window in every house may be "a thing of beauty and a joy forever," with more or less outlay of money and labour, as the person may feel disposed. A bay-window is of course better adapted for plants than a single one, but either should first be provided with a plain deal box the length of the window, from two to four feet wide, and at least six inches deep. Have holes bored in the bottom, and place upon it an inch of broken pottery, charcoal, and pebbles, to insure drainage. Fill with rich, friable soil, and in it plunge the pots of geraniums, fuchsias, heliotrope, etc.; then plant tradescantia, coleseum ivy, sedums, etc., along the edge and soon the whole surface will become a mass of various shades of green, intermixed with the bronzy purple of tradescantia, zebrina, and the golden flowers of the musk plant, or exquisite lavender of the delicate-leaved ivy (linaria cymbdaria); while if a German or English ivy has been placed in each corner, the long festoons will soon hang to the flower and the tendrils go clambering up the window-frame, and reach out arms that appear to be pleadingfor some support. From the upper part of the window-frame may depend various baskets and "hanging vases" or "amples," filled to overflowing with the bright-leaved "foliage plants" for centrepieces; and trailing over the sides, madeira vines, ipomea, ivy-leaved geraniums, yellow gazanias, mesembryanthemum, the partridge vine, dew plant, and tetrinoides. The common ferns, such as the maiden's hair, davallia pentaphylla, adientum cordatum, and fadyema prolifera, are all fine and appropriate for this purpose. A bay-window may be beautifully arranged as a grotto, with a deep, rough box filled with earth and rocks, piled up and grouped in picturesque confusion, with ferns, vines, mosses, etc., planted in the recesses and hanging in long, graceful festoons from the rocky projections. Trellises of cedar with the bark remaining, are suitable for such a window; and tubs planted with ivy, ampelopsis, victchii, cobor scandens, climbing roses or other climbers placed on each side of the window, and trained in an arch over the window, from a beautiful frame for such a sylvan picture, and are easily cared for. Rustic baskets of wire, filled with moss and suspended by grape-vine branches with delicate vines twined around them or covered with moss, are beautiful hung from the ceiling of the window, or from hooks or moss-covered brackets. The entire ceiling may soon be made a bower of greenness by fastening long vine branches or wire in arches from side to side, and planting Madeira vine or German ivy in boxes covered with bark, moss, lichens, oak leaves, and acorns placed on the sides of the windows. Suitable hanging-baskets for such a "woodland window" might be made of cocoanut shells, wooden bowls, covered with pine cones or gnarled twigs and roots, or log-cabin boxes, made by placing mossy sticks, one crossing the other, until of desired height, then fastening with nails to a square board with holes in each corner for cords, and filled in with moss (between the "logs.") A "hanging-garden" is also a great addition, but my description is already long, and I must defer farther explanation until another time.

A Test of Potatoes.

Sir,—In order to thoroughly test the relative merits as to cropping qualities of several different varieties of new potatoes lately introduced to the public with those of established character, I, on the 8th day of May last made a planting of eight hills of the several different varieties hereinafter named. The soil was all the same—a rich sandy loam. No manure was used. The tubers were cut to single eyes and planted one eye to the hill. The care was the same in every particular. At digging I selected four hills of each variety, with the following result when weighed:

Variety.	*Lbs.*
Burbank Seedling	13
Hawley	10
Mahopac seedling	8
Snowflake	12½
Early Ohio	15
Irish Cup	14½
Eureka	17½
Western Kidney	10½
Early Nonesuch	5
Iowa Nonesuch	16½
Seedling 10½	17
Seedling 6	15½
Curiosity	11
Dunmore	9
Davenport	8½
Compton Surprise	13
Seek-No Further	12
Early Wideawake	10
Success	11½
Victor	16

Variety.	*Lbs.*
Superior	12½
Fortune	12½
Early Eclipse	8
Morning-Glory	10
Berlin Seedling	14
Alpha	9
Ruby	16
Carpenter's Seedling	7
Ice-Cream	6
Paragon	5
Calcutta Seedling	7½
Climax	8
Early Rose	6
Early Vermont	8½
Peerless	10
Brown's Seedling	12
Early Favorite	6½
Campbell's Late Rose	5
White Peachblow	8

Owing to the ravages of the locust in August the yield was not large, but the figures show the relative merits of each as to coping qualities.

I also made the following test with and without fertilizers of the same varieties. Eight hills were planted to test each way with four selected and weighed.

	Lbs.
1 Without fertilizers	9
2. One tablespoonful of salt sprinkled at roots after hilling	10
3. Compost of one part salt, five unleached wood-ashes, a large handful placed on each hill after hilling	12¾
4. One part salt, five ashes and three of decomposed hen manure—one handful to each hill as above	21

I also made the following trial concerning the cutting of the seed. I planted ten hills of the same variety, prepared in the following four different ways:

1. Planted ten whole tubers, medium size, one to each hill.
2. Cut medium sized tubers into four parts and planted one set to the hill.
3. Cut to single eyes and planted an eye to the hill.
4. Cut one eye into ten parts and planted one of these small sets to the hill.

The result of each of the ten hills was:

	Lbs.
Whole tubers	20
Quarter tubers	25
Single eyes	33
One eye divided into ten parts	22¾

It will be seen that salt, ashes and hen manure combined gave a yield of more than two-fold than where no fertilizer was used, and also that the single eye gave the best returns of any method of cutting the seed.—*Cor. N. Y. World.*

Growing and Marketing Horse-Radish.

A *Maine Farmer* correspondent says: Although horse-radish, in its natural state is generally found in low places, it is found best to grow it in deep rich loam. When planted in low land there are many laterals, but when planted in deep soil it sends its roots down in search of water, and as the root is the only part valuable, the object of the cultivator should be to produce as perfect roots as possible.

The land should be liberally manured with say forty-five loads of stable manure, well ploughed in. Or, if more convenient, bone dust may be profitably employed. The land should be *deeply* ploughed, using the *lifting sub-soil plough*, and thoroughly harrowed and marked off into *rows* thirty inches apart.

The sets should be planted so soon as the ground is sufficiently dry. Take a small crow bar, and along the rows that have been previously marked out thirty inches apart, make holes, say ten inches deep and fifteen inches apart. This will allow four or five inches over the sets. This will allow the free use of the harrow when the leaves are first seen. This harrowing destroys the first crop of weeds, so that generally one hoeing is all the after-cultivation required. Use the harrow fearlessly; it cannot do harm.

It should be gathered the fall after planting. This perhaps is the most difficult work to be performed. To facilitate it a deep furrow may be ploughed among each row; but the main dependence must be in the spade. The roots should be taken out as completely as possible, for if the roots are left, they will sprout out the following year and cause trouble, unless to those crops requiring repeated hoeings.

As the principal demand for it is in the winter, it may be necessary to store it. They may be secured in pits or placed in a cool cellar, and well covered with sand.

As it may be required for market, the quantity required should be taken from the pile in the cellar (be sure to cover what is left with sand) and the crowns nicely thinned and all lateral roots removed, except the larger ones, which may be shortened, but left attached to the main root; the roots should now be cleanly washed, and allowed to drain and dry, if packed in boxes, or they may be placed in barrels with holes bored in them to allow the water to drain away.

The laterals cut away in "trimming" for market may be kept for sets the following year. They should be stowed in a cool cellar with an abundance of sand mixed through them and covering them completely.

Horse-radish may also be profitably grown in common with other crops, say early cabbage or radishes. In this case the rows should be marked out fifteen inches apart, and every other run planted with cabbage. The sets should be placed pretty deep, say six inches below the surface. This lets the cabbage get a good start, but should the horse-radish come up too soon, the leaves may be cut off with the hoe without in the least injuring the roots.

If the above directions are followed, horseradish can be grown easily and profitably.

Mushroom Culture.

Every gardener has his own ideas and practice in cultivating mushrooms, but a correspondent of the *American Grocer* tells his experience, which is interesting, as it is somewhat different from the methods laid down in the books.

Early in October I procure a supply of fresh horse-droppings clear of straw. In order to keep the manure from getting wet, I place it under a shed daily as gathered, and turn frequently. During preparation, the temperature should not be allowed to rise over 125 degrees, and may be kept in check by turning and tramping. When the temperature begins to fall, I mix the manure with good fresh loam, in the proportion of one part loam to six parts of manure. This compost I place in my beds, which are about twelve inches deep, and pack it hard with a mallet to within two inches of the top. A thermometer inserted in the material soon marks the temperature as high as 120 degrees, and within ten days it will fall to 80 degrees, when the spawn should be inserted. I am careful to get the best fresh spawn, which I trowel in, in pieces about the size of a pigeon's egg, eighteen inches apart all over; press them down and even the surface of the beds. A week afterwards I cover the beds with one and a half inches of turfy loam, taking care, however, to leave a narrow space along the centre uncovered with loam, for a few days, to admit of evaporation from the compost. The work is now finished by throwing over the beds a little hay. When it is necessary to moisten the bed, I use water at the temperature of 95 degrees, in order not to chill it. I also sprinkle the floor to maintain a humid atmosphere. In from six to eight weeks the mushrooms begin to show themselves, when I remove the hay. In picking the crop I do not use a knife, but twist the mushroom round, freeing it from the roots; I do not approve of cutting, as the stem that is left in decaying frequently destroys the small mushrooms near it. When the beds get exhausted and the supply fails, I give a liberal application of water heated to 150 degrees, in which I put a little salt. This so stimulates the bed that a second crop of mushrooms, often as good as the first, is the result.

The mushroom is largely used abroad in the manufacture of catsup, &c.; here it is less known. When found growing wild, great care is requisite to distinguish it from other fungi, which it closely resembles, and which are poisonous.

Packing Apples.

The Wisconsin Horticultural Society gives through its report the following good advice on packing apples:

Under the term packing we include the whole operation of storing and keeping after picking, until finally disposed of. We recommend, as the best article to pack in, a well-made, clean, new barrel, holding 2½ bushels, and perfectly seasoned and dry when the fruit is put in it. Take the barrel under the tree or near it, and taking out the head fill it a little more than level full, and then cover with short boards so as to exclude sunshine and rain; raise it on two or three sticks of stove wood, or some means of keeping the bottom of the barrel off the ground, and leave it for a week or two to sweat and dry out, when the head must be pressed down to its place and the hoops driven on tight, and nailed on both ends. If the barrel is not level full when headed up, it must be made so, as this is most essential to prevent handling of the barrel from bruising the apples. Failure in this one thing of pressing the contents of the barrel, so that there shall be no loose apples, and no working in any manner of the whole or any part of them, will involve serious danger of loss of all the labor previously bestowed; and yet we find that right here is the great neglect. Right picking and right packages are all useless if afterward the fruit is bruised in consequence of loose packing.

We greatly prefer to put the fruit immediately into the barrel in the orchard, and head up the barrel before it is moved, to the method so often recommended of picking and carrying to some out-house or chamber to cure before packing; as it saves much labor, involves less risk of bruising, and requires less time. When the barrels are headed up, they may be laid on the side, on sticks, and left in the orchard if the weather is fair, or removed to some out-house, barn, or any place where they will be dry and cool. It is a good way to lay down some poles and rails near the cellar where they are to be kept during the winter, and lay the barrels on them, and cover them temporarily with boards. The point to be aimed at is to keep them as cool and dry as possible, and out of the cellar till winter or very freezing weather, as it is a well-established fact that an apple will bear more cold and freezing without affecting its quality than any other fruit or vegetable, especially if kept in the dark and all air is excluded. Another reason for choosing tight packages is that light and air in conjunction with warmth rapidly change the structure or internal condition of the fruit and induce decay. The same agencies which operated in maturing and perfecting it will, after it is matured, ripen and afterward destroy. It is essential to success in keeping fruit in any manner, or by any method, to keep this fact in view and to be governed by it.

The writer has known apples packed as above directed and put in a dark cellar, to be frozen solid, clear through, and remain so for weeks, and on being opened in May, show no signs of injury in looks or taste. There is no question but that it will always pay to pack apples as

herein directed, even if they are to be sold immediately, and there were never so many apples on the market but there would be remunerative prices paid for such by parties knowing how they were picked and packed In commencing to fill the barrel with the apples, some advise placing the layer all with the stem end down, which gives a fine appearance when opened, and helps to sell it; of course there is no harm in doing so, provided you do not select larger and better specimens for that layer, as looks are to be regarded as desirable just as long as they do not deceive. We advise in all cases, instead of putting apples in a cellar to keep for spring and summer use, to have one especially devoted to that use, or to partition off a room in it which can be kept cold, even below the freezing point, and at the same time be dry. We repeat that there is more danger from warmth than from cold, from light than darkness, from handling than from lying still. Lastly, mark each barrel distinctly with the variety and grade on the end which should be opened.

Orchard Manuring.

There would seem to be no good reason why, if we wish to raise good orchard fruits, we should not manure our trees. People often look at trees growing on rocky hillsides, and argue therefrom that trees can grow without manure. They know that potatoes and other vegetables must have manure or they will not thrive, but they regard trees as a different order of vegetation, something that can thrive and flourish where nothing else would. But, in the case of trees on rocky hill-sides, the land is often anything but poor. The rocks themselves frequently contain valuable mineral matter, which, as the rock decays, is presented in a form that plants can feed upon. Then whatever vegetation grows among the rocks remains there to decay, and even leaves and other foreign substances that blow into the crevices formed by the rocks make a valuable plant-food, on which the tree thrives Indeed, trees in apparently poor, rocky places are really much better off than many trees in orchards, where they are in what appears good land.

In more level land trees must be manured. In many cases, it is as necessary to the best success that trees have an occasional manuring as it is that any other crop should have manure. There have been many discussions as to whether manure for fruit trees should be applied broadcast or ploughed in. For orchard trees there is no rule; it depends on circumstances. If the trees are on ground where vegetables are grown, the manure is, of course, turned in for the benefit of these crops, and the roots of the fruit-trees fight with those of the vegetables for some of it, and get it, too. But there are many orchards, where no crops are grown but the trees, and then it is an excellent practice to apply manure as a top dressing at least every other year, if you would have them bear an abundance of good fruit.—*Boston Journal of Chemistry*

The Gems of Spring.

There is no season of the year when opening flowers occasion greater delight than in early spring, after we have been deprived for months of all out-door bloomers. To secure them, we must make preparations in autumn, if they are not already provided for.

The early bulbs make the first brilliant display, among which are the snowdrops, Siberian squills, the many-colored crocuses, hyacinths, early tulips, &c. Beds of these bulbs may be set out till November, but they do better if in position by the middle of October. Those which are half tender, like the hyacinth, must, of course, be covered on the approach of winter; and they should also have perfect drainage, and be separated from a wet, adhesive soil. It is therefore best, where the soil inclines to be heavy, to place a small handful of coarse clean sand beneath each bulb at the time of setting.

Some of these bulbs are so hardy as to endure and hold their places whenever set. We have seen a striking appearance presented when the flowers of the crocus gemmed the surface of a smooth grass lawn, the crocus beds having stood there before the ground was seeded to grass, the blooming was over before the lawn mower was used

Nothing has a more beautiful appearance in April than masses of the liquid blue flowers of the Siberian squills resting on the surface of a green lawn.

Many hardy annuals may be sown in autumn, and will give a more certain and much earlier bloom than from spring sowing. All plants which are seen coming up early in the spring from the accidental dropping of the seed from the plants which have ripened the year before, are suitable for autumn sowing. Among them may be named candytuft, rocket larkspurs, sweet alyssum, mignonette, portulacca in light soil, and some of the centaureas Perennials, sown early enough to make a good growth before winter, will bloom the following season, such as digitalis, hollyhocks, aquilegias, &c. Vick says he has received flowers of the pansy from Southern States, nearly four inches in diameter, in winter, which had been sown the previous autumn.

Herbaceous perennials, such as peonies, campanulas, larkspurs, columbines, &c., which have stood and increased for many years, may be taken up and divided at the roots, and then reset for larger beds. These will follow the early bulbs and precede the annuals. The work should be done as soon as the leaves die, and the new plantings be slighly protected.—*Country Gentleman.*

PRESERVING PEARS.—In the first place select fair and smooth fruit. For this purpose the Lawrence pear has no superior. Take pears not quite ripe and peel off the skins. Prepare a syrup with three-quarters of a pound of sugar to each pound of fruit. Melt it and boil for half an hour, removing all the scum that rises. Put in the pears and let them boil for ten minutes, or just long enough to soften a little; then take out and cover tightly with paper wet in whiskey or alcohol, and cover with another paper placed over the mouth of the jar.—*New York Herald.*

PACKING PEARS FOR EXHIBITION.—The *Gardeners' Monthly* gives this advice in the packing of choice pears for transportation: "A pear should be put in clean paper and then laid in dry moss. An inch at least of thickness of moss should be between each pear, and after the pears are all in, then the box filled tightly with moss. If one decays, then the moisture is quickly absorbed by the dry moss, and the others are not affected. Besides, the moss gives an elasticity, and breaks the shock of the blows of the 'baggage smashers.'"

ROSE CUTTING.—European horticulturists have lately adopted a mode of making rose cuttings root with more certainty, by bending the shoots and inserting both ends into the ground, leaving a single bud uncovered at the middle and on the surface of the ground. The cuttings are about ten inches long, and are bent over a stick laid flat on the ground, holes being dug on each side of the shoot. The roots form only at the lower end of the shoot, but the other end being buried, prevents evaporation and drying up.

A NEW CHERRY.—Of Wier's Early Kentish, the *Prairie Farmer* writes as follows: "We have received (June 20) samples of Wier's Early Kentish and Early Richmond for comparison. The new cherry dead ripe, is a black, rather long and slender stemmed, almost sweet cherry of very good quality It reminds us more of an ameliorated Morello, than anything with which we can compare it. It is, says Mr Wier, about one week ahead of the Early Richmond this year, and in a succession of rains, cracked less than any other variety Should the tree prove to be a hardy one, we shall esteem this new cherry highly valuable.

PROTECTION FROM BIRDS.—In reply to a query as to the means of protecting fruit trees and vines from the depredations of the birds, we will mention a contrivance which is claimed to be a complete remedy—to run twine—common cotton twine will answer—around the exterior branches at the top and bottom, and the thing is done. This is for trees; for strawberries, grapes, raspberries, &c., each one must be the judge of the manner of applying it. We know that in cornfields, by enclosing the field with a single line of twine on poles some eight or ten feet in height, it is a protection against crows It is easy to try.—*New York World.*

PACKING FLOWERS FOR TRANSPORTATION.—The *Florist* gives the following directions: Always cut the flowers early, in the cool of the morning, and when in their prime. Take a piece of cotton wool, wet it, and wring it out, then twist it about the stalk. If tin boxes are used, they must not have sharp corners, or they will be rejected at the post-office, but, when properly made, they excel all others for the purpose in question. At the bottom of one of these place a piece of stout brown paper (if thin, double it); let this be well dampened, then lay the flowers carefully in placing a piece of silver or tissue paper between each, to prevent their bruising each other. Over all place a piece of the same paper, and on this a little cotton-wool. Cover the box with paper, and the flowers will reach the extremities of the kingdom in good condition.

HOGS IN THE ORCHARD.—A correspondent of the *American Farm Journal* says: "For the past two winters I have fed hogs a good portion of the time in my orchard, and continue to feed and pasture in it until the early fruit commences to fall. By so doing my orchard appears to be in a very flourishing condition, heavy loaded with large smooth apples, which appear to be clear of any effects of the apple worm I believe this method of treating an orchard preferable to any other mode of cultivating an orchard yet tried. Having practised feeding corn in the ear around the apple trees, especially the ones of slowest growth and bearing, the result is such trees appear to grow and bear finely by such treatment. Hog manure and corn-cobs no doubt are about the best manure that we can apply to trees to promote a healthy growth and good bearing. Then after the apples are gathered in the fall if hogs are pastured and fed in the orchard they will doubtless destroy many worms that may remain in the refuse and decayed matter left on the ground, thereby greatly promoting the healthfulness of the next year's crop. Some care should be taken with young trees by placing some trimmings of brush around the roots to prevent the swine from rubbing against the tender trees, but if they should scratch their backs against the large trees, all the better."

BUDDING.—A Pennsylvania fruit-grower writes: "A prime essential in budding is to insert a good bud, not only of a good sort, but that it is in itself well formed. This depends on its leaf being of full size, healthy, unbroken, and fully exposed to light. The bark, too, around the bud, must have full light in order to mature itself and its bud, so that both can resist the severities of winter On comparing the surface of the bark of a shoot from the interior of a tree top with one from the exterior, the former will be to the latter as a piece of unsized, flimsy blotting paper is to a glossy piece of card. In what may be called autumn budding, the bud is fully developed and matured before being inserted Being thus ripe, hard, glossy and comparatively dry, it requires a stock in which the cambium is quite moist; the bark lifting very freely. In the mid air of the last of August, or of September, such buds, set in such stocks and tied closely, are sure to take, and will survive the winter well if the stock can ripen sufficiently This operation approaches grafting in its nature; and, indeed, side grafting in the collar at the same season, using fully-ripe short shoots, is the simplest and one of the surest modes of propagating many varieties of fruit. It requires only three movements of the knife: two to cut the bark in T-form, and one to slice off the base of the scion with a smooth, slanting cut. A little fine earth drawn around completes the operation, unless it is found expedient to tie the scion in place to secure full contact of its cambium line with the cambium face of the stock. Wedge-grafting in the collar is a resource after the bark becomes adherent, late in September."

PLANTING POTATOES IN THE AUTUMN.—"In our number for May 22 last," says the *English Farmer*, "we drew attention to M. Tellier's method of planting potatoes in the early autumn, and protecting them by straw from the cold of winter, by which means he succeeds in obtaining good crops of healthy potatoes by the beginning of the following spring. This system was adopted last year, as an experiment only, by M. Tourniol, President of the Horticultural and Botanical Society of Limoges, who communicates the result in a long letter to the *Revue Horticole*, from which we take the following remarks: The seed potatoes were taken from a quantity gathered in April, 1875, and were stored on shelves in a garret until toward the end of August, when the planting out was proceeded with The workmen called upon to assist in this operation did so with broad grins and much shoulder shrugging, while the neighbors made merry by describing M. Turniol as a most fitting resident for the locality, the point of which rather obscure witticism lies in the fact that his property adjoins an extensive lunatic asylum. In two months the plants had made stalk rapidly, when M. Turniol was obliged to absent himself from home for a time. On returning about the first week in November, he found that his orders to tend the crop and cover it over with straw had been entirely disregarded—not a leaf was to be seen, the cold and the snails had destroyed everything above ground. Nevertheless, on digging up the soil, it was found that the experiment, despite the adverse circumstances under which it had been conducted owing to this neglect, had been a complete success. The first turn of the fork uncovered ten healthy potatoes, varying in size from a walnut to a hen's egg. M. Turniol was triumphant, and his self-satisfied workmen proportionately abashed. This year he commenced operations on the 1st of June, and intends to plant out every fortnight till the end of September. We hope to be able to announce, in due time, that satisfactory results have been obtained."

CLAY SOIL FOR PEARS.—The long experience and the critical observations of pomologists show that the pear tree will grow and bear fair crops upon nearly all soils, but will live longest, flourish best, and bear the most prolific crops where alumina predominates—where the top soil is either clayey loam or vegetable mould mixed with clay subsoil—where clay greatly preponderates. The pear tree, as well as the fruit, grows to its greatest perfection in and about the beautiful village of Canandaigua, in central New York. Trees that were planted there when the town was first settled are now sixty or seventy feet high, and fifteen to eighteen inches in diameter, sound, healthy and thrifty, and bid fair to continue so years to come. These trees consist of both natural and grafted fruit. The white Doyenne was grafted considerably at an early day, as many of the trees now indicate, some of which are from forty to fifty feet high, and one foot in diameter, and which bear prolific crops of the finest fruit grown in America Other varieties flourish equally well here. The soil in and about this village is clayey loam, with a stiff clay subsoil. There are many trees in this town, Lima and Avon, equally large and thrifty, that were planted by the first settlers, and which bear prolific crops yearly. The land that bore these old settlers is the same as above described. There are a great number of trees along the St Clair River that were planted by the early French settlers which are prodigious in size, healthy and fruitful. Soil clayey. Similar facts might be extended to any length to establish this position. A waggon load of clay spread around a pear tree where alumina is lacking, will often make a tree yield bountiful crops of fine fruit.—*New York Herald.*

Live Stock.

The Management of Brood Mares and Colts.

Mr. M. W. Dunham, of Illinois, who has made something of a study of the methods employed in France in managing brood mares and their colts, has given in a letter some interesting facts observed by him among the breeders of Perche. He says:

The division of the sexes in Perche differs from most countries where horses are raised. One section has the mares and produces the colts, while another section buys and raises them. No matter what may be the class to which she belongs, light or heavy, or partaking of both, the mare is expected to breed every year. If barren she is sold. This fault continuing she passes into public use. During her gestation she works constantly. A few days rest before and after foaling is the only time lost. The remainder of her work pays abundantly for keep and interest on her cost. At the age of five or six months the colt is abruptly weaned and sold. Led into the interior upon fertile meadows, it remains one year unproductive. In winter it is fed on hay in the stable, and during the fine season turned into the field to graze. To sum up it is rather poorly nourished on bran, grass or hay The reason is that it is yet unproductive to its master, and it feels the effect. Wait a little Its hardest time has gone by; and work will soften its lot. It reaches in this manner the age of fifteen or eighteen months. At this age the colt is put to work. Naturally docile in the hands of a man always patient and kind, the training is generally easy. Assigned to farm labour, the colt ploughs or draws a waggon. Harnessed with four or five colts of his own age, together they pull what would be an easy load for two good horses. Put before oxen or joined to three of his companions, the young animal ploughs, and it is never overworked Now it is fed better and receives better care. Its *morale* improves, and its master seems to delight in contemplating the progress and development of the desirable qualities. Master, servant, large and small, all deeply imbued with the love of the horse, unite in this work with admirable skill Thus in travelling through Perche, one involuntarily stops in the middle of the fields to see the colt work, never tired of admiring the vigour it displays and the gentleness with which it is treated. At the age of three, the Beauce farmer buys the colt to work his soft and light soil. For him the young animal must be preserved intact, its development uninjured—nay encouraged.

The colt has thus been worked one year, abundantly fed but supplied with little or no grain. Doing enough light work to pay its keeping, the master has received enough beside the manure to pay a heavy interest on the cost of his colt. The primitive work, which would have been injurious under careless management, is, on the contrary, beneficial so long as the colt is in the hands of a good master. This is so much the general case that the contrary is the exception. The animal grows and becomes better developed in size and strength than if not worked.

Lord Kinnaird on Sheep-Breeding.

In a communication on the subject of sheep-breeding Lord Kinnaird gives us a few jottings as to how he founded and carried on his flock at Rossie Priory. He says:—"I commenced in 1828 with a flock of Southdowns from the flocks of the Duke of Richmond, Sir J. Shelley, and Mr. Watson of Keillor, but I soon found that, though the wool at that time was worth from 2d. to 3d. per lb. more than Leicester—fine cloths being then in demand for general wear instead of tweeds—yet the carcase did not suit the working classes, there being neither size nor fat. I then went in for the pure Bluefaced Ditchley Leicester; but I crossed the Southdown ewes I had with the Leicester tup, and found the produce, which resembled Southdowns, came to a great size and early maturity, brought the highest price in London, and were purchased eagerly by the first-class butchers there, this cross not being then known; so that for some years I got from England pure-bred Southdown gimmers, and took several crops of lambs from them, and feeding them on lofts on sparred floors, sold them at eighteen months old in London, getting the top price as Southdown mutton After breeding the English Leicesters from the flocks of Burgess, Stone, and Sandday for some time, I became impressed with the greater return to be got from the large sized Border Leicesters, and commenced this breed in 1865, using always rams from the Polwarth, Bosanquet's, Miss Stark's, and Foster bloods, getting some ewes from Mr Bosanquet. One ram from this flock did good service in the Polwarth flock. Some years ago I met with a breed of sheep combining the excellence of the Southdown mutton with the long wool of the Leicester—a well established breed, carried on from father to son on a farm in Gloucestershire. The sheep were originally a cross between the Cotswold and Hampshire Down—the cross-bred rams being used to constitute the breed. This breed I find to be the most profitable. They are superior to the breed now known as Oxford Downs, inasmuch as the clip is twice the quantity, the quality of the wool, which, being long wool, sells at a higher figure, and the mutton is as good as Southdown, indeed, has been pronounced by competent judges as good as old Highland mutton. In the 'Transactions of the Highland Society' for July, 1864, will be found an account of the very careful experiment I made in 1863 to ascertain the relative value to the farmer of some different breeds, in lots of ten wethers—one pure Leicester, bred in England; one pure Leicester, bred by myself; another of Border Leicester, bred by Mr. R. Hardie, near Kelso; and a fourth, the Gloucestershire sheep above referred to—the result being in favour of Border Leicesters over English Leicesters, and Gloucestershire over both in weight and value at the end of the experiment, which was carried on for twelve months."—*London Live Stock Journal.*

Spaying Cows.

The claims of the operation may be condensed from the extended argument of Charlier. I. In relation to the yield of milk, it has the effect of maintaining a secretion as abundant as in the first month after calving for a period of twelve, fifteen, or eighteen months or more, until indeed the formation of fat comes to predominate over that of the milk. The castrated cows often double their annual yield of milk the first year after the operation, 6,000 litres (say 6,000 quarts) being no uncommon yearly product, while one animal is mentioned as having attained to 7,300 litres, having improved by one litre a day after the operation. The testimony of the owners of castrated cows and that of eminent chemists agree in this, that the milk of the castrated cow is far richer in butter, caseine, and milk sugar than that of ordinary cows, the increase usually approaching one-third. 2. In relation to feeding. Castrated cows feed much more rapidly than those that are subject to the periodic excitement of heat, or those that are pregnant and nourishing a calf. Their docility and general quietude, and increased constitutional tendency to the production of fat, secure a more delicate, tender, juicy and nutritive quality of meat. 3. In relation to health. The diseases of the generative organs are reduced to their minimum by the operation. Especially is this the case with cows which under a highly stimulating diet are predisposed to *astromania*, or an inordinate and constant desire for the male without the capacity of being impregnated. These three items fairly represent the claims of Charlier, which, it will be observed, are less extravagant than those of some recent writers. He demands no belief in a perenial secretion of milk by castrated cows, nor in a continuance of quantity as well as quality.

From my limited observations I conclude that the most valuable point in Charlier's statements, is that which refers to quantity. I am ready to accept all that he asserts as regards health, fattening, quality of the meat, and richness of the milk. But as regards quantity, observations made at Edinburgh and New York fail completely to bear him out. In Edinburgh the town dairymen, whose highest aim is to produce the largest possible yield of milk, who feed altogether with a veiw to this end, and who never keep a cow over two seasons, but sell them fat when they dry up, could not be persuaded to continue the practice. Had the annual yield been doubled, or even materially increased, their interests would have secured its continuance. These men, of course, attached less importance to quality than to quantity. In Tompkins county, New York, the cows operated upon were nearly dry the following spring, so that the owner let them dry up and hastened their fattening. The milk was very materially improved in quality, but diminished in quantity about as rapidly as if no operation had been performed. It may be claimed with some justice that the cows operated upon in Edinburgh and New York were less favourably situated than those spayed in France and Mississippi. By the ravages of lung fever, Edinburgh dairymen had been driven to use shorthorn cows, characterized by the strong propensity of the cow to rapid fattening, and which could be sold to the butcher on showing the first sign of illness. Doubtless such cows would feed too rapidly to allow of a prolonged secretion of milk, and would certainly dry up in direct ratio with the increasing obesity. The New York cases were less open to this objection, but were subjected to a winter incomparably colder than that of France or Mississippi, and were not fed so largely on sloppy, stimulating food as is customary in the milk dairies of the Old World. It is manifest that the operation is only advisable in cows that are to be fed and sold fat at the end of the year; in those that will not conceive, and when particularly rich milk is desired, as for infants or invalids, or for condensing, even at the expense of a speedy loss of the cow for dairy purposes. The operation may be performed by the Charlier method, with little or no risk to the cow, and with a very transient discomfort, often not exceeding twenty-four hours. It is particularly to be deprecated when it tends to the extinction of the finest milking families; and when votaries cannot draw upon an unlimited supply of equally valuable cows, it savours too much of killing the goose that lays the golden egg.—*Prof. Law, in the New York Tribune.*

Lung Power in Horses.

How shall a colt be treated in order to develop in him the highest degree of speed? We will take an animal at two years of age, let us say, and inquire into the best method of cultivating the faculty and power of rapid motion.

The first thing to attend to, be it observed by all, is the lungs. Lung power is the best kind of power a horse can possibly have, because it alone can make other kinds of power of avail; muscular power is very desirable, but muscles can never bring a horse to the wire in time, unless his lungs are good. Nervous force is excellent; but no amount of vital energy will hold a horse up through the wear and tear of a four-mile race. A perfect bone structure is admirable; but what are bones, if the breathing apparatus is inadequate? The first point, therefore, that a breeder or owner of a livery colt should consider, is this matter of lung development. The great question with him should be, "How can I expand and enlarge his lungs?"

To begin with, then, let it be remarked that colts need a great deal of exercise. By nature they were made for rapid movement. Like young birds, they develop in motion. The number of miles a colt of high breeding, and in good condition, will go when at pasture, each day, is something surprising.

Now, no sensible man will turn a colt of fine promise loose in the pasture after the second year, and we do not after the first. A good colt is too valuable to risk in that foolish manner, especially if he be a horse colt. He should be kept in a large, roomy stall, where he can be attended to and trained day by day. But do not forget his need of daily exercise. Do not think that a box-stall will suffice. You might as well teach an eaglet to fly in a large cage as to give the needed discipline to a colt's legs, heart and lungs in a box-stall. Many most promising youngsters are fatally checked in the development of their powers by lack of needed exercise in their second and third years. We hold that a colt needs a great deal of exercise; not to the halter, which is good for nothing but to sweat out a lazy groom; but sharp, quick exercise, in the taking of which every muscle is brought into play, every joint tested, and every vein, however small, swelled tout with rapid blood, as is the case when allowed the liberty of hill and plain, and to follow the promptings of nature.—*Rural World.*

Dear Beef in England.

The London, England, *Spectator* says: It is the fastidiousness of the English taste which is the real cause of the steady rise in the price of meat. By the use of the word "fastidious" we mean to imply no blame. We are but remarking upon a fact, which is that English people, finding themselves well-to-do, and liking highly fed, succulent meat, insist upon gratifying their taste, though the gratification entails an increasing drain upon their pockets. If they would be satisfied with a poorer quality there would be no difficulty in supplying them, for practically there is no limit to the herds of the world. The vast pasturages of Hungary, Russia, the Canadian Dominion, the United States, South-America, South-Africa and Australia, could feed all Europe with ease. But the British taste will not have half-fed meat. Look at the Australian tinned-meat experiment. The meat itself is excellent, the price not excessive, yet people simply won't have it. It is overcooked, and consequently pronounced uneatable. From the annual report of the Veterinary Department of the Privy Council for 1875, we learn, without surprise, that the imports of this meat from Australia have been steadily declining during the past three years. In 1872 as many as 327,000 hundred-weight were imported, while last year the quantity had fallen to 110,000 hundred weight, or only one-third as much. Apparently, therefore, the experiment is not successful. And the importation of the live stock teaches the same lesson. In addition to our stock in Great Britain, our supply is practically limited to Ireland, the Netherlands, and Germany. The British Colonies, with their boundless pasturages, are grouped together in the returns appended to the report, with various other places, under the heading, "All Other Countries;" and last year they sent us only one head of cattle for every two hundred we received from other foreign lands. Even Hungary, Russia and Spain sent us a quantity so small as to be able to exercise no effect on the price. No doubt in these latter cases cattle-disease had something to do with the result. But the real operative cause is the distance

of those countries. The long sea voyage so affects the cattle that on landing they require to be fed again to fit them for our fastidious market.—Hence we are dependent for our foreign supply mainly upon Holland and Germany. France apparently has so active a demand at home that she has no supply to spare for us. The minute subdivision of the soil in France, too, is unfavorable to cattle feeding. It is further corroborative of the injurious effect of a long sea voyage on cattle, that Germany, which is one of the two greatest of our foreign caterers, does not herself need the cattle she sends us. At least, if she does, she is obliged to draw upon other countries to an equal amount to keep up her home supply. It would appear, therefore, and probably the same thing holds good of the Netherlands, that Germany is rather an *entrepôt* for Russian and Austro-Hungarian cattle, than an independent source of supply. These animals are sent on to Germany for rest and recruitment, and then forwarded to England. If this be so, there would seem to be little prospect of getting from South America, Texas, and still less, from Australia, such a supply of live stock as would effect our markets, though it is possible that it might be done from Canada.

When swimming a horse, *never touch* the bridle, as a horse is easily drowned when checked up or otherwise interfered with about the head. Sit well back and guide the horse with the hand, gently slapping him on either side as required, thus a horse will swim a mile or more with a full grown man on his back, and suffer but little. —*Country Gentleman.*

Kindness in Handling Horses.—One very common habit or practice we observe both in the city and in the country, among the rural population, is that of yelling sharply at horses before cart, wagon, omnibus or buggy, with that of suddenly and violently jerking the reins, supplementing it with sharp shrieks of the voice, provided they make any untoward movement—a habit we deem no less reprehensible than detestable, and one that should be at once corrected and abandoned forever. Gentleness and kindness will be found not only the wiser and better, but the more humane and effective course in accomplishing the end desired.—*Boston Cultivator.*

The trade in Canadian horses and cattle bids fair to affect the home markets, as these arrivals are becoming weekly occurrences, and increasing in importance as the season advances. On Tuesday the Dominion steamer *Dominion*, one of the finest of this fleet of steamers, landed 110 very fine beasts in splendid condition. In fact, on their arrival they were little or none the worse for the voyage, and were in prime condition, ready for the butcher. In addition to these, the *Dominion* landed three thoroughbred, nine harness, and nine cart horses, all of which possess very fine qualities. The last importation of these horses brought by auction from 75 to 100 guineas.

To ascertain the number of head of cattle of an average of eight cwt. that a farm ought to support, French agriculturists generally estimate that an animal consumes in a year eleven cwt. of hay for every one cwt. of its weight. Thus twenty-two tons of hay ought to support during a year two tons of live stock, equal to five animals of eight cwt. each. Two hundred weight of nutritive hay, being taken as the standard of nutrition, are found to be equal to 8½ stones of oats and 16 of potatoes. It should be borne in mind that the richness of food varies with the soil, and its feeding value will vary with the temperament and the digestive powers of the animal.

Old Stock.—The *Drover's Journal* says:—Get rid of old—that is, not profitable, stock that it will not pay to winter. Carry this right through from horned stock down to hens. It is unprofitable to depend on old horses, and thrifty farmers usually get rid of them before they are quite past labor. But there is often a deep and laudable attachment between the farmer and his four-legged servants, and we do not wish our recommendation to be taken as applying to them. Old milch cows should be fatted as soon as they are past their milking prime. Old ewes give weak lambs and light fleeces; qualify them for mutton as soon as possible."

Feeding Dry Corn.—"An experimenter," says the *Poultry World*, "who has tried feeding dry corn in different ways, states that after repeated trials he has selected from his bins (before shelling) the ears that have the smallest sized kernels, which he has fed to chickens to best advantage—the larger sized grains being not so digestible for young stock. To say nothing of the extra trouble this causes, we suggest that broken or 'cracked' corn, sifted from the common merchantable article known by this name, is to be preferred for this purpose, and that more than half the food given to young chicks should not be of dry, raw corn, any way. Cooked meal, wheat shorts and potatoes for the other half is much the most economical."

A Fine Cow.—Mr. Mueller, the American consul at Amsterdam, gives the Dutch idea of a fine cow as follows. —"A '*beste koe*' must show a finely moulded head; large nostrils; thin, transparent horns; a clear, bright eye; thin, large, and not excessively wrinkled eyelids; rose-coloured inner membranes of the eye; purely red lachrymal glands; a kind, mild countenance; blue nose; thin neck; free respiration; fine bones; well formed body with rather broad hind parts; straight back; long, thin tail; round but moderately bent ribs, developed belly; stout, yet not heavy legs; smooth joints, thin, mellow, movable skin; soft hair; delicately haired, broad and drooping udder; four well-formed, dark-coloured teats; well developed milk and blood vessels; vessels on the belly and about the udder to be proportionately broad and vigorous, and of a wenlike swell, and the vessels of the udder and inner hams to spread net-like, the openings through which the milk and blood vessels enter the body to be large and roomy. A cow thus formed is also apt to show a perfect escutcheon."

A Profitable Hog.—The following description of a profitable hog was reported by the committee at the recent Swine Breeders' Convention at Indianapolis:—"He must have a small, short head, heavy jowl, and thick, short neck; ears small, thin and tolerably erect, not objectionable if they droop slightly forward; must be straight from the neck back to the flank; must be let well down to the knees in brisket; of good length from head to tail; broad on the back; ribbed rather barrel-shaped; must be slightly curved or arched in the back from shoulder to setting on of tail; tail small; long in the ham from hock to letting off the loins; shoulder not too large to give symmetry to the animal; ham broad and full; hair smooth, and evenly set on; skin soft and elastic to the touch; legs short, small, and well set under; broad between the legs; good depth between the legs; good depth between the bottom and top of the hog; with pleasant, quiet disposition; should not weigh more than three or four hundred pound, gross, at twelve to eighteen months old, according to keep; colour may be black, or white, or a mixture of the two. The above described hog will measure as many feet from the top of the head to setting on of tail as he does around the body, and will measure as many inches around the leg below the knee as he does feet in length around the body; depth of body will be four-fifths of his height."

Raising and Feeding Swine.—Says the *Live Stock Journal*:—"If one thing needs reforming more than another, it is the manner of raising and feeding swine. From the day they are large enough to eat, they are offered all manner of refuse about the place, such as rank weeds, filthy slops, spoiled vegetables and meats, dead fowl, &c. They are allowed to rummage the dung yard and glean the refuse of food in the faeces of cattle and horses, on the ground of economy. But we imagine that the quantity of food saved in this way is very insignificant—not to exceed the value of a bushel of shelled corn a year among the whole stock on an ordinary sized farm. The objections to the practice of keeping swine in this way are so serious, however, that the reasons in favour of it have no force at all. The origin of trichinosis in swine may be always traced to the consumption of vile stuffs in the food, or being housed and yarded amid filth and foul air. Interests as dear as health and life require a thorough reform in keeping swine. Let their food be as pure as that which other animals consume; let them be kept in clean quarters and have pure air; let diseased or unthrifty animals be separated from those in health; and we may have no fears of trichinosis among either swine or human beings." each. The Dominion line were about the first to embark in this trade, and the facilities and accommodation their steamers afford have made them a favourite with the Canadian shippers.—*English Farmer.*

The Dairy.

Pantries for Milk.

A lady correspondent of the *Practical Farmer* gives the following directions for fitting a pantry for use in setting milk:—

It should first receive a thorough cleansing and whitewashing. Not an article should be kept in it foreign to its natural list; the smaller the size, the more necessity there there is to systematize and bring in regular order all articles contained therein. The shelves devoted to the setting of milk should be kept clear of all other articles. The victuals it is necessary to keep in the pantry should be as far removed from the milk as possible, and be included in a section set off for the especial purpose—not slipped in unceremoniously on mussy plates, and dropped wherever there is room for them to stand—but set away in a neat and tiddy manner, newly dished, ready to be set upon the table at some future meal. Dish-cupboards are now so commonly situated between the kitchen and dining-room, that there seems little need of partitioning off a section for them in the pantry; but if the necessity exists, see to it that the dishes have an allotted space and are kept there. Window frames should be covered on the outside with wire or gauze netting, to exclude flies and other insects. During the heated term the window should be taken out, and a piece of muslin, the size of the window, should be wet and hung over a line suspended at the top of the window. If this muslin is kept wet, the dryness of the atmosphere will be overcome, and the temperature will be reduced to a fresh coolness, such as is experienced after a summer shower. The door communicating with the kitchen should be kept closed as much as practicable, especially while a fire is giving out a surplus of artificial heat.

I am familiar with the article called gilt-edged butter, and I know that such can be made when milk is set in a pantry. To be sure, it requires the exercise of greater skill, and more thorough management in the domestic department, to secure cleanliness and all other details relating to the manufacture of good butter, in order to obtain a first-class article, when a pantry is used for the setting of the milk, than when a dairyroom is provided. With painstaking, care, and skill, making the best use of opportunities and present household conveniences, housekeepers might make far better butter than many of them do. No person can sustain a credit for any length of time upon a false basis. A person may garnish a firkin of butter with gold-leaf, put on all manner of fancy brands, but that does not alter the quality of its contents. The butter either stands or falls upon its own intrinsic merits or qualities. A person that manufactures a really fine article of butter for the market, is soon known among the dealers, and although he may not meet with immediate returns, yet it is a good investment, not liable to depreciate in value.

Soft Butter.

This is what a writer in the *New England Farmer* says about it: "I have made more than eighty tons of butter since I commenced dairying, and, by dint of observation and experience, have come to know certain facts which I did not know at the start. In the first place, no sane man should let a winter go by without providing for a good stock of ice, as not one dairyman in twenty can have his butter come firm and good without that commodity, and just the pleasure of having it to use in the hay-field will pay for the storing. I confess I can't quite sympathize with those who are in trouble with soft butter, but I will make a suggestion or two that may be of service to some of my brother dairymen. My cellar is so constructed that it is cool, so that it is a rare thing that my cream, after standing twenty-four hours, is not cool enough to churn. I never want cream churned the day it is taken off. It does not come to butter as easily, nor make as good an article as to let it stand and ripen, and, at the same time, get the temperature lower.

My cellar is ten feet deep, twenty wide, and forty-five long, cemented on the bottom. I exercise a great deal of care about keeping my cellar cool; I take out the windows on cool nights and no others, and shut them early in the morning.

Now, if I could not get my cream sufficiently cool without, I would have a box made of plank, deep enough to hold my cans of cream, and three or four inches to spare, so as to set them on some bars at the bottom, also to lay chunks of ice—have a pipe run out at one corner to carry off the water into the drain. I always make it a point to churn early in the morning, while the other hands are milking, which would be a great help to those churning above ground, as one can get it out of the way in the cool of the day. My churning-room is just out of the main cellar, twelve by thirty feet, and ten feet deep, and so cool I find no trouble at all in handling butter in the hottest weather.

Where one churns up stairs, and the cream, of course, is growing warmer all the time in very warm weather, the temperature should be, at the start, as low as fifty degrees, if possible.

I would like to say a word on working butter, if it would not make this article too long. It has long been a mooted question whether to work the butter once or twice with the hands or with a butter-worker. Some savans have said the hands should never touch the butter. As to the first question, if butter comes all right, and a person understands it, he can make a better article to work it only once; if it don't come right, it can be very much improved by letting it stand a few hours and then working it again.

I made the inquiry of Prof. Arnold, at the dairymen's meeting at Montpelier in '75, if he worked his butter twice; he said he worked his partially, and let it set half an hour and finished it. I have tried different ways of working butter, and have come to the conclusion that if one understands it, and the hands are all right, there is no better machine than the hands when the butter is to be packed, but if lumped, a good worker is preferable.

H. A. Willard said, at St. Albans, that in the best but-

ter sections in Europe, they work the butter with their hands. With one's hands rightly prepared and rightly handled, I will defy the best epicure in Boston to find fault with the grain or texture of the butter.

To Make Scald Cream Winter Butter, Including Some Hints for Butter Factories.

Editor CANADA FARMER: Those who understand the scald cream system in butter making, will never use any other, especially in winter, when, at times, the churning is so laborious and is so often attended with signal failure.

When the scalding system is properly carried out, the making of butter of excellent quality becomes a positive and certain fact; quite as certain as cheese making in the cheese factory, bread making at the bake-house, or any other manufacture.

The following is the hand course, which can as well be used with one cow as five or ten: Use the ordinary tin pans, the pressed pans are the best, as they are the easiest cleaned and keep the milk purer and better than any others. Let the milk stand until the cream is well risen, (24 hours is best) the exact time is not important, so that the milk is well settled and the cream is well risen; then place the pans on the stove and let the milk heat up to 180° Farenheit,—it may go to 185°, but not higher—this is just before the smell of boiled milk comes from it, *but it must not boil*, then place the pans back on the shelves until cold and the cream is solidified.

The cream will all come off in one cake, if desired, and is removed without difficulty. The cream when removed may be either kept a day or two, or at once worked up into butter.

To work it into butter, put it in a wooden bowl and stir it with the hand all one way; it will come into butter and part from the buttermilk in a few minutes; then wash and salt it as usual.

If you do not heat the milk hot enough, the butter is apt to be bitter and to sting the mouth after being kept a few days. If you heat the milk to boiling, you will get the full quantity of butter, and white particles will show in the butter, although it will be good and well flavored.

When correctly and well made, the butter is hard and close, and keeps well as fresh butter. We never packed it away, and therefore cannot answer for it as packing butter, but for present use, it is always excellent, and commands the highest price. The color of the butter will be light, but it can always be brought to the proper and best shade in the following manner:

Grate up a high coloured carrot, mix the gratings with a little of the scalded skimmed milk; or, what is perhaps better, with some of the thinnest portion of the scald cream, and squeeze out the colour through muslin; this colour must be added to the cream before making it into butter; the colour only goes to the butter, leaving the buttermilk white.

Take care that the pans heat evenly. Milk will boil at one side of a pan, and not heat sufficiently at the other.

The skimmed milk, although excellent for family use and for drinking, will not make skim milk cheese, (at least we could never use it for that purpose), the cheese never seemed to sour properly.

Another great advantage about scald cream butter is, that the process greatly lessens, if it does not altogether destroy the taste of turnips. A friend of mine who uses the process, and who feeds his cows on turnips, never has the slightest flavor of the turnips in his butter; it is only fair to state, however, that he attributes this to the mode in which the turnips are fed to the cows; they always milk *before feeding with turnips*, and they insist on it that this is the cause. I, however, attribute it more to the scalding process than to the peculiarity in the feeding; this is a moot point, to be determined by experiment.

To adapt these principles to a butter factory is perfectly easy. It is now well known by the experience of all the butter factories in the United States, that cream rises sufficiently well for all practical purposes, in a deep, narrow vessel. It has also been proved from the same sources that milk can be collected and brought from a distance to the factory without practical injury, and that the cream will rise again, even although the first rising of cream has been disturbed. We did not use to think so, but the fact is proved daily and hourly throughout all the butter factories in the States.

You must, however, have a plentiful supply of cold spring water, either from a natural spring or from a well which yields largely.

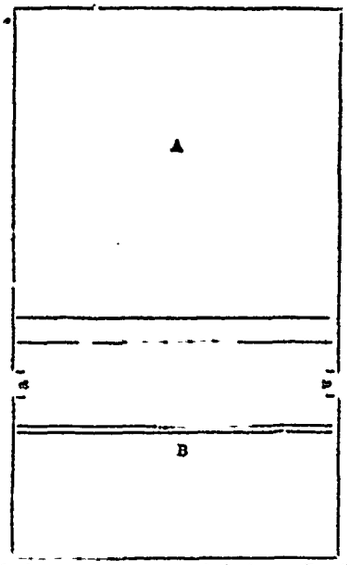


FIG. 1.—Ice house and dairy-room. A, ice-house, B, milk-room; a, and, wiows; c, level of ground.

You also require a steam boile. to enable you to raise your temperature as required.

The reason of the scalding heat giving a sort of impulse

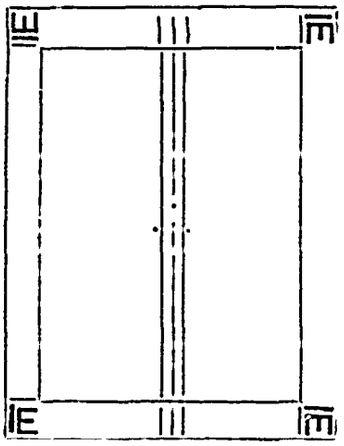
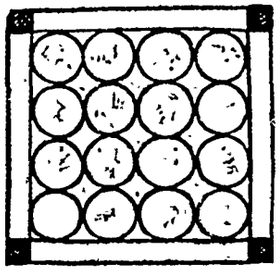
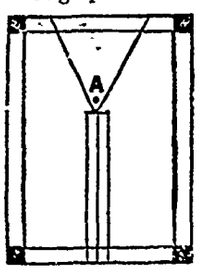


FIG. 2.

to the rising of the cream, is very evident—the heat renders the milk thinner and more fluid, and thus enables the smaller particles of cream to rise and reach the surface,



whilst the heat also melts the fatty particles of the butter, and the small and large particles combine together into



one mass, and, on cooling, consolidate together and are easily and more perfectly removed.

These principles being once well understood, the arrangement of a scald cream butter factory becomes an easy matter. SUBSCRIBER.

(Continued next month.)

The Perfect Dairy-Room.

How to construct the perfect dairy-room is still agitating the minds of many. Three summers ago I designed and built a dairy-room combined with an ice-house, in which it was desired to be able to maintain a temperature of 60°, and its operation since has been all that could be desired or expected of it.

FIG. 1.—Ice-house and dairy-room. A, ice-house; B, milk-room; a, a, windows; c, level of ground.

But the discussion has been going on all the while during these three years past, whether 60° is the best temperature, and is deep or shallow setting preferable for butter-making? From various trials of the Hardin box, and other methods of deep and cold setting, I must now say I am more inclined to adopt them than I was three years ago. If I were going to build the perfect dairy-room now, I would not put it *partially* under an ice-house, nor under a "hot kitchen." If I wished to secure a temperature ranging from 32° to 49°, I would place the milk-room *entirely* under the ice-house, as shown in figure 1.

I would have a metallic floor separating the ice-chamber from the milk-room, which, by giving it the proper inclination, would carry all the melted ice water to any desired point in the room below, or by having a double floor, the lower one perforated with small holes, a bath of ice-cold water could be continually showered down upon the covered cans of milk below. But is cold water or cold air the best agent for cooling milk? Prof. Arnold, in his new work on American dairying, gives a decided preference for cold air. In the Hardin box both cold water and cold air are employed. Cold water has the effect of rusting the cans badly, which a dry atmosphere would avoid. I have lately constructed a refrigerator which I think would answer well for a milk-room, or cupboard, if the cold, dry air method is found to be the better. This refrigerator serves as a water-cooler, milk-room and butter cupboard. Its size is three feet square and four feet high. The ice-box will hold a bushel of ice, afford drinking water for a family, and maintain a temperature of 48° to 50° in the chamber below. The butter is kept upon slatted metallic shelves under the ice-box. The lower part of the chamber is 28 inches square and 22 inches high, and will hold 16 four-gallon cans of milk or cream, 64 gallons of milk, which would be ample for the average dairy of 16 cows. For holding both milk and cream, it would serve for more than 11 cows, each cow averaging a gallon of milk. If a dairy of 12 to 16 cows could be run with the use of a bushel or two of ice per day, and a low temperature of 48° or 50° secured, that would certainly be an economical use of ice. By washing the ice, the water could be used for drinking, or if unwashed, the waste water could be conveyed through a discharge pipe into a vessel or drain underneath the box.

The accompanying figures show the form of the box.

Figure 2 shows a front view of the box, and figure 3, the size of floor and position of 16 four-gallon cans. Figure 4 is a sectional view showing the form and position of the ice-box, which extends through the box from front to rear with a faucet at A for drawing off the ice-water for family use.

For very large dairies or butter factories, the cold spring, where the temperature of the water does not exceed 50°, or the dairy-room immediately under the ice-house, will be found preferable, the latter having the advantage in the proper place at the proper time, without any extra handling or labour. If the results of future trials shall confirm me in the opinion that deep setting and low temperatures are preferable, I shall raise the second story of my dairy-room four feet, fill that with ice, and devote the entire lower story to the storage and keeping of milk, cream and butter.—*Cor. Ohio Farmer.*

New Facts about Butter.

The London *Agricultural Gazette* publishes the following lately ascertained chemical facts, condensed by that paper from the report made to the Board of Inland Revenue by the Principal of the Chemical Laboratory, Somerset House, on experiments conducted by him for the analysis of butter:—One hundred and seventeen samples were tested, the result being that while a few samples were found to be very poor in quality, and a few others exceptionally rich, the great bulk examined were found to possess considerable uniformity of composition, the principal variations being appparently due to a difference in the method of manufacture, the different seasons of the year when made, and the various modes of feeding. As might be expected, some of the poorest butters were produced by, and obtained from, small farmers in Ireland, at a time when there was very little grass, and food was scarce. It was also noticed that the butter was relatively poorer in its essential constituents when the food was chiefly cotton and oilcake, than was the case when roots and grass formed the staple food. A noticeable feature in the results recorded is the great variation in the quantity of water in the different butters, the lowest being 4.15 per cent., and the highest 20.75 per cent. The Devon and Dorset butters, which usually stand so high in the market, were found to contain in nearly all cases a high percentage of water, and one which was procured from the dairy of a private gentleman, contained as much as 16.99 per cent., and a second sample, recently obtained from the same source, contained 15-70 per cent.

Veterinary.

Tapeworms in Domestic Animals.

A medical writer in one of our foreign exchanges states that in carnivorous animals the tapeworms possess rows of hooks in the head, as well as suckers. In herbivorous animals, such as oxen and sheep, they possess suckers only With this difference, which was simply an adaptation to different conditions under which food passed into the alimentary canal, the life history of all tapeworms is similar The head is in reality an animal, for it is possessed of suckers or hooks, and has begun to bud into one of the well known joints. The budding process takes place next to the head, so that each joint is thus pushed a step further along to the intestine. This continues until the whole of the intestines might become completely charged with those joints. The joints are connected by a kind of canal down each side. The interior of each joint is filled with a large branch ovary. When the joints are detached the skin decomposes and the ovary is thus liberated. A tapeworm has often been known to extend to sixty feet in length, especially among those of the ox, and possessed more than 1,100 joints, and as each one of these tapeworms developed many millions of eggs, it was not surprising that the eggs were found almost everywhere, being blown about by the wind. In this dried up condition they possess an amazing vitality, remaining uninjured, perhaps for years. Should a pig, an omnivorous feeder, partake of food in which some of these eggs were contained, they would be conveyed into its stomach, where they would be converted into larvæ, and would after a short time bore their way through the pig's stomach and get into its muscles. There they would be quiescent and assume a condition like the chrysalis; this condition is called encysted. Pork killed in this condition is said to be measled, and should it be cooked without the larvæ being destroyed and partaken of by man, the encysted larvæ would then develop in man into the tapeworm. The tapeworm of dogs is of a very peculiar kind, and for a long time it was a matter of wonder how the creature got into the stomach of the dog. Now the secret was out. Sometimes when dogs affected by these worms went near sheep the sheep also suffered from them. When in the stomach of the sheep they bored their way through until they finally got into the brain, where they became encysted, and in this condition they caused the disease among sheep well known as staggers. Man himself sometimes suffers from the encysted larvæ, which produce a disease called hydatids.—*N. Y. Herald.*

Influenza in Horses.

It is said that this disease was first called *influenza* in Italy, in the seventeenth century, because it was attributed to the influence of the stars; and, although at the present day its occurrence will hardly be ascribed to any malign influence they may have in this peculiar direction, its causes are for the most part very obscure. It is known that it does not depend upon any known condition of the atmosphere, nor upon soil, seasons or temperature; it prevails everywhere and in all seasons, but it is oftener seen perhaps in autumn and spring than at other times. Its spread is not influenced by the wind, for it sometimes moves against it. "Sudden changes of temperature appear to assist the development of the influenza poison, and exposure to cold predisposes the animal to the disease, but neither of these causes are sufficient of themselves to produce it." Ozone, (that is, so to speak, the active principle of oxygen) in undue quantity in the atmosphere has been supposed by some to be the cause, but this can hardly be, for although ozone applied to the mucous membrane of the nose is an irritant to it, it has no effect upon the nervous system like the influenza poison. Whatever the specific material may be, there is but one conclusion that can be come to as to where it exists, and that is, that it must be in the air: that it cannot be the food or water is a fact which will be obvious to any one who has followed the history of the outbreak of 1872. The theory of its propagation by contagion, has many able advocates, and seemingly many facts to uphold it. However it is negatived by the facts that it is incapable of propagation by inoculation from one horse to another, or by the transfusion of blood from the unhealthy to the healthy animal, by its undoubted spontaneous appearance in localities in which contagion is entirely out of the question; and by its occasional occurrence where influenza prevails in man, dogs, and even birds.

So, then, all we are able to make out, is that at various and uncertain periods there exists in the atmosphere a certain morbid poison, which is capable of producing, sometimes in one animal, sometimes in another, and sometimes in all together, a certain disease of the air passages of the body, which we designate and recognize as influenza, and the first effect of which is the giving rise to febrile disturbance and great depression of the nervous centres; to these febrile symptoms succeeds the special effect of the poison upon the mucous membrane of the nose, eyes, throat, and respiratory tract, as well as sometimes the mucous membrane of the bowels, and biliary tubes; and there is generally more or less sympathetic or actual irritation of all the mucous membranes of the animal body.—*Scientific Farmer.*

Colic and the Bloat in Neat Stock.

Horses, &c, seized with colic may indeed be relieved to a degree by kneading the flanks and the belly, but fomenting the latter with flannels or cloths rung out of very hot water, and often replaced by another set, would be found to speedily assist the manipulation, and might alternate with that, so that the operators at one or the other process could rest. A bran-mash, as hot as the animal will take it, seasoned with ginger or capsicum, also might be tried. Warmth mitigates colic.

The bloat, resulting from an excess of gases, may be treated not only by manipulating with the spread hands, a rolling-pin and a short inch-thick stick put like a bit into the mouth of the animal, and held in place by fastening two straps extending from the ends of said stick to the horns, or the top of a headstall, but said gas might be extracted by withdrawing it with a large syringe, carefully inserted into the anus as far as may be safely. Then gradually pulling back the piston the syringe fills with gas, and thus the suffering beast can be speedily freed in two ways. I have seen men treated thus, posteriorly, who were in agony with strangulated wind in the bowels, and as they were signally benefitted, no doubt animals would be, especially since with them two ways of egress are available. Their very champing the stick or rope accelerates the escape of gas.

I speak from experience, having operated on cows and horses, and prefer these remedial agents to the use of strong purgatives, and to physic generally. Anyway something should be tried for relief pending the advent of a doctor.—*Germantown Telegraph.*

Sheep Killed by Eating Wheat Ears.

Here is a typical case of the mischief effected amongst a choice lot of 120 ewes in a few hours' run over an unraked and ungleaned wheat stubble. On a damp morning, about eight, the ewes were allowed to roam the stubble; about three in the afternoon they were returned to the old pasture from which they had been removed in the morning. Nothing amiss was observable that evening; but next morning about half the ewes were restless, pained, pawing and scratching with their fore feet, rumination suspended, the belly overfull, the bowels confined, some straining considerably. Tympanitis and dullness increased, and five sheep died shortly after noon, and about twenty hours after being placed in the fatal stubble. For another day fresh cases, although of a milder character, continued to occur, and half a dozen of the first patients died. In the sheep opened, the rumen was distended with the swollen heads of wheat, which were only slightly softened or changed. Very little either of the grain, chaff or straw had got beyond the first stomach. In two cases the cuticular coat of the stomach was readily peeled off, and disclosed underneath patches of congestion; but excepting these patches, which were not noticed in all cases, no congestion or inflammation was discovered in the digestive canal, and all the other organs were healthy. The treatment adopted consisted in placing the affected animals in a yard where they had no solid food; allowing them as much boiled linseed gruel as they would take; giving five or six ounces of linseed oil mixed with gruel, and administering in gruel or beer every two hours about a drachm each of ammonia carbonate, and spirit. This stimulant treatment appears to give relief, and had it been adopted earlier might have saved some of the eleven sheep lost. In all such cases it is unwise to give large or reiterated doses of purgative medicine; one or about two doses of mixed linseed and castor oil are much safer and equally effectual; solid food should be interdicted until rumination is established and the bowels regularly opened. Soft, sloppy messes assist the action of the oils; whilst frequent small doses of stimulants brace up the digestive organs to their work of getting rid of the indigestible matters.

These cases should warn agriculturists against turning their stock on the stubbles, particularly if there is much grain left, or it has got wet and growing. Especial caution is requisite when first the animals are turned out, as they are apt more greedily to devour the unaccustomed food.—*North British Agriculturist.*

Unusual Forms of Fracture.

Two instances of fracture of the front of the jaw occurring in horses are related by Mr. Hill, of Wolverhampton, in the last number of the *Veterinarian*, and are worthy of notice on account of the success which attended the treatment.

Generally the idea of a broken bone in a horse is associated with the notion of immediate slaughter; but in numerous instances it has been proved that fractured bones in these animals unite with remarkable facility; and though a variety of circumstances may combine to render it necessary to destroy a horse which has suffered the accident of fracture, it should be remembered that there is no special difficulty to be met in respect of the union of the fractured part.

In the first case, a mare which was used to carry a lady to the hounds was fastened to a ring by means of the bridle reins. The animal suddenly ran back, and the front part of the upper jaw, which was affected with that kind of malformation which constitutes "parrot mouth," exactly the opposite of "under-hung," was fractured in two directions, transversely and longitudinally, so that the part of the bone which contained all the incisor teeth or nippers, was disconnected from the rest of the jaw, and in addition, the two sides of the fractured part were separated in the centre. By a judicious arrangement of silk and wire sutures, the divided parts were kept in apposition, and union took place in due time. In the other case, a carriage horse after getting rid of its bridle, ran away, and came in contact with some stone pillars, and fractured both jaws, besides knocking out several front teeth. The injuries received during the concussion are thus enumerated. A ragged wound between the nostrils, penetrating to the gum, and communicating with both nasal chambers, left central upper incisor absent, and the jaw split asunder, rupture of the palate and wound in the gum. In the lower jaw, right central incisor out, left one hanging loose, portion of the walls of the alveolar cavity broken, and the adjoining tooth fractured. These serious injuries were treated by sutures of twine in the first instance, that being most readily obtained; afterwards wire sutures were employed to secure the broken bones. Owing to the heat of the weather considerable decomposition took place, causing extreme fœtor, which was corrected by the use of carbolic acid lotions. The fractured parts united without the occurrence of any other untoward symptoms.

It is remarkable that very little constitutional disturbance was present during the cure, the horse partook of soft food, and showed so strong an inclination to eat the straw of his bedding that it was found necessary to rack him up. This utter absence of mental excitement in his patients gives the veterinarian an enormous advantage over the surgeon in treating severe injuries. Under the circumstances described a man would have persuaded himself that all movement of his jaw was impossible, and it would have been necessary to feed him by means of a stomach pump, and the medical attendant would be esteemed if he succeeded in preventing an attack of lock-jaw.—*Agricultural Gazette.*

THE AFTER-BIRTH.—Mr. Arnold has stated, in some of his lectures, that the retention of the after-birth may be almost entirely prevented by feeding cows generously before calving, on a diet made up chiefly of flesh-forming elements, and that a cow that is *gaining* in flesh at the time of parturition, will have no trouble of this kind, but that this trouble is confined to those cows which are running down or remaining stationary. If these statements are correct, and we believe they are, it will be seen that cows should not be kept short before calving, but should have a generous allowance of food, but which is not specially fat-forming in its tendency.

NEW CURE FOR HYDROPHOBIA.—The *Salut Public*, Lyons, France, gives Dr. Buisson's new remedy, rather specific for hydrophobia. It is as follows: "When a person is bitten by a mad dog, he must for seven successive days take a vapor bath, '*a la Russe*,' of 57 to 63 degrees. This is the preventive remedy. A vapor-bath may be quickly made by putting two or three red-hot bricks in a bucket, for fifteen or twenty minutes. When the disease is declared, it only requires one vapor-bath, rapidly increasing to 37 centigrade, then slowly to 53 and the patient must strictly confine himself to his chamber until the cure is complete."

SURGERY FOR DOMESTIC ANIMALS.—Farmers should know that a broken bone may be set and the injury cured in a dumb animal, as well, considering their different natures, as in a human being. I once saved a young horse which got well and strong after his hind leg was broken; and not long ago had a year old heifer which got her hind leg broken above the hock joint. The steer that broke it chased her over the bars, and the broken bone projected through the skin some inches. I got her into a pen well provided with litter, and set the bone as well as the circumstances would admit, and splinted and bandaged it up, and in six weeks it was apparently as well as ever, with the exception of a small callus at the place where broken. The animal may now be seen at my place.—*Cor. Maine Farmer*

The Poultry Yard.

Non-Sitters.

The Black Spanish, the Polish, the Leghorns, and the Hamburgs are all great layers, and not inclined to sit. Some prefer one breed and some another. One cock to every ten or twelve hens is sufficient, at most, and some of our best poultrymen keep a less proportion than that.

In the egg-producing class, the Leghorns stand pre-eminently above all others. This variety consists of the white and brown. The browns appear to be the favorites, being hardy, easily raised, and maturing quickly—the pullets often laying at four months. Pullets of this breed frequently lay as high as 260 eggs during the year. Their large comb and pendants require a warm house during our rigorous winters.

The next in high favor is the Black Spanish; these, like the former, are non-sitters, and prolific, but not so easily raised. They do not, until nearly grown, get their full feathers, being generally half naked for a considerable time after hatching. These, like the Leghorns, require comfortable winter quarters, owing to their large comb and wattles.

The Houdans, a French breed, come next as layers and non-sitters. This is what they call a made breed, between the Poland and Dorking—showing the characteristic crest of the former, and the fifth toe of the latter. Although not as continual layers as the two varieties mentioned, yet they possess points superior to the others in size, delicacy of flesh, and hardihood, but are very liable to disease.

The small breeds, the different varieties of Hamburgs and Polands, have their admirers as fancy fowls. They are excellent layers, partially non-incubators, but are not recommendable, owing to their size, as likely to improve our present stock of common fowls.—*Western Rural.*

Choosing Fowls for Table.

It is a little singular that taste or fashion as to the color of the flesh of fowls varies at different large markets. In the London market yellow-skinned birds are not sought for, the pink or flesh-colored skin being the favorite there, while in New York the yellow is preferred in a marked degree. The questions naturally arise: What is the reason for this difference in taste, and which are the best for the table as to flavor, delicacy, &c.? There is no doubt that those fowls that are celebrated for their peculiar richness of flavor and delicate flesh mainly belong to the *pink*, or some people call them, the *white* skinned varieties. This is conceded by all authorities. Such fowls are the Games, Houdans, Dorkings, &c. Perhaps the reason for the preference for yellow in New York is that a proper discrimination is not made between the pink and *dark* or *blue* skinned fowls in choosing fowls for the table, the latter of which are generally poor in quality, such as Spanish, Hamburgs, &c. Another reason may be that all the pink skins are very tender to dress, tearing easily, and extra care is required in dressing to make them look attractive, and if they come from a long distance and are at all damaged they do not present as clean and nice an appearance as those with yellow skins.

Fall Work in the Poultry Yard.

At this season of the year, between sowing rye and corn husking, or topping turnips, the farmer is not quite so much driven with work as he has been since early spring. Now is the time to pay some attention to his poultry. This is just the time minks, weasels, skunks, and other *fowl fanciers* approach near buildings, looking out either for good, warm winter quarters, or something nice to eat. See that your half-grown chickens leave their old dirty coops or corners, where they huddle together at night to keep warm—sometimes near an old rat's hole or corners, where they fall an easy prey to enemies.

If any of the coops used during summer are laying about, gather them up, clean well and put them in a dry place, as they are harmed more in lying about after use than they are when in use. At this season, when hens have plenty of room, they are more likely to steal their nests than in summer. I suppose the reason is this: That, after having had the sitting fever broken up by their owners during summer, they begin to lay another brood of eggs, and, remembering being disturbed, seek for a hiding place for their next nest.

A farmer can now see the result of the year's increase—whether he has succeeded in raising as many and as good chickens as he expected; if not, try to find the reason. Have you been breeding in-and-in, year after year, with the same birds, without change of blood? If so, you shall kill off your old cocks; procure young cockerels of some good breed to cross with your hens. A few dollars so invested will sometimes double the value of all your young poultry the next year—in some cases, increase the value to many times the outlay on the cockerels.

The winter quarters must also now receive attention, and as the fowls leave the trees and exposed roofs, see that they do not go into a dirty house. Clean up thoroughly; let the whitewash brush be assisted by a willing hand and a sharp eye. See that you have no tyrants that get up to roost first, and keep up a constant quarrel with all the other birds as they come in; quiet such a one in the pot. Also watch and see that no diseased ones get in the house with the rest, or they may infect the others.—*Rural New Yorker.*

GAPES.—A Connecticut poultry-raiser writes to an exchange: "Perhaps some of your readers who raise fowls will be interested in my experiment, tried last season on a chicken with the gapes. I gave it about a quarter of a teaspoonful of kerosene, and as it seemed better for a day or two, I repeated the dose, giving nearly one-half a teaspoonful, for the second time. The chicken was about the size of a robin at the time, but is now full grown, weighing several pounds. I cured chickens affected with a disease we thought cholera, by giving powdered alum dissolved in water."

TREATMENT OF YOUNG FOWLS.—A correspondent of the *Country Gentleman* writes. "I have had fifty years' extensive experience with poultry, and can state positively there is no difficulty in keeping young and old healthy, and in raising ducks or turkeys, if they are not coddled to death. The only obstacles are vermin, lice (fleas in England), rats, hawks, weasels, etc. Allow the broods perfect liberty with the mother, free after being cooped on some healthy ground away from the haunts of the old fowls for a day or two. Take the coop first and place it, then put the hen and brood in so that the chickens can pass out and in again at pleasure; then on the second or third day let the hen run around with the young ones, and she will go in at night. The best coops have no bottoms, so that they can be moved into fresh, unstained ground daily. Water should stand all day in a shallow vessel let into the ground, so that nothing can be drowned."

THE AGE OF EGGS.—An egg is generally called fresh when it has only been laid two or three days in summer, and two to six days in winter. The shell being porous, the water in the interior evaporates, and leaves a cavity of greater or less extent. The yolk of the egg sinks too, as may be easily seen by holding it toward a candle or the sun, and when shaken a slight shock is felt if the egg is not fresh. To determine the precise age of eggs, dissolve about four ounces of common salt in a quart of pure water, and then immerse the egg. If it is one day old it will descend to the bottom of the vessel; but if three days it will float in the liquid. If more than five days old, it will come to the surface and project above in proportion to its increased age.

AN IOWA CORRESPONDENT writes the *National Live Stock Journal*. "We have in our farm-yard among the poultry, a turkey cock and two hens. Being desirous of raising more turkeys than we were likely to by letting them have their own way, we put the first eggs laid by the turkeys under some hens to be hatched. The first hen came off with eight fine young turks, and all went well for about two weeks, when the hen became dissatisfied and left her brood to scratch for themselves. The old turkey cock, seeing the forlorn condition of the young turks, at once resolved to take personal charge of them, and accordingly commenced to scratch, peck, and catch insects for them, all the time consoling them as best he could with his turkey-talk, and at night the old hero gathered them under his wings in a motherly manner. Since that time, whenever a hen weans her brood of young turkeys, he adopts them, until now his family numbers twenty large and small. At night he gathers as many of the smaller ones as can be accommodated under his wings, while the remaining larger ones sit close around him; and woe to the pig, dog, cat, chicken, or other animal that at any time offers to disturb him or his brood. He will not even allow the turkey hens or their young to come near him. It is quite amusing to see him march about the yard and stubble-fields clucking to his young, which are always in close proximity."

The Apiary.

Saving Weak Stocks of Bees.

In preparing the apiary for the winter colonies are often found that have not the requisite number of bees. The old plan was to destroy all such with brimstone and take the honey—a murderous operation. Though the combs in box-hives cannot be readily transferred from one hive to another, the bees may be saved and given to stocks that need strengthening. The same thing may be done with weak colonies in moveable comb hives, and with more certainty as to the result. The stocks to be united should either be moved a distance of a half a mile or more at night and placed by the side of each other, or they can be moved about four feet each day until they stand near together. In the case of the box-hives all that can then be done is to drive the bees from the weak hive into the hive which contains the colony designed for wintering. For performing this operation select the middle of some pleasant day. Smoke both stocks, and wait a few minutes for the bees to gorge themselves with honey, then turn the hive containing the stock to be drummed bottom upward; set the other hive on this so the openings of the two come together, and then rap with a light stick on the lower hive until all the bees have gone into the upper hive; this can be told by the loud buzzing, and by occasionally lifting the upper hive and looking in. The bees will generally be so gorged with honey as to be peaceable, especially if they were well smoked, and were given time to fill their sacs with honey before the hives were lifted from their stands, yet it is well to have the face protected by a veil of some sort. The hive containing the bees is now to be placed on a stand so that its entrance will be midway between the points where the entrances to the two hives were, the two hives, of course, having been previously moved until they were side by side. Within a few hours one of the queens will be killed, and the remaining queen, together with her strong colony of bees will, with plenty of honey, stand a good chance of wintering.

When stocks in moveable comb hives are to be united, first get them moved together, then, on the day they are to be combined, remove enough combs from the two hives so that the remainder will just fill one hive, or will constitute the proper number to contain the winter supply of honey for the colony; at the same time remove one of the queens—the older or poorer one if there be any difference—and place the other in a little wire-cloth cage. (This cage is made by simply folding together the edges of a piece of wire-cloth about three inches wide by four long; ten or twelve meshes to the inch is the right size; stop the ends with bits of sponge.) Just at dusk smoke the bees in both hives pretty thoroughly, and, after letting them become filled with honey, remove the combs one after another and shake the bees into a third (empty) hive, placed just between the two; when this is accomplished, set the combs selected for the purpose into the new hive, slip the cage containing the queen down between the centre combs, and place the cover on the hive. The next day at dusk smoke them again, and release the queen, taking care to daub her well with honey, as well as to drizzle honey over the tops of the frames and down between the combs. *No honey should be left outside the hives where the bees can have access to it, for there is great danger in thus tempting the bees to commence robbing.*

Thus the bee-keeper possesses the ability to save all weak stocks, instead of resorting to the old plan of "murdering" them for the sake of what little honey they may have stored in the dark, tough brood-combs. Surely the saving, as well as the humane bee-keeper will at once recognise the advantages of uniting weak colonies in the fall of the year.—*Cor. Michigan Farmer.*

BEES IN OLD HIVES.—Dagden's "Bee Book" says.—"Never put a swarm of bees into an old hive, as there will almost certainly be the egg of the honey-moth deposited in the crevices of the hive, which will hatch out and probably destroy the swarm. Nothing is more to be dreaded by the bee-keeper than the moth, and when they once gain an entrance to a hive the bees appear as if powerless to expel them, although they will seize them savagely at the entrance. When the moths have once established themselves in a hive, and the maggots begin to eat their way through the combs, the sooner the bees are fumigated and put into another hive the better, as for them to remain with the moth maggots will be certain destruction to them. Moths as well as the large slug may be taken in great numbers, late on summer evenings, by spreading a mixture of sugar, home-made wine and rum, on the walls or the stems of trees."

COMB FOUNDATIONS.—The *American Bee Journal* thus answers the question, What are comb foundations? "Take a piece of empty honey-comb and cut off all the cells, until nothing is left but the division wall of wax between the two opposite sets of cells and you have a comb foundation. The latest production, however, consists not merely of the dividing wall but also a slight depth of the cell walls, themselves, on each side, and these cell-walls, although slight in depth, may be of such thickness as to contain enough wax, so that the bees may work out or prolong the cells to their full depth without any additional material. These comb foundations are given to the bees in their broad chamber, enough being put in a frame to fill it, in whole or in part, perhaps only a narrow strip being used for surplus honey, enough being given to fill the boxes, or merely enough to give the bees a start. The object is to save the time of the bees in secreting the wax, as also the honey used in its production. Another object is to secure all straight, worker comb, and still another to hasten the commencement of work in boxes when the bees are loth to enter them."

The Canada Farmer

TORONTO, CANADA, NOVEMBER 15, 1876.

Another Hoax Exploded.

In the June number of THE CANADA FARMER, p. 115, we inserted a brief paragraph announcing a most wonderful discovery, claimed to have been made by Professor P. B. Wilson, of Washington University, Baltimore. This was neither more nor less than that minutely pulverized silica, as an element in plant growth, is taken up originally *not* in the fluid state, but *free*! We stated at the time the nature of the experiments and mode of reasoning by which the Professor's conclusions had been reached, adding that the theory was certainly startling and would require much more positive evidence to warrant its acceptance. Since then the announcement, evidently because of the respectability and high professional standing of the discoverer, gained currency in *Silliman's American Journal of Science and Art*, the *Polytechnic Review*, the London *Journal of Science*, and, with a faint protest, the *Monthly Microscopical Journal*—in brief the eyes of the scientific world were directed towards it as something likely to revolutionize the entire field of agricultural science. People were scarcely prepared for the divulgences that were shortly to follow. If Professor Wilson is not American born, he has been most thoroughly americanized. Professional reputation is with him as nothing at all compared with a good stroke of business, and business alone was in his eye when he penned his extraordinary discovery. At least so says the *American Journal of Microscopy* which has taken the trouble to call in eminent scientists and probe the new theory to the bottom. The results of the investigation, as published in its August number are first that no such forms as those delineated by Professor Wilson are to be met with in straw treated with nitric acid; secondly, that Professor Wilson never made the discoveries claimed by him, or attributed to him; and finally, that the whole matter is a huge advertising *canard* and consequently a swindle designed to draw money out of the farmers pockets for an article (infusorial earth) that would prove of no earthly use to them whatever. Swindling of this nature is bad enough when confined to lightning-rod men and other itinerants in the lower walks of life. When permitted to enter college halls and pollute learned professors it becomes a serious matter indeed.

Butter from Thames Mud

We have already referred in these columns to the artificial butter question, detailing in one or two instances the delectable process of its manufacture from suet, tallow-candles, soap-grease, waggon-grease, and other such spotless ingredients. More light has since reached us, which serves to show not only the wonderful elasticity of speculative principles in general, but how the very vilest of nature's refuse may be utilized to fatten a Briton and turn a penny at one and the same time. The narration will, no doubt, have a sanitary, appetizing effect upon epicures, and for their special benefit we hasten to submit it.

On the Essex or north shore of the river Thames, from Dagenham downwards, is a long stretch of artificial embankment, the original construction of which dates back to the Saxon period, and which is still kept up by the proprietors of the riverside meadows under the watchful eye of the Thames Conservancy Board, with a view to preventing an overflow of the Thames, the land lying in this district being a few feet below high-water mark. Roughly built of sandstone boulders, and possessing a gloomily uninviting aspect, the stretch of river-dyke is almost unvisited except by an occasional sportsman or the workmen employed at the chemical manure works, dotted at long intervals along it, each with its jetty stretching into the river. At low tide, however, is occasionally to be observed a busily employed "mudlark," basket on back, and hook in hand, like the traditional rag-collector of Paris, intently searching each crevice and cranny of the bank near the water's edge for something that appears to be an object of eager desire to the anxious seeker. This something is Thames fat, and the mudlarks are commissioned, we are assured, by London manufacturers, to seek the dainty treasure trove in the interests of our metropolitan butter supply. The grease, originally poured into the bosom of Father Thames from the drainpipes of countless factories, and mingled with the liquid household refuse of a million kitchens, is washed, congealed, and agglomerated by the action of the tides until when found it is of about the consistency and apparently almost the purity of ordinary Russian tallow. The stones of the bank are plentifully bespotted with its white particles, but it is not for these that the *chiffonnier* seeks. His basket, if examined, is found to contain perfectly-shaped balls of the oleaginous matter, varying in size from a walnut to that of a cricket ball. And here is a result of the action of specific gravity. Each of these balls of fat, slate-coloured without, but almost white within, has (and this without exception) for its nucleus a cork. Around the cork is matted a collection of hair and woolly fibres, and gathered upon this is the fat, accumulated during days and nights of floating up and down the river until it is left by the retreating tide upon the bank. As nature's refining process would not leave the unctuous matter sufficiently pure for the fastidious palates of the consumers of best Britanny, it is subjected to various boilings and strainings by the manufacturer who receives it from the collectors, and is then sold to the retail trade, who distribute it to the public in different guises as salt and fresh butter. On a "lucky day" an industrious mudlark will earn as much as 3s. 6d. by his queer occupation at the two tides.

We wonder if the cork, hair and woolly fibres above mentioned are retained and transformed along with the villainous stuff that surrounds them!—for, evidently, they would constitute the cleanest ingredients in the mass. Verily nothing has been made in vain.

Notes from "Sarawak."

EDITOR CANADA FARMER. The mild weather this morning tempted me to take a walk to a field, some distance from my house, where my sons were busy securing the root crops. In one place where the earth had been disturbed by the removal of the carrots, I found caterpillars with a variegated coat. One of my sons tells me that he has noticed them feeding on the carrot tops, whilst some green caterpillars were feeding on the leaves of the sugar beet. They appear to have given over feeding and retired to their winter quarters since the cold spell of last week, when a couple of inches of snow with some sharp frost, with the thermometer at 29°, made us fear that we were to have a repetition of the weather of about six years ago, when the winter set in on the 18th of October, and most of the farmers in this part of the country had to leave their potatoes and turnips in the ground all the winter. For the last two or three days the thermometer has stood at 56°, at which I hope it will continue long enough to enable us to secure the root crops, which, in this part of the country, are pretty good. I have filled the box containing the caterpillars with dry earth, to prevent it from being shaken too much in the transit, and hope it will reach you safely. If I can find any of the green caterpillars when were on the sugar beets, I will send a specimen or two. The cabbage butterflies made their appearance in this part of the country for the first time this year, and have proved very destructive to the cabbages and cauliflowers in most places. What with them and the Hessian fly, which has appeared in North Keppel this year, we may expect a trying time for the farmers for some years to come, as no doubt the Hessian fly will extend all over the province, and farmers will have to look out for some flinty-stemmed and early varieties of seed wheat next year. My fall wheat is looking very fine—or first-rate, in accordance with the prevailing slang of the day. Perhaps the late cold spell may prove beneficial by checking the upward growth, and causing the young plant to expend its strength in striking downwards. Now that the threshing machines have gone their rounds, the result may be stated here as in other places. Fall wheat, a failure; spring wheat, half a crop on an average, the extremes being from 5 to 20 bushels per acre; barley, below an average; oats, hay and peas, generally good. As for fruit, apples and pears good; plums a failure. I have heard of only two fruit growers in this township who complain of blight in their apple trees. One complains of his vines being killed, for which he can assign no cause. Price of wheat steadily rising; and, as probably the senseless indignation meetings which have been so generally held in England will baffle all attempts to preserve peace, we may expect war prices next year, which may make amends for the smaller than usual quantity of wheat our farmers will have to spare. I would suggest that our leading butchers should buy up and slaughter all the second-class cattle they can get, such as would scarcely pay to ship alive for the English market, as in the too probable event of a war there will be a great demand for salt beef for the English navy, which the Old Country farmers will be unable to supply. About £100,000 worth of Spanish cattle were imported into the county of Cornwall last year. The voyage is short, as the sailing vessels specially engaged in the trade make the round trip in from nine to fourteen days. Most of the cattle raised in that country are sent thither alive or dead to the up-country markets.

SARAWAK.

Cost of Farm Labour in Scotland.

The *North British Agriculturist* has been looking up the cost of manual farm labour in different districts of Scotland. Beginning with a Mid-Lothian farm of four hundred imperial acres, one-third of which is in grass, one-sixth in turnips, and very little under potatoes, the annual outlay for manual labour is 36s. ($9) per imperial acre, or £720 ($3,600) yearly for the 400 acres.

Coming nearer the city of Edinburgh, to a farm where only about one sixth is in grass, where potatoes are grown extensively, and the grain as well as the green crops mostly all hand hoed, the labour account reaches about 48s. per imperial acre. Indeed, taking those portions of the Lothians where all the land is steadily under crop, with only one grass, and probably a sort of two green crops, we find the expenditure for manual labour alone ranges from 40s. to 45s. per imperial acre annually. Twenty-five years ago the outlay in the same district under this head ranged from 24s. to 30s. per acre.

In Berwickshire the annual bill for a 520 acre farm reaches £830 ($4,140), or 32s. ($8) per acre. On one large farm of 1300 acres in Roxburghshire the wages bill comes to about £1,680 a year, which represents 26s. per acre. The amount paid to women or day labourers on this farm annually is about £500, while for harvesters close on £200 a year is paid, and ten ploughmen receive on an average £50 each per annum. The remainder is paid to stewards, shepherds, cattlemen, &c.

Moving round to Dumfriesshire, where the five-shift course of cropping with two grasses is generally followed, the labour outlay does not exceed 26s. per arable acre. It may safely be said that for the lowland or all arable part of the county or south-western district, the labour bill ranges now from 28s. to 32s. per imperial acre annually, according to the size of the holding and nature of the land.

One farmer, about the centre of Ayrshire, makes his labour outlay about 30s. per acre, but on many farms nearer the coast it is more. An experienced farmer in Ayrshire writes us that from calculation he has made he finds that 40s. per imperial acre would fully cover the outlay at the present time for all manual operations properly agricultural on most low ground farms from Glasgow to Girvan. On the arable farms in Dumbartonshire and Argyleshire the expenditure in question varies from 25s. to 32s. per acre. In the lower part of Stirlingshire it is rather higher—some of the strong land, freely cropped farms there having an annual expenditure for manual labour of about 35s. per acre.

In the counties of Forfar, Perth, and Kincardine, from £42 to £45 was the amount set down, as the allowance to each ploughman a year, whereas in the south from £45 to £52 were the corresponding sums, £50 being the more common figure. The majority of the ploughmen in the lowlands of Perthshire, Forfarshire, and Kincardineshire live in that institution properly known as the "bothy." That may to some extent account for the difference as

compared with the south, where the cottages are numerous and the rents of which go to make up the total allowance to the men. From one Forfarshire holding we have had 32s.; from another 30s. One Perthshire farmer makes his annual disbursement in the form of wages 33s. per acre, one 28s., and one even so low as 24s.

The average of the arable farms in Aberdeenshire and Banff is now about 30s. per imperial acre. From some holdings under 200 acres we have had as high as 33s. per acre, while in other instances 28s. have been returned. One farmer, whose possession of 150 acres in the Alford district of Aberdeenshire is all arable, has an annual disbursement of 32s. per imperial acre for manual labour. In the lowlands of Moray, Nairn, and Inverness the figures are not quite so high, except on farms where potatoes are grown to a large extent. Then, as already hinted, in the counties to the north of that wages are not yet so very high as in the south, and arable farmers are thus enabled to till their holding at a yearly cost—for manual labour only, mind—of from 20s. to 28s. per acre.

From beginning to end of this inquiry, says the *Agriculturist*, we have found that the labour account was relatively smaller as the holdings increased in size, which is a significant fact. Taking the arable land of Scotland as a whole, we have made the average annual cost, in the form of manual labour, of cultivating every acre, 32s. This is about 75 per cent. more than it was only a quarter of a century ago. Has the amount of the agricultural produce, or even the price thereof increased in a corresponding ratio during that period? Assuredly not. Then, unluckily for the tenant, rents have risen considerably since 1850. But this is not all that is unfavourable for the occupiers of land, tradesmen's accounts, manure bills, cost of agricultural implements, price of horses, &c., have been enormously increased in the course of the last twenty years. The extent of that increase, as well as the complete labour outlay, including tradesmen's ac., we must postpone to a future inquiry. Meantime we may add that if any of the above calculations or estimates differ materially from the accounts of representative farmers in the respective districts, we shall be happy to publish the corrections or comments thereon. The above estimates do not include the cost of any drainage or reclamation works, but just the ordinary labour of all-arable farms.

Cementing Cellars.

EDITOR CANADA FARMER.—I have, for several years back, been very much annoyed with a damp cellar, on which experiment after experiment had been tried with very indifferent, and in no case permanent, success. I have at length, however, "struck" upon an idea, and as it has proved eminently satisfactory, I will, with your consent, make it known to my brother farmers and others who may be similarly situated. Cellars that are merely damp after sharp rains, and then dry off again of their own accord, can be made water-tight by a coating of good Rosendale cement (half sand, half cement) an inch thick. But when, as in many cases, the pressure of water is great and it rises a foot high or more at times, another more effectual mode of treatment is necessary. The plan I adopted was as follows:—I got a lot of cobble-stones, about the size of a goose egg, some larger and some smaller. I then got good fresh cement, and secured the services of two active men, one of whom I kept mixing the cement, so that it was always ready for application half an hour after mixing. I spread a layer on the ground about an inch thick, then quickly set the stones close together, sinking them down into their soft bed nearly to the earth. As soon as I got a good strip, say four feet in width, arranged in this way, I finished it up by an extra coat of cement over all; when I proceeded in the same way with a second strip, and so on until the whole was completed. It is well to adopt this "strip" method, for, although the finishing coat could be left until the entire floor is ready to receive it, still it is doubtful whether the two coats of cement would then coalesce as effectually as when both were comparatively soft and fresh.

The grouting system, that is, arranging the stones on the bare ground and then pouring cement over them, is a good one; but, in order to be effective, it must be done in a very dry season, when no heavy rains occur before it has had ample time to harden.

SUBSCRIBER.

English Tenant Farmers.

It is a difficult matter for outsiders, however dispassionately disposed, to arrive at at a just estimate of the relationship now existing been landlord, tenant and labourer, in English Agriculture. The mere onlooker, though dispassionate, can scarcely be said to be as well informed as the partizan in active combat; and the latter is, in turn, prejudiced to such a degree that his testimony must be received with considerable caution. Tenant farmers have, of late years, been scarcely holding their own. Their lands, they say, are not as fertile as they used to be; the prices are low and, therefore, their complaint is, first, high rents—and secondly, high wages for labour. Landlords, on the other hand, attribute these lamentations to mismanagement on the part of the tenants themselves, and resist any reductions, although a few of them have yielded to the inevitable and allowed a slight rebate.

Both alike unite against labourers' unions, which they denounce as the most fruitful sources of trouble with which any country has ever been cursed, and labourers retort with the well-worn cry of "self-defence."

A practical letter by "An Old Farmer," which lately appeared in one of our English exchanges, throws something like new light upon the whole matter; and, although it may not serve the purpose of "oil upon the troubled waters," still it has attracted, and is yet attracting, enough attention to warrant very serious consideration on the part of those who consider themselves perhaps most injured. The writer, referring to a recent speech by Lord Walsingham, and a subsequent discussion thereon between a "Tenant Farmer" and a "Farmer's Son," goes on:—"I too am glad that Lord Walsingham's speech has not been allowed to pass without notice. But, sir, as we do not differ in fact so much as we do in opinion, permit me to say that I cannot agree with 'Tenant Farmer,' nor with 'A Farmer's Son,' in the opinions they expressed in your issue of last Tuesday and Thursday. 'A Farmer's Son' says, he did but little suppose that 'A Tenant Farmer' would speak out in the way he did. For my part, I am not at all surprised to hear 'A Tenant Farmer,' or 'A Farmer's Son,' speak out; for in this our day you can hardly tell a tenant-farmer, or a farmer's son, from a lord or a duke. At the same time, I must confess that they speak of grievances that are only too keenly felt; but they do not try to remove those grievances with the proper means: I, with 'A Farmer's Son,' say, 'No, my lord, not by reducing our labourers' wages;' and I say, also, not by reducing the rents of my lord; but by a plan which all can act on themselves. I have known farmers who have lived and brought up a family, and put their sons into farms as they grew up, and who yet managed to save a few pieces of gold with the image upon them of her most gracious Majesty the Queen. But, sir, in those days, 'A Tenant Farmer' or 'A Farmer's Son' could do what they complain they cannot now—hold their heads above water; for they were not then sunk under water with heavy gold guards and studs and other finery. In those days a farmer did not try to swim with so much silver on his harness as he does now, nor did he allow his sons to keep their riding horses, worth £100 to £150 each, nor guns and dogs to match. Then farmers' sons were learning to farm and preparing themselves for the day when they should get into a farm, and learning how to work it to the best advantage. But now, sir, shooting, coursing, yachting, and racing are the glory of farmers' sons, and the drawing-room and the ball-room are the pride of their daughters. 'A Farmer's Son' then calls public attention to the local liquidation cases. Let him note the sort of farmer that meets the fate of having his name on that list. 'A Farmer's Son' will find, I apprehend, that it is not the farmer who trains his sons to plough and to sow, and his daughters to milk and make butter and cheese, that is in that list; it is those men who are training their sons, or have been trained themselves, to appear as much like a lord as Lord Walsingham, and their wives and daughters as much like a lady as my Lady This or my Lady That. I therefore think that, instead of reducing the rents or the labourers' wages, it would be better to reduce a little of that which I must call pride. 'A Tenant Farmer' and 'A Farmer's Son' will then be able to keep their heads above water, and keep themselves from sinking into the unfathomable abyss of liquidation."

THE COLORADO BEETLE, said recently to have made its appearance in Germany, turns out to be something different. Mr. Murray, of Bethnal Green Museum, reports on the authority of M. Chevrolat, Paris, France, that the specimen is not the true *Doryphora decemlineata*, but an allied species, *Doryphora juncta*, very much resembling it, which inhabits the Confederate States and does not meddle with the potato. Mr. Murray says that specimens and illustrations of both may be seen in the Bethnal Green collection. The consolation, however, must be exceedingly small to the European farmer, for if the one has crossed the ocean, why may not the other? and, as the numbers of the potato species are infinitely the greater, so must the chances of its raid be multiplied. Some of our contemporaries seem to augur but a short life to the pest in Europe, owing to the transatlantic facilities for stamping it out. The London *Farmer* is not so confident of this, for it says:—"We fear the confidence of our friends may be found misplaced. We are not prepared to deny the credit of prompt action to the Germans, or that they 'manage these things better in France,' but as far as this Kingdom is concerned, judging from our inability to exterminate foreign animal diseases, we fear our chance of stamping out the voracious foreign potato beetle would be but small. It is satisfactory to know that at present we are free from an invasion by this pest."

M. CARRIERE, a French writer, publishes some interesting particulars regarding the preservation of potatoes during winter and spring. The methods usually employed he characterizes as both good and bad; good, because the atmosphere of cellars or pits is usually damp enough to prevent the too speedy evaporation of water from the tubers, and bad, because the cellars are almost invariably kept closed, so that occasionally the temperature rises considerably and induces the very evil most to be avoided, namely, the sprouting out of buds. In storing potatoes for seed or culinary purposes, the main object in view is to prevent their germination, so that it may not be necessary to pick out the budding eyes, a process which invariably induces a rapid deterioration in quality and strength. To prevent this, the store-places should be wholesome, dry, and *freely ventilated*. In extremely cold weather the temperature must be raised by artificial means, but an excess of warmth is to be carefully guarded against; it is sufficient to keep the temperature just above freezing point, the arrival of which may be proved, in the absence of a thermometer, by the appearance of ice on a shallow pan of water purposely kept in the store-place. These measures suffice in the case of potatoes intended for planting out, but where they are required for domestic consumption the further precaution must be taken of shielding them from the action of light. If this be not done, the tubers are apt to turn green, a change which is nothing to their detriment for seeding purposes, but which is attended by chemical alterations that give them a bitter taste, and quite spoils them for domestic use. By attention to these points, M. Carrière has succeeded in keeping old potatoes in good palatable condition up to the middle of June, or sometimes, as in the present year, to the middle of July, by which date the new potatoes are no longer scarce, dear, and tasteless, as is the case at the time the old stock usually goes out.

SEVERAL MEMBERS of the Parisian Biological Society have recently been engaged in a series of experiments which seem to prove that everything endowed with life, whether animal, plant or ferment, is susceptible of being brought under the influence of anæsthetics—in other words, may be sent to sleep. It has been proved that the influence of anæsthetics extends to all the animal tissues, and last of all, to the central nervous system. Hence, it was argued, plants having tissues must also be subject to the influence of ether, etc. Experiments prove this to be the case. Germination is arrested by anæsthetics. The watercress, for example, germinates within thirty hours. Ether arrests germination in this plant, but does not destroy that faculty. It merely sends the plant to sleep, for germination recommences as soon as the use of ether is suspended. But the sensitive plant furnishes a still more striking illustration. Its sensitive faculty is rendered completely dormant by etherization, while the other living properties remain unaffected. On suspending the action of ether, the sensitive faculty of the plant is quickly restored. The capability of being sent to sleep is not confined to

plants; it extends to ferments. Thus the ferment of beer, when submitted for twenty-four hours to the influence of ether, becomes perfectly dormant, but recovers its activity as soon as the anæsthetic action is suspended. In future the practical botanist must not pursue his cruel rambles without the assistance of one of the Chlorine family.

It Has Been Stated that the Chinese method of layering roses is sometimes more successful than ours. Late in the summer they select a vigorous shoot of the same year's growth and tongue it in the usual way; they put in a small pebble to keep the slit open, and bind a handful of fresh roses around the tongue, keeping it constantly dampened. In about six weeks it will have struck roots, and can be planted without disturbing the mossy covering. Many of the garden roses can be increased by suckers from the roots, which can be severed with a sharp spade in the autumn and new bushes formed of them. Budding roses is a simple process, by which amateur cultivators often increase their stock. A sharp penknife can do duty for a budding knife, and the handle of a toothbrush, if ground down smoothly, will answer for a spud to aid in lifting the bark. From the last of June to the last of August is the best time for this process, as the bark can then be more easily raised from the wood. Take a smooth stalk and make a horizontal cut across the bark, through to the wood, but not into it. From the centre of this cross cut make another straight cut down the stem, an inch or more in length. These two cuts should resemble a T. Slice off the bud you desire to propagate with one cut of the penknife, cutting it close to the brak Now, with the edge of the spud turn back the stalk on each side of the straight cut and insert the bud on the wood of the little branch to be crossed With a bit of soft yarn bind down the bark, leaving the point of the bud exposed. A handful of dampened moss must then be bound round the stem, taking care to leave the tiny point of the bud exposed to the air. In six weeks the wrappings can be removed, but all other shoots must be kept from growing on the budded branch. By this means a rosebush can be made to bear half a dozen different colored roses.

The Belgian Journals, in their reports upon the exhibitions now being held in Brussels, comment, in very high terms, upon the "Mainstay" wheat, which is shown by Capt. Delf, Great Bently, Colchester, who is the originator and cultivator of this new variety of wheat. They speak of it as truly superb, and far superior to any other kind of wheat grown in 1875. The particulars of the habit of this plant, which are set forth in the circulars placed upon the stand, indicate that it is a wheat very well adapted for the wheat lands in Belgium

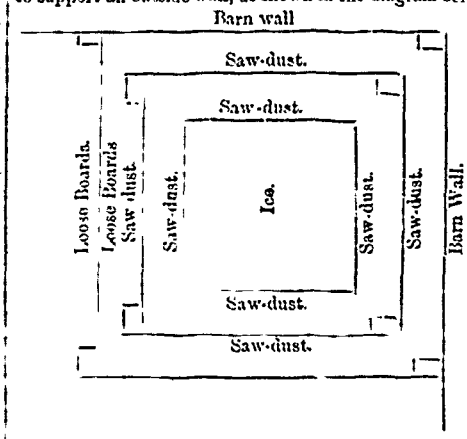
The attention of scientific men has been directed to it, the various meritorious qualities possessed by this grain being well worth their attention.

At the recent Corn and Seed Congress held in Vienna and Pesth, samples of the "Mainstay" were shown, and received the highest praise. The Austrian journals welcome the enterprise of an English agriculturist, and from the opinions received from those competent to judge, they have no hesitation in recommending the "Mainstay" to their countrymen. Considerable orders are being transmitted from Germany, Austria, Hungary, and the Danubian provinces.

Ice and Ice-Houses.

A store of ice is now considered as an absolute necessity for the dairy, and it is certainly very acceptable for the household. Every person who lives "in the country," with very few exceptions, may have a supply of ice if he wishes it. The first thing to be secured is the ice; the ice-house is really the simplest affair possible. Upon every farm where there is a stream an ice pound may be made with little trouble and at small expense. To dam up the water and make a shallow pond is easy enough. To do this drive a few stout stakes or posts on the line of the proposed dam, carefully leveling their tops by stretching a cord from end to end of the row and applying a spirit level to the line. Then nail boards to the posts in the manner of a tight fence, placing the lowest edge close to the groune. It would be better first to plough a furrow, and set set the post in it, nailing the lowest board closely down to the earth; then plough furrows toward the boards on the inside, or the pond side, packing the earth down closely, and continue this until no more can be ploughed, when the earth loosened by the plough may be thrown into the dam with the shovel. A week's work will make a dam large enough to raise a large pond When this is done planks should be placed against the posts that have been driven in the edges of the stream, and on the pond side, so that the pressure of the water will hold them against the posts. This will raise the water which should flow over the upper plank and not over the dam when the pond is full. Every ten feet square, or 100 square feet of surface, when frozen six inches thick, will yield a ton and a quarter of ice. A pond 100 feet long and fifty feet wide, frozen six inches thick, will yield over sixty tons of ice, or enough for ten families, each having a dairy Six tons of ice, allowing half to waste, (which should not be allowed,) would furnish fifty pounds a day for four months. This would supply one of the Hardin milk refrigerators large enough for a dozen cows. By selling the surplus ice to neighbours the cost of the pond would be repaid the first year One dollar a ton would be a moderate charge for the ice; the purchaser to cut it for himself. Forty cubic feet may be given for a ton.

To make the ice-house, the following plan will answer as well as the most costly one: Take a corner of a barn or outbuilding on the north side and mark out a space one foot from the wall on each side, seven feet square, to hold five tons of ice, or ten feet square if ten to twelve tons are required. Tack or "toe-nail" at each corner a piece of scantling eight feet long, and nail to them some rough boards so as to inclose the space marked out on the three sides. Leave the fourth side, which would be toward the inside of the barn, open. Fix scantlings outside of the space, and one foot from it, toward the inside of the barn, to support an outside wall, as shown in the diagram below:



It will be seen that upon one side the boards are left loose. This is done that the ice can be packed, and as it is packed these boards are placed one by one as the pile rises, and as the ice is taken out they are taken away one by one. A supply of saw-dust is then to be procured. Tan-bark, oat chaff, wheat-chaff, or cut straw may be substituted; their value being in the order in which they are named. When the ice is ready, and the place prepared, six inches of saw-dust is laid smoothly upon the bottom of the inner space, and some smooth-edged boards are laid upon it beneath where the ice is to be piled. This is to exclude air from beneath as much as possible, yet to keep the floor dry When a foot of saw-dust is laid upon the floor, and the ice cut in square pieces of even size, so as to pack solidly, it is piled in the centre, leaving a foot of space between it and the inner wall. As the pile increases in height the saw-dust is thrown in both spaces and trampled down closely, the loose boards being put in place as needed. When the pile is seven or eight feet high, or high enough, the whole is covered with a foot and a half of saw-dust. The top one of each set of loose boards is nailed firmly to the posts to keep the walls from spreading; this should be done at the commencement. It is not necessary to do anything further, as ice may be kept very well in this way without any more protection than adding covering to the top, if necessary. It would be a safe precaution to block up the floor timbers of the barn beneath the ice, to support the weight. To make any sort of ice-house, the plan here outlined may be adopted. It must be borne in mind that the floor beneath the ice must be air-tight, and yet thoroughly drained; that the walls must be double, and perfectly free from any currents of air; that the ice must be surrounded on all sides with a porous dry substance, and one as perfectly impermeable to air as possible; that the top covering should be at least eighteen inches thick, and need not be tightly closed in, but must be protected from the sun, and that the ice must be packed closely and solidly, and in freezing weather If these requirements are observed the ice-house may be anywhere, or of any material, size, or shape whatever. We hope that those of our readers who intend to put away ice, or expect to, or may by any probability do so, will cut out or preserve these directions, and not ask for them to be repeated.—*New York Times.*

That the Little Bat, not very common in the North, could congregate in sufficient numbers to make extensive deposits of excrement which have a commercial value, seems almost incredible; but in numerous caves, from Virginia to Texas, are found deposits of this material, sometimes reaching 20,000 tons in extent, and yearly increasing. During the war it was thought to extract nitre from it for powder-making; but though the manufacture was somewhat successful, the nitric acid was present in such small quantities as to render it so expensive as to be abandoned at the close of the war. The material has been used as a fertilizer to a slight extent, and is found to exert a considerable influence on the crops treated. The attention of Mr. McMurtrie, chemist to the Department of Agriculture, having been called to the matter, analyses have been made of the samples collected. These are all of a similar light to a dark brown color, according to the moisture, except those containing much insoluble matters, which resemble soil, of which they probably largely consist. The physical condition when air-dried, is excellent, both for handling and application, being highly pulverulent. The analyses fairly represent the average composition, which, according to the valuations of Professor Grossmann, the Massachusetts State Inspector of Fertilizers, adopted by the department, show them to possess a value of from $15 to $55 per ton for use as fertilizers. The values compare favourably with those of fish fertilizers, and even of Peruvian guano. Microscopical examination shows the material to consist largely of the hard parts of insects upon which the bats feed. Mr McMurtrie wisely concludes: "With these facts before us, we may readily recognize the importance of the development of these deposits in the South, where fertilizing materials are so much needed and are so costly, and especially when they may be obtained for the mere cost of removal."

A Very Simple Calculation will sometimes lead to exceedingly interesting and curious results. One of our American exchanges has recently been figuring up the fence question, and these are its conclusions: The cash value of the annual farm products of the United States is over $2,450,000,000, while the value of all the live stock, including horses, mules, cattle, sheep, hogs, was, on the 1st day of February, 1872, $1,659,211,933, or about $8,000,000 less than the value of the annual farm products. To protect this $2,450,000,000 worth of growing crops from being destroyed by the $1,659,211,933 worth of live stock, we have built 1,619,199,428 rods of fence, inclosing 2,050,505,614 acres of ground, with an average of 6.46 rods per acre, costing $1 08 per rod, or $6 98 per acre, making a total cost of $1,748,529,185, or about $89,317,192 above the value of all the live stock. The annual decay and cost of repairs cannot be less than 10 per cent. of the original cost of the fence, or $174,852,918; interest at 7 per cent. per annum, $122,397,042; total annual cost $297,240,960. But this is not all. A fence occupies and wastes an average of one-half rod wide, or one acre for every 50 inclosed, making a total for all the fences of 50,101,123 acres. The gross proceeds, per acre, for the cultivated grounds in the United States for the year 1871, amounted to $9 78. Call it $9 per acre, and taking two-thirds as the cost of cultivation, we have $3 as the net proceeds per acre, which would show an annual loss of $150,303,369, which added to the annual cost to settle up and develop the country, gives those who improve and cultivate the land the heaviest burden of taxes to pay, and they expend more than all the stock in the country is worth to fence in their crops, and give free range to the stock owners, who need not own or improve, or pay taxes upon a single acre. But people are beginning to believe that when they have bought a piece of land, and paid for it, and paid taxes upon it, they ought to own the land; and the crops growing thereon, and be protected in their right to do with it as they please, providing that nothing which they do, or grow, or keep, shall interfere with the right of others.

Dairy and Other Stock in England.

It will be noticed by the following prices of dairy and beef cattle, and sheep in England, as reported in the Agricultural *Gazette*, that the prices range higher by far than in this country. The cattle are doubtless grades and greatly superior to the average of our own farm stock, and the same may be said of the sheep:

Basingstoke, Sept. 6.—At Messrs. H. E. Raymbird &

Sons' fortnightly auction sale of stock, there was a supply of 20 fat beasts, 18 fat calves, 698 fat wethers, ewes, tegs, and lambs, 127 fat and store pigs, and 6 dairy cows and heifers. The attendance was unusually numerous. Beef sold readily at former rates, as also did good quality of mutton; secondary quality mutton sold at rather lower prices, as also lamb. Veal met a ready trade at higher prices. Fat and store pigs as previously. Dairy stock an improved trade. Fat beasts, £16 10s. to £24, fat calves, 62s. to £7 2s.; fat wethers, 61s. 6d. to 74s., fat ewes, 61s. to 82s.; half ditto, 46s. 6d. to 50s.; fat lambs, 30s. 6d. to 61s. 6d.; fat rams, 56s. to 84s.; fat hogs, 102s. to 113s.; fat porkers, 40s. 6d. to 79s.; strong stores, 30s. to 55s.; small ditto, 15s. 6d. to 25s. 6d.; dairy cows and heifers, £10 to £16.

NORWICH, Sept. 9.—A large supply of store cattle, and a clearance was far from being effected, although prices were reduced in some instances 5s. to 10s. per head. Short-horns, £10 to £24; and Irish, £8 to £22 per head. Fat beasts, 9s. 6d. to 10s, 6d. per 14 lb. The show of sheep was again considerable, and business in this department being also sluggish, prices gave way 1s. to 2s. per head. Fat sheep made 10s. to 11s. per 14 lb.

NOTTINGHAM, Sept. 9.—Show of cattle not large. Milch cows in fair demand at late prices, namely, £18 to £20 per head. The few barren cows on offer sold slowly. There was a small show of lambs, the enquiry for which was restricted. The trade in calves, of which the supply was moderate, ruled slow at former prices.

CARLISLE, Sept. 9.—There was a moderate supply, and the quality was better than usual. Milch cows were the best we have had for many weeks, and sold readily at £26 to £30 each. Irish were most numerous, but sold slowly at £7.to £11 each. Good supply of lambs, which made the prices lately quoted. Cheviot lambs, 15s. to 17s.; half breeds, 25s. to 27s. each.

CHIPPENHAM, Sept. 8.—Average supply. Beef, 14s. to 14s. 6d. a score; mutton, 9½d. to 10d. per lb.; lamb, 11d. per lb.; veal, 8d. to 9d. per lb.; pork, 12s. 6d. per score.

COCKERMOUTH, Sept 4.—A remarkably good sale for dairy cattle, in fact, one of the best we have ever had, many animals realizing from £18 to £30 each. A rattling market for veal calves. Fat sheep and lambs receded a little in value from last week, but not quotably. We had 129 Herdwick wedders, the property of Lord Leconfield, in the market. They came direct off Skiddaw forest, and made from 33s. to 43s. 6d., or an average of 36s. each.

READING, Sept. 9.—Supply of cattle scarcely so large as of late, farmers holding on stock for a time longer. Cows in full milk were readily taken off at prices £26 to £30; other animals for milking purposes, £22 to £25. Young stock experienced a fair demand, and the two-year-old steers and heifers, £8 to £10 10s. each; yearlings, were £5 10s. to £7 10s. Barren cows not much in demand; prices £10 to £13; sucking calves, 25s. to 35s. each; fat calves, 65s. to 85s.

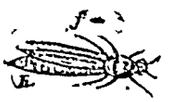
DONCASTER, Sept. 9.—About the usual supply of beasts for the time of year, and buyers fairly numerous. Business fairly good, and late values fully supported. Milch cows and in-calves, £16 to £20 and £22; heifers, £12 to £16; barren stock, £7 to £12; calves, 45s. to 50s. a head.

Insects on House Plants.

The "green-fly" every plant-raiser knows, and he knows, too, to his sorrow, how destructive it is if left to itself. The plants which this insect attacks are the softest and most succulent, and at the end of the young shoots, and the softest leaves. It sucks the juices so as to materially injure the plant in a short time. The insects of this kind *(Aphis)* increase with such wonderful rapidity that Beaumur has proved that in five generations one aphis may be the progenitor of six thousand millions, and there may be ten generations in a year.

The insect inflicts the injury by means of a long rostrum or beak, through which it sucks out the juices—the rostrum when not in use, lies inflected beneath the breast. Their bodies, at the hinder extremity, are furnished with two little prominent or knotty openings, from which exude almost continually little drops of a sweet or honey-like fluid. As they take in great quantities of sap, they would soon become gorged if they did not get rid of the superabundant fluid. The leaves and bark of plants much infested by these insects are often completely sprinkled over with drops of this sickly fluid, which, on drying, becomes dark colored and greatly disfigures the foliage.

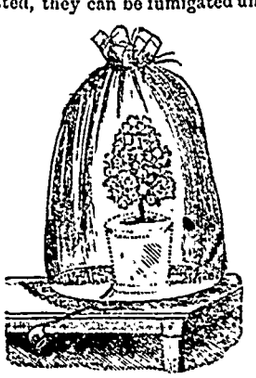
Of all the means that have been employed for the destruction of this insect, that which has proved most efficient and the one now almost universally practised, is fumigation with tobacco. Those who use it frequently in green-houses, procure tobacco stems, when they are readily to be had, on account of their cheapness; or in suitable climates a small crop of it is raised for this purpose, but tobacco in almost any form may be used, and the amount necessary for a stock of house-plants is of inconsiderable value. Some plants, such as Heliotropes; Salvias, Lantanas, and some others with soft, downy foliage, will not bear fumigations without injury to the leaves, and these plants, therefore, should not be subjected to it. Many plants in full flower, but especially Pelargoniums, will throw off their expanded blooms after smoking, and therefore it is best to remove these before fumigating. Care should be used also to have the foliage of all the plants dry, for if they are wet or damp, the smoke will be apt to injure such as are of a soft texture. If the plants are in a conservatory attached to the house, the time chosen for fumigating should be a still evening when there is little or no wind stirring, and the temperature of the house should be pretty well up, as then the insects are more active and the smoke will more easily



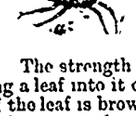
affect them. A few chips or a little charcoal may be placed upon a small furnace or a pan and ignited, and then a small quantity of tobacco placed upon it—the tobacco should have been previously dampened so as to prevent its burning too rapidly or blazing. See that the fire continues to burn, and add more tobacco, if enough has not been placed on at first, until the room is filled with smoke. It can be left this way all night, and in the morning the plants should be well syringed to free them from the dead

insects, and to remove the odor of the tobacco. After a few days it is best to repeat the smoking so as to destroy any insects that may have escaped the first time. In this way fumigation is to be practised whenever necessity indicates it; but as we have before remarked, a free use of the syringe and a moist atmosphere will render the necessity of less frequent occurrence.

When only a plant or two, or a small number of them are to be treated, they can be fumigated under an inverted



barrel or large box in a back room or shed. Single plants may be fumigated by making a bell of a newspaper, as shown in the engraving. The smoke can be introduced by means of a tobacco-pipe. Fill the bowl two-thirds full of quick-burning tobacco, and after lighting, place a piece of cotton cloth over the bowl, and blow the smoke through the stem, with the mouth. Instead of fumigation, a weak solution of tobacco may sometimes be used quite as effectively; this is often the more convenient way for a few plants. Soak or steep some tobacco in water until the



strength is extracted. The strength of the water may be determined by dipping a leaf into it or letting it remain in it for a short time—if the leaf is brown or burned, or turns so when taken out of the water, the solution is too strong, and must be reduced by increasing the quantity of water. When the right degree of strength is acquired, dip the whole plant into the water and afterwards syringe it off

with clean water. What we desire to impress most forcibly on the minds of our readers, and especially those who keep only a small number of plants in the living-room, is the better way, of watching them so closely and syringing and washing them so frequently that the fly is kept under and the plants maintained in the highest state of health.

Thrips is an exceedingly active little insect, and seems to leap rather than fly. The engraving shows a thrips of natural size, *fig. f*, and the same magnified, *fig. h*. These insects are extremely small, and have long, slender bodies, with narrow wings which are fringed with fine hair. They live on leaves, flowers, in buds, and even in the crevices of the bark of plants, but are so small that they readily escape notice, the largest not being more than one-tenth of an inch in length. The color of the insect varies from a whitish yellow to a dark brown. It attacks the extremities of young shoots and tender leaves, which become brown and shriveled, and will crumble to dust when rubbed between the thumb and finger. The same means that have been recommended for the destruction of the "green-fly" serves for this pest also, but it does not succumb so readily—the fumigation must be more frequently and persistently practised. As we have said in reference to the "green-fly," so with this insect; it may be prevented to a great extent from multiplying, by syringing and frequently washing the leaves of the plants.

If a vinery should be seriously attacked with thrips, wait until all the foliage and fruit are taken off the vines; then remove all kinds of plants that have green leaves into other houses, and shut up the vinery close and fill it with the fumes of sulphur.

The Red Spider (*Acarus Teliarius*), is a troublesome little insect, and one which, if allowed to run unchecked, would speedily bring devastations and total ruin to the plants of the house or conservatory; but it is no doubt designed for some beneficial purpose. We can more clearly see the compensating good from its attacks than in the case of most other plant-preyers. If it were not for wholesome fear which it continually inspires, gardeners and other plant-growers would probably very frequently maintain an atmosphere so dry as materially to injure or destroy their plants. If you catch a glimpse of a red spider you may be sure that the atmosphere of your plant-room has been kept too dry—if it is your living-room, it has been too dry for the health of the human occupants. It will be seen by the engraving that the insect is very minute, as shown by the little dot *a*; the same, highly magnified, appears at *b*. The body is of a blood-red color, and the feet a light red.

A plant upon which this insect has taken up his abode, in a short time shows some leaves turning yellow, indicating premature decay—when they are numerous they work webs on the under-side of the leaves, and sometimes all over it, until the plant becomes a mass of half-dead and decayed leaves.

Water is fatal to the red spider, and as before remarked, with an atmosphere of proper humidity this insect would never get a foot-hold. When once firmly established upon the plants, the speediest way to destroy them is by the fumes of sulphur. This remedy, however, must be used with caution, as the free use of it will cause most plants to shed their leaves.

Fortunately, but little of it is required; and in green-houses it has been found sufficient to mix a little flour of sulphur with water, or with milk, which is said to be better, and to paint or smear with it a small surface of the heating-pipes or the flue; a very little of it in the atmosphere proves sufficient for the destruction of the insect. In the case of a few house-plants, we think that sponging of the leaves on both sides, and syringing of the plants so that the water is thrown on both sides, and syringing the plants so that the water is thrown on the under as well as upper sides of the leaves, will be effectual without recourse to sulphur.

The Coccus, or Scale Insect, is a common pest on some kinds of plants—the Orange, the Myrtle, the Camellia, the Oleander, and many other hard-wooded plants are apt to be infested by them. There are many species of Coccus, varying slightly from each other. One kind of plants is the home of one variety, and another sort devotes its attention exclusively to some other kind. The grape, the pear, the elm, and almost every kind of our cultivated and forest trees has its special representative of this class of insects.

The remedy in this case is by washing the plant by hand and forcing the insect off with the thumb or finger-nail; or take a small, stiff brush and soap-suds and brush the plant until it is thoroughly clean. The name of the species that infests the Myrtle, Orange, Oleander, Ivy, etc., is Coccus Hesperidum.

The Mealy Bugg (*Coccus Adonidum*) is similar to the previously mentioned insect, except that it is covered with a white, mealy or downy substance. Both of them insert their beak into the bark or leaves, and draw from the cellular substance the sap that nourishes them. A weak mixture of whale-oil soap and water in the proportion of one pound of soap to five gallons of water will be found destructive to them. With a few plants only, we would recommend the use of a soft brush and water, and in this way they can be readily removed.—*Vick's Floral Guide.*

Hints on House Building.

Having recently built a residence, it occurs to me that I may offer some hints which may possibly be of use to a novice about to build. For such it is none too soon for them to commence studying a plan. It is advisable to visit some modern houses of similar grade to the one proposed to be erected. Careful estimates should be made of cost of material and labor. With a competent person to superintend or inspect the work as it progresses, having very full specifications of all details, I would have the work done by contract, unless I had a surplus of money.

After eight months' trial, we are greatly pleased with a

cistern of thirty barrels capacity, in the second story. A drain of tile is laid around the house a foot outside of and a few inches lower than the bottom of the cellar wall, continued 100 feet below the house, carrying all kitchen and bath-room slops into a cistern, whence it is pumped into the garden A strong solution of copperas is used freely as a decoction, requiring fifty pounds for the season.

House built of wood, balloon frame, covered outside with matched and surfaced fencing, building paper and siding Studding is six inches wide, strips are nailed on sides of studs and boards nailed to them, the inside face of which is two inches from inner edge of stud; the space thus inclosed is filled with dried new sawdust, and a liberal admixture of fresh dry slaked lime.

Butternut, black walnut and European larch, oiled and varnished, are used for inside finish.

The Ruttan system of ventilation is satisfactory.—*Germantown Telegraph.*

Common Sense and Forest Trees.

Every now and then some one undertakes to get up an excitement in relation to the money that can be made in raising forest trees for timber and fuel. Farmers are informed that an acre in forest trees of certain varieties will produce more money in twenty years than ten acres will if planted to annual crops that length of time. The number of cords of wood, feet of lumber, thousands of stakes, and barrel hoops are all figured out to a nicety, and the respective price of each given. Very often statements are given of the number of years required to produce trees large enough to cut four lengths of railway ties from. These statements are accompanied by others showing that at the end of the above period all the natural forests in the country will be cut down, and accordingly railroad ties will bring a very high price. In short, the railroad managers of the country will be at the mercy of the men who entertain no especial regard for them on account of what they believe to be extortion practised during many previous years.

Many farmers have put full confidence in these reports and set about planting forest trees as a means of securing a certain, if not a speedy fortune. In many cases they have purchased expensive trees, as the larch, which cost a great deal of money. In nearly every instance that has come to our knowledge, farmers "have not had good luck with them." Many obstinately refused to live even through the season that followed their planting, while the others maintained a sickly existance for a while and then gradually went into a decline. At the end of five years' time the artificial forest gave little promise of a crop of fence posts or railroad ties, while the show for ship masts was absolutely discouraging. These plantations of larch may be found in most of the Western States, and their condition is ordinarily as we have pointed out. As a rule after farmers have devoted much time and labor and expended a large amount of money at the start, the forest is leveled with the plough, which covers the few little dead trees and the many great expectations.

Now it is very likely that the supply of lumber will be much diminished during the next twenty-five years, though it is not true that forests are diminishing as rapidly as many state In some sections of the country forests are increasing very rapidly. To show that it is not ordinarily profitable to set out and tend trees for half a life time in order to have some lumber and wood, we have only to point to the portions of land in this and other Western States that are covered with trees, where land can be bought at a less price than on an open prairie in the vicinity If there was a prospective speculative value in forest timber, aside from pine and a few other varieties, we should see capitalists competing to buy up all the forests in the country. The fact is, however, that investments are rarely ever made in this kind of property. At present wood is little used for fuel in the West, and as improvements are made in the manner of consuming soft coal it will be used less than now As the country increases in age and wealth more durable materials than wood will be used in the construction of buildings.

While we believe that there is no profit in cultivating fancy trees on land that will produce good crops, we are inclined to think well of planting nuts and trees that are native to the country On any patches of land a farmer may have that cannot well be cultivated. These will include steep hill sides, the banks of rivers, rocky places, and the borders of marshes. We also believe that every farmer should have on his place one or more groves or trees, not so much as a matter of profit as for comfort and pleasure. Any farm looks very much better with trees upon it. It is more homelike, and will sell for more if it is put on the market. Some trees are an absolute benefit to a pasture, and many farmers speak highly of a grove as a place for feeding young cattle during the winter. There are many advantages in having forest trees on a place, but there is as much humbug about the forest tree business as about almost anything.—*Chicago Times.*

Chinese Farms.

The whole surface of the plain was covered with the autumn cotton crop still standing The economic husbandry of China lays hold of every bit of ground, and not a single rood was lying fallow. In the spring this vast extent of cotton-covered ground, now a snowy expanse of fleecy bolls, starred here and there with bright sulphur-yellow blossoms, had been one huge field of waving corn. During the rainy months, such is the fertility of the rich alluvial soil, it had produced its third crop, namely: rice. There was an air of quiet, of peace, and plenty, pervading the whole district. Its denizens seemed neither to heed nor to require the products of other lands. Villages there were none to be seen. The inhabitant dwelt in single homesteads, or in snug cottages, collected in little groups, like tiny hamlets, of three or four. These pleasantly diversified the landscape. Clumps of trees, from between which peered out of the quaint, curved roof, —so marked a feature of the architecture of Eastern China,— cut the sky-line and redeemed the view from the dull monotony of an endless plain. The farms bore the aspect of being owned by the well-to-do. As the narrow pathway passed in front of each prosperous-looking homestead, it widened into a smooth esplanade. On the other hand, a broad trench divided the roadway from the fields; on the other ran a neat lattice fence, deftly woven of split bamboo, often overgrown with a luxuriant creeper, which surrounded the little garden and various farm-buildings. Within this fence stood the stately trees which overshadowed the roofs, and rows of a slim and graceful bamboo, growing not in clusters, as farther south, but in single stems. The little plot between the house-walls and the paling was planted with lettuces and other vegetables. The Chinese husbandman grudges even a corner to garden-flowers; but here and there bloomed a few asters or chrysanthemums which would put our Temple garden-shows to shame; and, once in a way, the gorgeous crimson of the gigantic Chinese cockscomb glowed against the dingy background of the farm-house wall. The first tints of autumn were already deepening on the leaves, and rich yellows, browns, and reds added color to a picture which would otherwise have presented too great a sameness of hue. The dwellings invariably faced the esplanade, and filled up an interval in the fence which joined them at either end. We will describe one. It was long and low, without an upper story. The principal room was in the centre, and was entered by wide folding doors. Within it, the members of the family who were not in the fields could be seen at meals, or at indoor work. Some few perhaps were weaving long strips of coarse cotton cloth on the esplanade in front At a window was an aged dame whirling a spinning-wheel, or turning the rollers of the simple machine that frees the white tufts of cotton from the seeds. A sharp twanging sound issued from the chamber at the side. By inquiry we learned that it was caused by young lads "teazing" the cotton into thin flakes with a quaint instrument, like a fiddle-bow. The stranger was received with civility, or rather with that absence of incivility which seems the sum total of politeness among the Chinese. A hideous chorus, set up by the yelping curs which infested every homestead in the neighborhood; a sharp reproof from the farmer or his lads, which produced silence, or low and scarcely audible growls; a ready response, in pantomime, to a question in the same form as to the way, and then a relapse into silence and busy labor, as though no one of foreign race was within a league—such was the stranger's only greeting. The children and the younger women retreated within the gates, or back to the farther corners of the room, when the strange face of the "barbarian" was seen approaching. The former had already donned their winter clothing, as, early and late, the autumn air was fresh and nipping. The blue blouses and leggings, quilted and stuffed with cotton, were piled on one above another, till the little wearers looked like miniature balloons. The gait of the women, with their poor pinched feet, according to the universal custom in these northern provinces, was ungraceful in the extreme, and they toddled about in so uncertain a manner as to excite astonishment at their untiring industry in the fields. Their dress was tasteless in shape and color, and their features lacked even the slight share of good looks possessed by their sisters of the provinces farther south. There was little to attract the stranger to stay, or to induce him to investigate the style and processes of the native farm. Foul odors assailed his sense of smell as soon as he approached one of these latter. The ditch between the homestead and the fields was but a fetid sewer. Unutterable horrors were collected between the windows by the wayside, and the filth of the garments of men, women, and children was such as must be seen to be believed. The comfort, and even abundance, of which so many signs were evident, was overlaid by a superlativeness of dirt which the squalor attendant on the most abject poverty can hardly match. The visitor gladly turned away to continue his walk, and to contemplate scenes which could only be enjoyed when looked at from afar.—*Fortnightly Review.*

Agriculture in Roumania.

A correspondent of the *Times*, writing of Roumania, says:—The Roumanians are essentially an agricultural and pastoral people. According to the latest published official returns, there were under cultivation for grain about 6,000,000 acres, and for vineyards, tobacco, &c., about 600,000 more. Pastures and meadow land occupied nearly 9,000,000 acres; forests not quite five millions, and rather more than eight millions were waste lands. The total amount of live stock was estimated at 8¼ million head, of which rather less than two million were cattle, nearly five million sheep, and 427,000 horses. Such a country must of necessity be greatly dependent for its prosperity upon the seasons and the ever-fluctuating demand of foreign countries for its produce. Of late the Western States of America have proved formidable competitors to Roumania in the grain markets of the world, and more especially in the English. The statistics given by Mr. Vivian may be taken up as a fair average for the last ten years of the imports and exports according to official valuation; but they do not indicate the productive capacity, which is obviously much greater, nor the true value of the imports, which, for reasons which Mr. Vivian points out, must be assumed to be very much understated. According to these figures, the annual exports amount to nearly £6,700,000, against about £4,300,000 of imports. Among the exports, cereals of all descriptions form the chief staple, amounting to nearly £5,000,000; hides and other animal produce, to the extent of about £1,500,000. The mineral wealth of the country, which is supposed to be as great on the southern and eastern slope of the Carpathians as on the northern, is, as yet, with the exception of salt and, to a less degree, of petroleum, altogether undeveloped. Although copper mines were worked in the time of the Romans and in times far less remote, it was found more profitable to sift the sands of the river beds for gold. The chief consumers of Roumanian produce are, in the order of their importance, Austro-Hungary, which figures for a total of £1,800,000; Turkey, which averages about £760,000; England and France, in nearly equal proportions, at about £560,000. The exports to England (exclusively grain) vary, however, more than to any other country, amounting in the year preceding that taken for the average to £108,000, a difference of £520,000 between two successive years.

The imports comprise every article which a country devoid of all manufacture, except that of the most primitive kind connected with agricultural pursuits, must need. In these England figures, without much variation from one year to another, for about £850,000 per annum; Austro-Hungary, with considerable fluctuations, for about 1,500,000; France for about £300,000; Germany for about £300,000; Russia for less than £120 000. Among all other countries the highest is Italy, for less than £50,000 It is very evident from these figures that the relations of trade, export as well as import, are with the West. In regard to England, Mr. Vivian says:—"The principal imports from England are cotton and woollen manufactured stuffs, agricultural machines, colonial produce, and iron; but trade is probably capable of considerable development and expansion, especially in the commoner sorts of pottery, glass, saddlery, furniture, lamps, &c., and English manufactures are highly prized in the Principalities. The Roumanians of late years have imported a large quantity of foreign ploughs and agricultural machinery, the latter chiefly of English manufacture. . . . The English agricultural machines are most in request. . . . In a country where manual labor is scarce, the introduction of machinery has been of immense value, and its importation will probably increase as experience more and more teaches the Roumanians the economy in labor and the value of the machine in thrashing and cleansing their grain." The Commercial Convention last year concluded between Austro-Hungary and Roumania, and since ratified by the Chambers of Pesth, Bucharest, and Vienna successively, may, and probably will, place English manufacturers at a disadvantage towards their Austro-Hungarian competitors. This Convention provides that no articles of *bona-fide* Austro-Hungarian origin shall be subject to a duty exceeding 7 per cent. *ad valorem*, notwithstanding the new Customs' tariff, which comes into force on the 1st of July next, and which imposes such enhanced duties upon the manufacturers of other countries, such as cotton and woollen fabrics, leather, gutta-percha, paper, &c. Agricultural machines of Austrian make are exempt from all duty. The export duties of salt, tobacco, wines, and spirits, and on crude petroleum are abolished as regards Austro-Hungary.

Farmers' Health.

Health is usually considered as an accompaniment to an out-door life; and justly so, perhaps, as all who have experienced the good effect of a life in the open air know to their pleasure. The statistics of the Massachusetts Registration reports show also that the farmer's chances for life are larger than are the other occupations. Thus the average age at death of 31,832 farmers who are recorded from 1843 to 1874, is 65, 29 years, while the average for all classes and occupants are but 50.9 years; and of 3,435 clerks, the average age at death was but 35.93 years.

A person may live long, however, and yet be a sufferer from either occasional or continuous ills, which may be hard to bear, without being necessarily fatal; and the farmer himself may be in good health, and yet be much troubled and put to an expense through troubles within the family circle, among those who labor in the household. These our registration reports do not discriminate; and whether the farmer's wife is long lived, or the family require unusual medical attendance, must be largely derived through indirect evidence.

We derive some facts from the valuable reports of the Massachusetts Board of Health, and especially from the able article of Dr. J. F. A. Adams of Pittsfield, who has made apparently an extended and most critical study of the health of the farmer.

Farmers' Diseases.

In view of the intelligence of the farming class and of their families, we trust that a quite literal quotation of the opinions of 46 physicians, scattered throughout the State, may be of some service as a text, and as a preventive. The question given out was "What causes tend to injure the health of farmers and their families?"

Overwork is mentioned in	26 cases.
Exposure,	18 "
Improper diet,	22 "
Sanitary(defects, pertaining to barn-yards, hog-pens, privies, drains, or filthy cellars,	10 "
Want of ventilation,	7 "
Overwork among women,	6 "
Irregularity of work,	3 "
Ignorance of hygienic laws	3 "
Anxiety,	3 "
In-door life of women,	3 "
Want of recreation,	5 "
Neglect of bathing,	2 "
Damp cellars,	2 "

Of the prevalent diseases by 49 correspondents,

Rheumatism is mentioned by	28
Pneumonia,	12
Pulmonary affections,	10
Fevers,	23
Dyspepsia,	10
Phthisis,	9
Bronchitis,	4
Catarrhal affections,	4
Diarrhœa and dysentery,	10

When we consider that all the causes in the first table are or should be under the control of the individual, we can realize the importance of a better understanding of hygienic laws. In the second table we have rheumatism mentioned first among the prevalent diseases, and this trouble, although not as yet entirely under our control, either in its causes or effects, yet may be largely diminished through proper care. Pneumonia, in turn, is usually predisposed by conditions which may often be obviated; and as to fevers, we find ourselves almost ready to say broadly, that the mere existence of fevers is the result of accidental or gross carelessness.

Indeed, as a general proposition, a little knowledge, and considerable action on this knowledge, would suffice to reduce this second list at the least 40 per cent. of its present numbers. This is to say, among people who must have one of these nine complaints, none should suffer from fever, or dyspepsia, and but few from diarrhœa or dysentery.

Cellars and Drainage.

These diseases are but the names for states into which our system falls, and usually result from exposure of certain kinds. Fevers, of which the slow and typhoid fevers are the type, originate usually, if not invariably, from a low or depressed state of the system, and living in the presence of atmosphere containing germs, of which sewer emanations are usually considered the type. Now we feel safe in asserting that if the farmer keeps his cellars sweet, clean and aired, and his drainage good about his house, even including the soil drainage, that he will be surprised at the increased health of his family, and the decrease of his doctor's bills. Typhoid or low fevers will be almost unknown; and in addition he has guarded himself largely against that fell New England scourge, consumption. It is probable that more than fifty per cent. of diseases which meet the farmer and his family, are preventible, and easily so, through this one action, viz.: dry, sweet, clean, ventilated cellars, perfect cesspool system, and removal of surplus and stagnant water from about the house.

Food.

The stomach is, however, largely the key to health; for it is through this organ that all the nutriment of the system must pass, and all the force taken with the food must be transferred. We must therefore consider the demands of a healthy stomach. This organ becomes habituated to a system. It secretes the fluid which in part disorganizes the food and digests. Now, so long as this organ is in order, man appears to get the better of his surroundings. So long as the facility to digest is present, ill health need scarcely be feared. How important then to guard this important organ against damage! What the farmer requires is regular meals, and that slowness of eating which allows the food to be masticated before being swallowed. He must guard against surfeit, because he works at times hard, and hard work on an overloaded stomach is shown by experience to be injurious; yet he must eat abundantly In this respect, as in the work on his farm, he should use common sense. Then as to the character of the food. Let him avoid the habit of tea drinking or water drinking in excess at meals. If he must drink largely, let him take other times. Eat plain or rich food, but in moderation A swallow of meat, and a whole pie is scarcely as healthful, or as nourishing as a swallow of pie, and a large junk of meat. It is not so much what we eat which is injurious, as the manner and proportion; and a little common sense here also will go a great way. It is only necessary for the family to *think*, to increase the comforts of life; it is but necessary to apply *thought* to produce most radical improvement in the family and without. The thinking farmer should be the rule; and when once the rule, we need fear but little but that he will take his proper place in the community; honoring and being honored, healthful and contented.—*Scientific Farmer.*

Running in Debt.

I dwell on this point, for I would deter others from entering that place of torment. Half the young men in this country, with many old enough to know better, would go into business—that is, into debt—to-morrow, if they could. Most poor men are so ignorant as to envy the merchant or manufacturer, whose life is an incessant struggle with pecuniary difficulties, who is driven to constant "shining," and who from month to month, barely evades the insolvency which sooner or later overtakes most men in business; so that it has been computed that but one man in twenty of them achieve a pecuniary success. For my own part I would rather be a convict in a State prison, a slave in a rice swamp, than to pass through life under the harrow of debt. Let no young man misjudge himself unfortunate, or truly poor, so long as he has the full use of his limbs and faculties, and is substantially free from debt. Hunger, cold, rags, hard work, contempt, suspicion, unjust reproach, are disagreeable, but debt is infinitely worse than all. And if it had pleased God to spare either or all my sons to be the support of my declining years, the lesson which I should most earnestly seek to impress on them is, "never run into debt." Avoid pecuniary obligations as you would pestilence and famine. If you have but fifty cents and can get no more for a week, buy a peck of corn, parch it, and live on it, rather than owe a dollar! Of course I know that some men must do a business that involves risk, and must give notes or other obligations, and I do not consider him in debt who can lay his hands directly on the means of paying, at some little sacrifice, all he owes; I speak of real debt—that which involves risk or sacrifice on one side, obligation and dependence on the other—and I say from all such, let every youth humbly pray God to preserve him evermore.—*Horace Greeley.*

Canadian Fruit at the Centennial.

The New York *Daily Graphic* of the 11th ult. gives a large wood-cut illustration of the Canadian fruit display at Philadelphia, and accompanies it with the following remarks:

Probably the finest show of various fruits is made by the Fruit-Grower's Association of Ontario, Canada, a society which has done much to promote and encourage the cultivation of fruit in North America. It was formed a number of years ago with this object in view, and has been extremely successful in all its undertakings. The membership includes more than 2,000 persons Three meetings are held every year, at which the members interchange their views upon the various subjects connected with fruit-growing. These meetings are held in different parts of the Province of Ontario in order to be more convenient for members to attend, and once a year new and promising hybrids, trees, and plants are given to members, who are expected to cultivate them carefully and report the results of their trial. A number of the members of this society have achieved a reputation as careful hybridists, and the names of Arnold, Dempsey, Mills, and Saunders are held in deserved estimation throughout the pomological world. The best results of their labors are generously placed at the disposal of the association, and now and promising varieties of fruit are soon widely and inexpensively scattered abroad and thoroughly tested.

The society also publishes an annual report, embodying its transactions and preserving such useful information with regard to fruit culture as they may be able to gather, and gives a copy of it to each of its members. In this manner many choice fruits and much useful information are disseminated among its members, hence it is that the fruits produced by them are generally noted for superiority and excellence.

At the quarter centennial of the American Pomological Society in Boston, the Ontario Fruit Growers' Association carried away not only silver medals for the best collections of plums, but also prizes for the peaches, grapes and pears displayed in competition with the most noted fruit-growers of the United States. Many people suppose that the climate of Canada is a perpetual winter, but nothing could be further from the truth. The climate is generally the same as New England or Northern and Central New York, and Ontario, from whence these fruits come, is the most fertile part of the whole Dominion.

Milk Sugar.

The following extract from the *Rural New-Yorker*, is interesting in a speculative point of view, though there is probably no immediate prospect that its suggestions will be carried into practical effect:

We hope the time is not far distant when the chemists may find a use for milk sugar that will create a large demand for it, so that it will enter into commerce on an equality with other articles of general consumption. Should this occur, we should have another element of the dairy which would add considerably to the profits. In the making of cheese the milk sugar, as is well known, mostly pours off in the whey. Of the solid constituents of whey, the milk sugar is in the largest proportion, ranging from 4 to 5 per cent. In an average sample of milk we have, in round numbers, water, about 87 parts; butter, 3½ parts, casein, 3½ parts, and milk sugar, 5 parts, the balance of the 100 parts being mineral matter.

It will be seen that the milk sugar contained in milk is larger than the proportion of butter, and is as 5 to 7 when compared with the butter and caseine combined. An estimate has been made of the annual yield of sugar from the whey of 30 factories, averaging 400 cows each, and it amounts to the enormous quantity of 2,000,000 lbs., or 10,000 bbls. At the price of only 10c. per lb., a factory of 1,000 cows, on the above estimate, would yield 800 lbs. of milk sugar per day, worth $80, or $2,400 per month. Milk sugar, at the present time, brings a high price. It is used by homœopathists as the vehicle for their medicines, and in other practice, as an article of food for infants in teething, being less apt to produce acidity than cane sugar. It has also been recommended as a non-nitrogenous article of diet in pulmonary diseases. The demand, being limited, regulates its production, we suppose; and from its comparative scarcity, the price of course, is high, being sold at the shops not unfrequently at a dollar per pound.

The milk sugar of commerce comes from Switzerland. It is made, we have been informed, by allowing the whey from cheese-making to trickle down the sides of the mountains in wooden troughs or gutters. Threads are placed in the gutters, upon which the sugar adheres as the watery portions pass off in evaporation.

On the authority of the American Encyclopedia: "It is prepared from whey obtained from milk coagulated with a little dilute sulphuric acid, and left several weeks in a cool place to crystallize. The crystals of sugar of milk are collected and decolorized by animal charcoal and repeated crystallization. By the homœopathists, sugar of milk is regarded as the most inert substance upon the system, and for this reason, as well as on account of its great hardness, which causes it to reduce to extreme fineness the substances with which it is ground, they esteem it as the best medium for their medicines, and are, by far, the largest consumers of it."

We have no doubt there are various ways in which milk sugar could be used for food, and if these were shown, it might prove an important source of profit to the dairy. Among the new uses to which substances are being put, from time to time, it is a matter of no little surprise that milk sugar should not be on the list. From the large quantities of whey at the factories, the material would not be wanting for the production of this sugar to meet almost any demand. Will not some of our chemists tell us how this product can be utilized, and then the best method of manufacturing it? If as much, or more, can be made from the sugar of milk as can be obtained for the butter, the prospects of dairying will be cheering.

The Grain Prospects Abroad.

There are still a great many speculations on the state of the grain trade and the supplies for the ensuing year. There are no well established estimates, but the most recent reports indicate that the crops on the continent of Europe will be much below an average. Great Britain will have a very fair crop. Recently the average produce per acre was estimated at 30 bushels, but a more recent report places the average at 27 bushels, and the whole crop as larger than last year by ten millions of bushels. This addition, with the large stocks held over of last year's crop, both domestic and foreign, permits the market to start off with a low range of prices for the coming grain year, which commences on the first of September.

From Hungary we learn that the deficiency in the wheat crop will be nearly 1,000,000 bushels below her usual average, but she will have a surplus for export of 14½ millions of bushels. The rye crop is also short as much, but of barley and oats there will be a large surplus.

In Austria the supplies of wheat over an average harvest is estimated at a million and a quarter bushels, with an equally great surplus of barley and oats. Rye, however, remains a deficient yield.

From the Baltic provinces of Russia and Germany the reports are that the cereals have done well, but that the rust has attacked the wheat crop, but to what extent is not known, and hence nothing definite is yet learned of the yield and quality of the wheat of that section of Europe.

It is admitted that France will have a crop that is below her usual average, and will probably need a foreign supply of eight to ten millions.

From Russia we have no definite reports, but judging from the accounts that have been already received, there will be a much larger yield than there was last year. There is, therefore, likely to be a much larger supply of surplus grain in Europe than there was last year, and there will be larger supplies from the Black Sea to meet the requirements of France through her Mediterranean ports of Marseilles and Toulon, while the Baltic Sea and the railroad companies will supply the wants of Belgium and Holland to a very considerable extent.

The United States, so far as can be ascertained, east of the Pacific Slope have grown less wheat than last year, but to make up for this California, Oregon and Australia have each large surplus crops that must make up for any deficiency of grain in the States on this side of the Rocky Mountains.

These are the apparent conditions of the wheat trade at present, and lead to the conclusion that wheat will be slow to advance for the next three months, but that it is not likely to change a great deal from its present rates. It is not likely to be much lower, and there is a chance for it to be somewhat better as the year advances and the actual necessities of the consumptive demand are developed.

Items on Hydrophobia.

A correspondent having written to the *Scientific Farmer*, asking, when a dog is bitten by a mad animal, what chance there usually is of infection, and how long before the bitten dog will develop symptoms, that journal gives the following as the result of its dive into the literature on the subject:—

"Speaking with much latitude, the stage of incubation, that is, the time elapsing between the receipt of the bite or inoculation of the virus, and the presenting of the first symptoms of this distressing malady, may be said to vary from 30 days to 18 or 20 months; the duration depending perhaps upon the virulence and quantity of the poison, as well as upon the constitution and age of the inoculated. The period appears to be shorter in the very young than in the more advanced in years. Exceptional cases are recorded, where the symptoms have set in as early as the 8th day, whilst others are known in which the appearance has been delayed for 4 to 5 and 7 years. One instance is on record where it is said that 12 years intervened between the bite and the hydrophobic symptoms In 1862 Mr. Renault published the results of some experiments, which had been conducted with the object of learning the time of incubation in the dog. From these it appears that of 131 dogs bitten by mad dogs, and inoculated with hydrophobia saliva, 63 remained well at the end of 4 months. The disease was developed in the 68 others thus:

"In 25 dogs the disease set in between the 5th and 30th days. In 31 dogs, the disease set in between the 30th and 60th days. In 7 dogs, the disease set in between the 60th and 90 days. In 5 dogs, the disease set in between the 90th and 120th days."

THE LATEST THEORY.

The following extraordinary letter has appeared in the Brooklyn (U. S) *Argus*. The effrontery with which it is asserted that the various matters stated would be proved "if the facts can be ascertained," is something out of the common way, but the letter is worth preserving, even as the production of a monomaniac.

"Brooklyn Society for the Prevention of Cruelty to Animals, No. 199 Joralemon street.

"To the Editor of the *Argus*:—Hydrophobia in the dog, I am satisfied, is the result of the animal having been inoculated by biting some person suffering from the disease of intoxication. Startling as this theory may appear, there is not the least question but that the facts will bear it out.

"First.—Hydrophobia and *mania a potu* are identical in most physical conditions—subjects dead of either disease presenting nearly the same autopsy.

"Second.—The saliva of a man dying of delirium tremens, and that of a dog suffering from rabies, bear the same chemical analysis.

"Third.—The entire system of the patient suffering from alcoholic madness is so poisoned that rapid inoculation will follow any contact with the virus of the blood.

"Fourth.—The bite of a man in an alcoholic fit has been known to result in hydrophobia.

"As to the application of these facts:—

"First.—With the canine race hydrophobia is never spontaneous; with man the disease is known to be.

"Second.—There is not a case on record of a dog having died of hydrophobia that will not admit of proof, if the facts can be ascertained, that the dog had previously bitten an intoxicated person, or had been attacked by some other animal suffering from a like inoculation.

"Geo. Will. Johnston, Superintendent."

Damages for Using Patents.

About this time look out for men travelling about the country and charging farmers a royalty for using a patent right. They generally hunt in pairs and threaten the farmers on whose places they find patented articles that unless they pay a certain stipulated price by way of damages, an action will be brought against them in court. Most farmers are afraid of a law suit, especially one brought in one of the federal courts. They are ordinarily held at a distance from the home of farmers, and it is understood that great expense is incurred in conducting suits in them. On these accounts farmers generally put themselves at the mercy of the patent sharks, and submit to their demands. Every year some community in the West is preyed upon by parties who are seeking damages from farmers for using the sliding gate. This is a gate that is made like a length of a board fence, is supported by one or more pins on which it slides half its lenght, and is then turned round at right angles with its position when it is in place. For years farmers submitted to their demands, and paid a royalty for using each of the gates on their farms. At length the members of a grange in this state refused the demand, and prepared to contest the claim in the courts. In looking up the facts in the case, they soon found that the gate had been used for years before it was patented, and that a cut of it had been published in an agricultural paper of general circulation at least a year before a patent was issued for it. They had then a valid defence, and the patent right sharks, seeing their determination, were scared out of bringing a suit. They went, however, to other places and succeeded in collecting large amounts of money. Quite likely they are operating in some parts of the country at present. In like manner many farmers have been made to pay considerable sums for using single trees, lightning-rods and dairy utensils on which there was never any valid patent.

It now appears that an attempt is to be made to force all farmers who have driven or tube wells on their places to pay the sum of ten dollars on each of them. It is said that there are at least three-quarters of a million of these wells in operation in this country, for the use of which a royalty has already been paid in some form. It also appears that wells of this kind have been in use in England for more than fifty years, and that they are described in a work printed in 1829, and in very general circulation. It seems, moreover, that the naked savages of Ethiopia have used a contrivance of the same kind for unknown ages. It consisted simply of a reed pointed at the end and forced into the mud or sand till water was reached. The fact that these wells have been in use and a description of them published is a sufficient defence in an action for damages for using a contrivance on which a patent was granted. It will be the part of wisdom for western farmers to unite in resisting paying damages for the use of a thing that has been known for so many years.—*Chicago Times.*

Short-Horn Sales.

The Short-Horn Reporter (W. T. Bailey, Buffalo) for October, contains reports of the following sales —

	Place	No	Average	Total.
May 12.	Marshalltown, Iowa	50	$153	$7,665
June 22.	Oak Grove, Ohio	27	139	3,730
Aug. 9.	Fairview, Cynthiana, Ky.	77	406	31,240
10.	Stoner Farm, Paris	67	934	62,605
11.	Paris, Ky	81	400	32,385
12.	The Pines, Lexington	64	293	18,775
17	Chillicothe, Ohio	93	255	25,005
23.	Osborn, Missouri	32	237	7,595
24.	Winfield, Iowa	27	121	3,275
29.	Grinnell, Iowa	69	182	12,568
May 31.	Emporia, Kansas	44	181	7,965
Aug. 10.	Ottumwa, Iowa	43	179	7,680
		679	$325	$220,485

The tabulation of these figures, and consequently the general result is our own; it turns out an average, as will be seen, of $325 each on 679 animals of both sexes, against $382 each on 1,347 animals in the table of spring sales as published in this paper of July 13th. Of the 679, there were 148 bulls and 531 females—more than one-quarter as many of the former as of the latter, which must certainly be regarded as a very good proportion.

There was not a large crowd of buyers at the Short-Horn Sale yesterday at Dexter Park, says the *Chicago Tribune* of October 6, for a copy of which we are indebted to the auctioneer of the day, Mr. J. R. Page. Following is a record of the sale:—

Mazurka 26th, Winslow Bros., Kankakee, Ill	$725
Mazurka Armstrong, Maj. E. S. Ward, Kansas City	800
Mazurka Armstrong 2nd, L. Hanna, Waveland, Ind	575
Constance of Lyndale 8th, G. H. Morrison, Minneapolis	475
Constance of Lyndale 7th, G. H. Morrison	1000
Bracelet 10th, E. E. Steigers, Kellogg, Ia	205
Bracelet 6th do. do.	250
Chatham's Fairy, L. Hanna	310
Calla 19th, Dr. W. H. Heller, Abington, Ill	900
Miss Wiley 26th, Maj. E. S. Ward	1025
Constance of Lyndale 6th, Wm. Gibson, Oakland, Minn	800
Constance of Lyndale 5th, E. E. Steigers	1225
Molly Clay, E. E Steigers	325
Lady of Deer Park, L. Hanna	400
Oxford Queen 3rd, Jackson & Son, Farm Ridge, Ill	1425
Oxford Queen 2nd do. do.	1500
Oxford Queen do. do.	950
Lady Anna, J. R. Heath, Anawan, Ill	320
Nelly Blyth 6th, Dr. Campfield, Ottawa, Ill	700
Lady Spencer 3rd, W H Heller	200
Oxford Queen 5th, Jackson & Son	1000
Oxford Queen 4th do.	1300
Constance of Lyndale 9th, G. H. Morrison	700
Constance of Lyndale 4th, Maj. E. S. Ward	700
Airdrie Duchess 2nd, G W Dunlap, Abingdon, Ill	600
Miss Mary, E. E. Steigers	225
Blossom of Promise 2nd, E. E. Steigers	525
Magenta 2nd do.	650
Winona 2nd, L. Hanna	400
Belle Leslie, Maj E. S. Ward	575
Sweetmeat, J. R. Heath	405
Rowena 6th do.	190
Helen Bly, Maj E. S. Ward	525
Second Forest Lady, S. W. Jacobs, West Liberty, Iowa	525
Wild Eyes Beauty, L. Hanna	425
First Louan of Cedar Farm, J R. Heath	230
Sally 2nd, A. C. Boggs, Princeton, Ill	155
Eugenia 3rd, L. Hanna	175

BULLS.

Mazurka Duke, Mr Bullock, Tonica, Ill	150
Baron Lyndale 3rd, L. Hanna	205
Baron Lyndale 2nd do.	305
9th Duke of Constance, 11,730, E. E. Steigers	350
Second Forest Duke, G. P. Burnett, River Falls, Wis	250

SUMMARY.

33 cows and heifers, average	$603 16—Total	$23,110
5 bulls and bull calves do.	252 00— do.	1,260
43 head, average	$566 74—Total.	$24,37

H. P. Thomson's Herd.

This sale came off on the 11th ult. with the following results. Forty-one head were disposed of—thirty-three cows and eight bulls. The total amount of sales was $39,980, a general average of $975 12. Bulls averaged $704 38, and cows $1,040 75.

Fidelity 6th, Joshua Barton, Millersburg, Ky	$1000
Belle Duchess, Joseph Julian, Bainbridge, N Y	4000
Duke of Moundale, Mrs. Jessie Long, Monroe, Ia	1800
Peri 5th, S. W. Jacobs, West Liberty, Ia	1700
Peri of the Valley, S W Jacobs, West Liberty, Ia	1800
Second Duke of Moundale, C. A. DeGraff, Janesville, Minn	650
Princess of the Valley, John B. Saylor, London, Ont	2450
2nd Princes of the Valley, M. H. Cochran, Compton, Can	2500
Highland Maid 6th, Col. W. Sims, Paris	1650
4th Princess of the Valley, Winslow Bros., Kankakee, Ill	2200
2nd Earl of Moundale, C. T. Noell, Nashville, Tenn	285
Princess of Moundale, Mrs. Long, Monroe, Ia	750
Second Princess of Moundale, Col. Sims, Paris	750
Second Duchess Kirklevington, W J. Barbee, Paris	2000
Kirklevington Duke, Henry Meredith, Cambridge City, Ind	400
Finesse 2nd, Joshua Barton, Millersburg	1185
Finesse 3rd, W. Sims, Paris	1000
Finesse 4th, Joshua Barton	700
Fourteenth Duke of Airdrie, John Van Meter, Midway	1850
Lady Languish 3rd, Mrs. Long, Iowa	400
Lady Languish 2nd, Mrs. Long, Iowa	505
Campaspe, Joshua Barton, Millersburg	675
Campaspe 5th, John Payne, Newtown	600
Campaspe Duke, Asa Bean, Mount Sterling	150
Grand Duke, B. J. Clay, Paris	200
Oxford's Annette, C. A. DeGraff, Janesville, Minn	550
Imp. Duchess of Lancaster 13th, H. C. Meredith, Cambridge City, Ind	700
Hilpa Duchess 2nd, J. Julien, Bainbridge, N.Y	620
Fidelity, H. Evans, Spring Station	600
Fidelity 4th, W. Sims, Paris	1150
Fidelity 5th, J. D. Reid, Mount Sterling	1000
Australia 4th, S. P. Kenney, Lexington	325
Australia 14th, A. H. Davenport, Lexington	350
Australia 27th, S. P. Kenney, Lexington	285
Raspberry 7th, C. A. DeGraff, Minnesota	500
Underly Wild Eyes, S. W. Jacobs, Iowa	250
20th Rose of Richland, G. L. Barbee, Lexington	775
26th Rose of Richland, R. C. Estell, Lexington	415
Amelia, S. W. Jacobs, Iowa	300
Udora 5th, Joshua Barton, Millersburg	810
Olive Gwynne, Joseph Scott, Paris	400

The Kentucky Live Stock Record contains the result of the two sales of Oct. 10th. We give a few of the leading prices, with summary:—

Ware & McGoodwin's Sale.

3rd Duke of Oneida (guaranteed to be a breeder), Ayres, Barton and Hutchcraft, Millersburg	$6800
Fennel Duchess 7th, W. N. Offutt, Georgetown	525
Campaspe 3rd, Hon. M. H. Cochrane, Canada	675
Peri Duchess, Joshua Barton, Millersburg	750

Peri of Melrose, W. N Offutt	1150
Kirklevington 15th, J. H. Davis, Danville	1700
Kirklevington of Melrose, J. H. Davis, Danville	700
Chaplet, J C. Smith, Newtown	500
Oxford Duchess, F. J. Barbee	680
Mazurka of Elkhill, A. J. Alexander	800
25th Rose of Richland, M. G. Elzey, Blacksburg, W Va	500
23rd Rose of Richland, N. F. Berry, Lexington	880

SUMMARY.

21 cows and heifers, average	$443 88—Total	$13,760
4 bulls and b. calves do.	1738 75— do.	6,955
25 head, average	$828 60—Total	$20,715

E. L. Davison's Sale.

Cannondale 2nd, Wm. Warfield, Lexington	$560
Cannondale 4th, E. H. Garrard, Paris	720
Constance 7th, S. W. Jacobs	410
Imp. Mayflower, L. Combs, Jr., Lexington	460

SUMMARY.

50 cows and heifers, average	$167 10—Total	$8,355
5 bulls and b. calves do.	116 00— do.	580
55 head, average	$162 50—Total	$8,935

J. & G. Hamilton's Sale.

At the above sale, on the 16th ult., near Winchester, Ky., the following figures were realized :—

Belle Barrington 3rd, J. V. Grigsby, Winchester	$450
5th Hetta, W. D. Gay, Versailles	270
Baronette, B. F. Vanmetor, Winchester	875
Ruth, R. A. Spurr, Chilesburg	405
Ruth 4th, C. L. Vanmeter, Winchester	310
Red Bud, Reuben Harper, Owingsville	300
Belle of Bath, Judge B. J. Peters	570
Roan Cow Calf, B. F. Vanmetor	320
Miss Renick 5th, Dr C. R. Rowe, Sharpsburg	350
Baronette 3rd, B. F. Vanmeter	600
5th Belle of Bath, B. F. Vanmeter	660
Peeress, J M. Biggstaff, Mount Sterling	250
La Belle 3rd, J. V. Grigsby	590
2nd Grand Duke of Clark, 3704, B. J. Peters	1275
3rd Belle of Flat Creek, H. C. Foster	900
Red Heifer Calf, J. W. Bean	495
7th Belle of Bath, C. L. Vanmeter	1010
LaBelle's Rose, Col. J. H. Holloway, Winchester, Ky	570
LaBelle, F. J. Barbee, Paris	1210
Pearl 4th, I. C. Vanmeter	290
Belle of Bath, Jas. A. Farra, Lexington, Ky	630
Cow Calf, W. T Hearne, Lexington	580
Belle Barrington 7th, B. F Vanmeter	520
5th Belle of Flat Creek, B. F. Vanmeter	560
Ruth 3rd, I. C. Vanmetor	400
Belle of Barrington, J. M. Biggstaff	415
Roan Cow Calf, B. F. Vanmeter	400
Grand Duke of Oneida, 23352, I. F. Calk, Mt. Sterling, Ky	700
4th Belle of Bath, Spurr & Estill	975
2nd Belle of Barrington, Spurr & Estill	570
Barrington Rose, Col. J. H. Holloway	510
Rose, W. L. Sudduth	490
2nd Belle of Flat Creek, B. F. Vanmeter	660

SUMMARY.

56 cows and heifers, average	$393 25—Total	$20,980
2 bulls, average	987 50— do.	1,975
44 Young Marys, average	427 50	

J. V. Grigsby's Herd.

On the 13th ult., this sale came off at the same place The offering contained eighty animals, seventy-three cows and seven bulls, bringing a total of $44,965, being an average on cows of $575,55 and $473,47 on bulls, or a general average of $562,06. The following are some of the most important purchases :—

Sharon Rose, Archie Hamilton, Mount Sterling, Ky	23100
Geneva Rose, Col. W. E. Simms, Paris, Ky	1325
Second Rose of New River, J. P. Ridgeway, San Francisco, Cal.	2025
Rose of New River, W. C. Van Meter, Winchester, Ky	2200
Sharon's Beauty, W. P. Van Meter	2150
Duchess of Kingscote, B. A. Tracy, Winchester, Ky	1800
Mazourka of Lyndale 4th, Bush & Hampton	1510

Many head were sold averaging from the above to $500.

Athlone and Oak Ridge Herds.

The sale of John W. Bean and Robinson Bros., took place on the 15th ult., near Winchester. The Athlone herd brought very good prices, the Oak Ridge not quite so fancy, the former selling for a total of $7,610, the latter $12,600. The entire offering was sixty-five head. Forty-three cows and twelve bulls sold for $20,220, a general average of $311,07. The sale of Hamilton Bros., Monday, will be followed by a series of four in Bourbon County. Following is a record of the leading sales :—

Cypress Duchess of Geneva, Joshua Barton, Millersburg	$570
Duke of Athlone, John T. Gomme, Paris	270
Duchess Cadenza 2nd, Joshua Barton	860
Duchess of Athlone, W. L. Sudduth, Winchester, Ky	710
Sharon Mary, E. K. Thomas, Middleton	1300
Red Riding-Hood, Spurr & Estill, Chilesburg	660
Irene of Airdrie, Joseph Scott, Paris	315
Irene of Elkhill, R. Edmonson, Winchester	255
Athlone Beauty, C. L. Van Meter, Winchester	470
Pride of Athlone, C. L. Van Meter	400
Hope 5th, C. L. Van Meter	350
Wildair, C. L. Van Meter	290
Forest Beauty, W. L. Sudduth, Winchester	1060

Bush & Hampton's Sale.

At Bush & Hampton's Sale, Winchester, Kentucky, on the 12th ult., fifty head were disposed off, forty-five cows and five bulls. The total amount realized was $14,785, averaging $355 50 for cows, and $117 for bulls :—

Geneva Rose, Abner Strawn, Ottawa, Ill	$2050
Second Lady Knightly, Arch. Hamilton, Mount Sterling, Ill.	250
Colleen Bawn 2nd, H. C. Foster, Winchester, Ky	450
Kate Townley, R. P. Scober, Thompson Station, Ky	490
Louan 6th of Poplar Farm, Arch. Hamilton	425
Gracia 4th, Lowry & Metcalf, Pine Grove, Ky	228
Pattie Lewis 2nd, Wm. Vonmeter, Winchester, Ky	720
Florence Filligree, Abner Strawn	620
Water Lily 2nd, Lowry & Metcalf	320
Medora 3rd, Jos. Scott, Paris Ky	405
Maggie Bright, Joseph Scott	310
Nora Dean, Abner Strawn	280
Rosette 6th, S. H. Redmon	260
Fairy Queen, James Kennaird, Chilesburg, Ky	270
Pearlette (and bull calf), H. C. Foster	600
Water Lily (and cow calf), B. P. Goff, Winchester, Ky	415
Ashwood Louan 3rd, Dr. G. Sprague, Des Moines, Ia	400
Musadora, John Van Meter, Midway, Ky	265
Colleen Bawn, James Kinnaird	425
Faith 5th, R. P. Scober	200
Water Lily 2nd, Ben. Goff	210
Nelly Gwynne, J. M. Thompson, Nashville, Tenn.	300
Geneviere, Dick Spurr, Chelisburg, Ky	460
Gipsy Queen, Hall & Taylor, Paris, Ky	275
Ashwood Louan, J. M. Thompson	400
Nannie Tucker, W. P. Turner, Nashville, Tenn	240
Emma Hood, Richard Spurr, Chelisburg, Ky	250
Mazurka Lad 2nd, John Duckworth, Kansas City, Mo	270

Upleatham, England.

Mr. Thornton sold off the late Earl of Zetland's Shorthorns at Upleatham, Marske-by-the-Sea, Yorkshire, on the 8th ult.

It will be sufficient here to give only some of the principal prices :—

COWS AND HEIFERS.

Name.	Calved.	Sire.	Purchaser.	Gs.
Crimson	1866	Beckham	Lord Moreton	50
Marigold	1866	Maximilian	Lord Moreton	80
Emmy	1868	Emilius	Mr. Thomb	51
Bloom	1867	2nd Grd. D. of Essex	Mr. Woods	50
Eleanor	1867	King of the Roses	P. Stevenson	52
Marcia	1867	King of the Roses	Mr. Outhwaite	37
Dance	1868	King of the Roses	Mr. Botterill	40
Betty	1868	King of the Roses	Capt. Gandy	45
Mary	1868	Chatsworth	Mr. Cradock	62
Eveline	1868	King of the Roses	Mr. Stevenson	36
Kate	1869	Chatsworth	J. Singleton	56
Blonde	1869	King of the Roses	Mr. Parker	52
Erato	1870	Chatsworth	Col Gunther	56
White Bramble	1870	King of the Roses	Capt. Gandy	40
Bellona	1870	Musician	Mr. Botterill	130
Agatha	1871	Dunkeld	Mr. Wharton	67
Comfit	1871	Marquis	J. Singleton	40
Mary 2nd	1871	Dunkeld	Mr Botterill	56
Comfit 5th	1871	Chatsworth	J. Singleton	62
Bloom 2nd	1872	Chatsworth	Mr. Bincks	55
Ellen	1872	Grand Monarch	Mr. Scoby	50
Touch	1872	Dunkeld	Mr. Woods	42
Morel	1873	Grand Monarch	Capt. Gandy	46
Idle	1873	Grand Monarch	Capt. Hincks	43
Bramble	1873	Grand Monarch	Mr. Botterill	54
Evelina	1873	Grand Monarch	Mr. Outhwaite	44
Bloom 4th	1874	Grand Monarch	Admi. Chaloner	40
Daylight	1874	Grand Monarch	Mr. Botterill	74
Comely	1874	Alexis	J Singleton	40
Trifle	1874	Alexis	Mr. Curry	40
Briar	1874	Grand Monarch	Admi. Chaloner	50
Mary 3rd	1874	Grand Monarch	Mr. Cotterill	33
Emery	1875	Grand Monarch	Col. Gunter	40
Mermo	1875	Grand Monarch	Mr. Parker	50
Farina	Jan. 1876	Duke of Underley	Capt. Gandy	60

BULLS.

Alexis	1871	Dunkeld	Mr. Bullman	42
Scots Fusilier	1874	3rd D. of Hillhurst	Mr. Morcrop	95
Boxer	1875	Grand Monarch	Mr Woofer	33
Biscay	1875	Grand Monarch	Mr. Mills	47

The *Prairie Farmer* reports a sale of Short-horns, by H. G. Little, Grinnell, Iowa, at which the following results were made.

H. G. Little's Sale.

COWS AND HEIFERS.

Maggie May 3d	$205
Hope 27th	27300
Fanny Leslie 2d	5
Floridon	140
Flambard	100

Sale of Messrs. Thos. L. McKean, O. T. Wadsworth and J. R. Stuyvesant, at Philadelphia.

COWS AND HEIFERS.

Dinorah 4th	$225
Dinorah 5th	160
Princess of Thorndale	1,700
Imp. Lady Acomb 4th	600
Australia 10th	300
Australia 19th	300
Australia 21st	350
Lonicera	200
Edgewood Languish	130
Jubilee 10th	950
Jubilee of Easton	425
Lady Blanche 5th	145
Countess of Edgewood	200
Miss Belle	500
Hyphaene	110
Lady of Lehigh	275
Kentucky Rose	140
Eleanor	175
Dairy Maid 6th	115
Dairy Maid 5th	100
Dairy Maid 2nd	150

BULLS.

5th Prince of Oxford	500
Prince Nicholas	150

Weeting Hall, England.

The sale of Mr. Augerstein's herd at Weeting Hall, near Brandon, Norfolk, England, came off on the 20th ult., with the following results :

COWS AND HEIFERS.

Name.	Gs.
Caroline	60
Musical 13th	100
Fantail 5th	130
Specimen	41
Viscountess Jersey	110
Countess of Wateringbury 4th	80
Twin Duchess 5th	55
Lady Bates	210
Blanche 10th	125
Lady Waterloo 23rd	210
Fantail 8th	135
Musical 16th	120
Lady Margaret	110
Grand Duchess Carolina 2nd	300
Fantail 9th	140
Velvet Eyes	900
4th Tube Rose of Brattleboro'	125
Caroline 3rd	68
Caroline 4th	100
Viscountess Jersey 2nd	175
Fantal 10th	200
Wild Eyes 32nd	300
Lady Bates 2nd	165
Duchess 7th	205
Fawsley 16th	28
Fantail 11th	125
Musical 18th	100
Specimen 2nd	51
Blanche 11th	44
Lord Waterloo 24th	140
Musical 10th	110
Specimen 3rd	34
Grand Duchess of Carolina 3rd	150
Caroline 5th	40
Caroline 6th	50

BULLS.

Duke of Rothesay	2000
Duke Lally	135
Prince of Brattleboro'	86
Musician	25
Blanche Duke	80
Music Master	44
Viscount Jersey	22
Baron Bates	26
Baron Fantail	76
Duke of Brattleboro'	32

SALE OF TWO SHORTHORN HEIFERS AND THREE YOUNG BULLS.—The two heifers and three young bulls shipped by Hon. M. H. Cochrane, Compton, Canada, to Scotland in August, were sold at auction at the sale of Mr. James Beattie, Annan, Scotland, Sept. 8th, at the following prices : Rosamond, by Royal Commander, $1,864 ; Boadicea, by Cavalier, $919 ; bulls, Wallenstein, by Royal Commander, $1,050 ; Floriden, by Royal Commander, $735, and Flambard, by Sirius, $525.

SHEEP AND HORSES FROM CANADA.—An experimental consignment of 569 sheep arrived at Liverpool on Wednesday from Guelph, Ontario, by s.s. *Lake Megantic*, in splendid condition. The venture is expected to prove more profitable even than the shipment of cattle. Forty-six horses, comprising matched teams of carriage horses and hunters, together with about 100 head of fat cattle have also arrived on Wednesday, by Dominion steamer *Quebec*.

SHEEP FROM CANADA.—Alluding to the fact that two steamers have arrived in the Mersey from Canada, having between them 1,139 head of live sheep on board, the London *Globe* remarks : "Here, then, we have the commencement of what may prove an almost inestimable boon to the English people of small means. The capabilities of the Dominion for raising sheep are practically unlimited. During the last few years the annual exportation of sheep from Canada to the United States has averaged half a million, and this in spite of the trade being hampered by a 20 per cent. duty. It is estimated that this 20 per cent. more than equals the total cost of bringing sheep from the Canadian ports to Liverpool. Hence they could be sold for the same price in England as they fetch in the United States. This is, we believe, considerably less than existing rates in the United Kingdom, and the effect of such importations, if carried out extensively, must be to bring down our market to a level with the American. It would be too sanguine to expect much relief from this source for some time. A trade of such magnitude as this would need to be to produce any effect on prices could not be established in a day. But, in the present state of affairs, any news is welcome which affords a reasonable hope of a good time coming for people of limited means. The present price of butcher's meat in London is, to a certain extent, prohibitory, unless those who want it go to the trouble of making their purchase at Smithfield Market. There comparatively moderate rates prevail, owing, we believe, to the slackness of trade having diminished the consumption of meat among the working classes. But the rest of the metropolis, almost without exception, remains the victim of an inordinately high tariff, for which no reason is apparent except the joint determination of retailers to maintain existing rates. The public will certainly have every cause to rejoice if this Canadian sheep traffic prove successful.

HORSES FROM CANADA.—We are glad to see that in our present dearth of good useful horses there is some chance of our scanty supply being helped from the colonies, as on Wednesday, October 4, 10 fresh, active animals from Canada, ranging from 5 to 6 years old, were disposed of. They were all quiet in harness, had good legs, and fair action, looking likely to meet the want that is now felt for sound working horses at a fair figure. The prices ranged from £29 8s. to £58 16s., no less than 4 of them causing the hammer to drop for more than "half-a-century." Four more ranged from £40 to £50 ; so that, if they only turn out as well as appearances would lead us to expect, there will not be much cause to grumble on the part of purchasers, and if they can be sent over and sold so as to pay their way at these figures, a sound horse may not in future be beyond the reach of a man of moderate means. We sincerely trust this sale is only the forerunner of many more.—*Sporting Gazette.*

Veterinary.

DISINFECTANTS.—Subscriber, Toronto. Alum as a disinfectant of liquid manure, though good, is far inferior to chloride of lime with sulphuric acid, but better than either the sulphate of magnesia or the sulphate of iron Between it and slacked lime there is little to choose, and carbolic acid—disinfecting powder—is slightly better than either.

CHESTNUT PLANTING. Sow the seed where it is to remain, about twenty feet apart, or even nearer, as the young plants may be thinned out afterwards. Cultivate carefully for two years, and, by the third, the chestnuts will be found to have made a fair growth. The nuts, as soon as gathered, must be mixed with damp sand, earth, or muck, as they will not grow at all if allowed to become dry in the shells.

SILVERTHORN.—Subscriber, Innisfil.—Silverthorn is the *Elæagnus Portifolius* of botanists. It has no thorns proper, but its small twigs become sharp and hard, and increase in number each year, so that in a few years the hedge becomes a somewhat formidable barrier to domestic animals. It seeds freely and early. It may be said both of it and the barberry, that they are not large growers; but when the soil is very rich and moist they attain a sufficient size to turn most ordinary depredators. They bear pruning well, but do not require much of it.

LEAKING CISTERNS.—R. McCallum, Kingston.—When, as you state, the pressure from without is sufficient to force the hard water through the joinings *into* the cistern, the probability is that no amount of patching will make a satisfactory job. A single crack, or even several, are occasionally stopped by calking, but in a case of general leakage this expedient is usually either impracticable, or, when accomplished, utterly useless, as the operation will likely have to be repeated indefinitely. The only certain and satisfactory remedy is to remove the cistern; slightly enlarge the cavity it occupied, and, on replacing it, pack under the bottom and round the sides with cement. This plan is on the assumption that the cistern is comparatively new and sound If old, or much decayed, a new cistern is of course the only alternative, treated as we have stated, or made a size smaller than the old one, and placed inside, the space between the two being packed with clay or cement as before.

OFFENSIVE SINK.—Rustic, Cayuga.—The odor you complain of does not perhaps arise from the sink itself, but from the pipe connecting it with the drain If the pipe is a straight one such odors are certain to find their way upwards whilst the tube is empty. The difficulty is readily overcome by bending the pipe, a short distance from its connection with the sink, into the form of the letter S, the left hand side being prolonged upwards, forming that portion of the pipe above the curve, and the right hand side extending downwards, representing the portion between the curve and the drain. It will be seen at once that, from the moment the curve is first filled a certain portion of whatever fluid passes down always remains there, thus preventing the passage of any gases upwards. If the curve is sufficiently large to hold a goodly volume of fluid, and care be taken that both pipe and cistern are kept clean and free from solid accumulation, there is little danger of offensive odors from this source

Miscellaneous.

WATERPROOF BLACKING.—Dissolve an ounce of borax in water, and in this dissolve gum shellac until it is the consistency of thin paste; add lampblack to color. This makes a cheap and excellent blacking for boots, giving them the polish of new leather. The shellac makes the boots or shoes almost entirely waterproof. Camphor dissolved in alcohol, added to the blacking, makes the leather more pliable and keeps it from cracking. This is sold at 50c. for a small bottle. By making it yourself, a dollar will buy materials for a gallon.

KEEPING COOKED MEAT.—During hot or sultry weather it frequently happens to the ladies, from some unforeseen circumstance, that large quantities of cooked meats, prepared for a party that did not come off, perhaps remain on hand, which, for want of knowledge how to preserve, are measurably lost. Such should be potted. Cut the meat from the bone and chop fine, and season high with salt, pepper, cloves and cinnamon. Moisten with vinegar, wine, brandy, cider, or Worcestershire sauce, or melted butter according to the kind of meat or to suit your own taste. Then pound it tight into a stone jar and cover over the top with about a quarter of an inch of melted butter. It will keep months and always afford a ready and ex-cellent dish for the tea table.

WHEAT GRAINS IN THE BUSHEL.—An agricultural writer who seems to know, avers, that in one bushel of good plump wheat there are about 600,000 grains, and in an acre of ground there are 6,272,640 square inches. A bushel of seed to an acre, if all should grow, would thus give one plant to every ten square inches or less, which would bring them within about three inches of each other. At this small distance apart it is clear there cannot be any vigorous growth nor any tillering, and only the weakest growth of straw. At one foot apart each way, or with only 43,560 plants to an acre, which would require only a little more than two quarts of seed per acre, there would not be any more room than a vigorous, healthy wheat plant would require in a fertile soil.

LIGHTNING CONDUCTORS.—Dr Mann lately showed, at the Science Conference at South Kensington, how unimportant is the form of lightning conductors, whether rods, ropes, or pipes; and that the real desideratum was that they should be of sufficient size to afford an unobstructed path for the passage of the electric fluid. He insisted on the necessity of a goodly number of points, and above all upon the indispensability of large earth contact, and saying that a lightning discharge passing through a large rod with an ample earth contact is only a gentle stream of low tension; but that if the size of the rod or the area of its contact with the earth is diminished, the tension is increased, and the fluid has a dangerous tendency to discharge itself laterally by chance outlets.—*Scientific American.*

STEEL HORSE SHOES.—One of the latest improvements, in which the farmer is personally interested, is the manufacture of horse shoes out of Bessemer steel. The manufacturers claim the steel shoes will last three times as long as the iron ones; that they are lighter, and consequently easier on the horse; that when bought by weight you can get twenty-five per cent. more shoes than when buying iron ones; that they can be had for seven cents a pound—a little more than for common iron shoes. The steel shoes seem to be highly recommended by those who have tried them, and they are opposed only by a few blacksmiths. As yet they are manufactured only by the Cleveland Rolling Mill Company, of Cleveland Ohio, but we hope soon to hear that the Pennsylvania Steel Company and other similar Bessemer steel companies have taken hold of them. If they are what is claimed, farmers are ready to use them at once.

IVY ON DWELLINGS.—Florists are beginning to appreciate more fully than they used to do the value of ivy for a variety of purposes. Connoisseurs, too, have begun to collect, study, and classify the many varieties. Few plants do better in confined spaces and dirty atmosphere than the free growing sorts of ivies. In fact, the ivy is one of the most accommodating plants. The spread of the branches, if fully extended, would be about ten metres (between thirty-two and thirty-three feet), but they are trained in an arching manner so as to leave an opening about seven metres (about twenty-three feet) in diameter. The branches are well furnished with leaves, and, as the plant is grown in a tub, it can be removed from place to place, as may be required, and may be made to serve as a most agreeable summer house. The facility of transport is still further increased by the fact that the branches are trained over wires which can be folded up umbrella fashion.

Patrons of Husbandry.

Officers of Dominion Grange.

Master	S. W Hill, Ridgeville, Ont.
Overseer	Stephen White, Charring Cross, Ont.
Lecturer	E. H Hilborne, Uxbridge, Ont.
Steward	Levi R. Whitman, Knowlton, Quebec
Ass't Steward	Charles McGibbon, Douglas, New Brunswick.
Chaplain	James Manning, Schomberg, Ont.
Treasurer	J P Bull, Downsview, Ont.
Secretary	W Pemberton Page, Fonthill, Ont:
Gatekeeper	J. A. Dickson, Central Onslow, N.S.
Ceres	Mrs. J. Trull, Oshawa, Ont.
Pomona	Miss E. J. Whitelaw, Meaford, Ont.
Flora	Mrs. Lossee, Norwich, Ont.
Lady Ass't Setward	Mrs. J. T. Gould, Foley, Ont.

Executive Committee.

James Daly, Newburgh, A Gifford, Meaford, A J. Hughes, Sharon; Wm. Coles, Coles' Corners, Charles Drury, Barrie.

Auditing Committee.

Luther Cheyne, Brampton, Ont., H S. Lossee, Norwich, Ont.

Thirty-three Division Granges represented, 110 delegates present

New Granges since Last Issue.

529. HEREWARD.—John Cowen, Master, Hereward; William Hamilton, Secretary, Hereward.

530. ABINGDON.—William Jackson, Master, Abingdon; L. Williams, Secretary, Abingdon.

Division Granges.

32. NORTH BRUCE.—John Biggar, Master, Burgoyne, Alfred Shell Secretary, Burgoyne.

33. HALDIMAND.—Henry Ivey, Master, Jarvis, Jesse Forster, Secretary, Rainham Centre.

Testimonial to Mr. Fellows.

We, the undersigned, clergymen of the Methodist Church in Nova Scotia, having used the preparation known as Fellows' Compound Syrup of Hypophosphites, prepared by Mr. James I. Fellows, chemist, St. John, N.B., or having known cases wherein its effects were beneficial, believe it to be a reliable remedy for the diseases for which it is recommended.

JAMES G. HENNIGAR, Pres. of Conference,	STEPHEN F. HUESTIS,
JOHN MCMURRAY, Ex-Pres. of Conference,	RICH'D W. WENDALL,
WM. SARGENT,	ALEX. W. NICHOLSON,
JOHN A. MOSHER,	CRANSWICK JOST,
	ROWLAND MORTON,
	JOHN JOHNSON,

JOHN W. HOWIE.

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