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Agriculture.

Barnyard Tanks.

It requires no great stretch of veracity to say that Canadian farmers do not derive nearly as much benefit from their ordinary manure heaps as they might. In nine cases out of ten these are left exposed to wind and rain, clouds and sunshine, with no protection whatever. If, as frequently happens, they stand upon elevated grounds, every successive shower of rain that falls leaches them of their very essence, and carries it off to be wasted. Thus the heaps, in spring, when, through fermentation and other changes, they should be in the best condition possible for fertilizing, are little better than so much dry straw. With facts like these staring him in the face, one naturally wonders why the barnyard tank, so highly prized in Britain, is such a phenomenon in Canada. It is easily constructed and attended with but trifling expense, for the digging may be done by anyone at odd hours, while the benefits accruing from the application of its liquid contents to certain crops, or even to the heap again, are simply incalculable. Tanks are constructed either square or round, and finished after the manner of an ordinary rain water cistern. They should have a capacity of at least two to five hundred barrels each. Round ones are perhaps preferable as regards the plastering, for they are devoid of those troublesome corners which, in the square tank, often prove future weak spots. Having completed the tank, let it be furnished with a large-bored, strong wooden pump, and closed over. Of course its location should be such that all streams or leachings from the heap will find their way into it. The farmer will thus find himself, every spring, the possessor of a large quantity of excellent liquid manure. Several methods of application are followed. A common one is to pump the liquid into large hogsheads perforated as for street watering purposes, wheel it out to the fields, and apply it as required. This, however, entails a good deal of rather disagreeable labor. A simpler and less troublesome plan is to thoroughly saturate the manure heap with it from time to time, at intervals say of two weeks or thereabout. Applied in this way, accompanied by occasional sprinklings of plaster to retain the ammoniacal qualities, it greatly facilitates fermentation, aids decomposition, and renders the manure in every way more effective as an immediate fertilizer. Authorities on the subject in Britain claim that common barnyard manure, treated in this manner, will decompose half-inch bones quite as rapidly as sulphuric acid, and fit them in one week for application to the land. In a series of experiments with liquid manure applied directly to the plants, the following results were obtained. A grass crop, with a dressing of 20,000 gallons to the imperial acre, was doubled in quantity. With wheat it answered well on light, but not at all on heavy or wet soils. The crop was increased about one-fourth. With barley it proved rather injurious than otherwise, rendering the straw so soft that the crop lodged; and, applied to potatoes and turnips, it increased the growth largely, but the tubers were very watery. In all these cases however, when the liquid was properly mixed with barnyard manure, the yields were still farther increased, and the quality most excellent—showing that the saturating method, while the simpler, is also the better of the two.

The Cost of Fertilizing.

Will it pay? What will it cost? These are the points that first, and most naturally, occur to experimenters. Not, will the increased returns five or ten years hence justify the outlay? That is not sufficient to the purpose with a great many. "The present time," say they, "is only ours," and a present affair they make of it. Will it

pay, and will it pay now? Let us examine the question briefly in this light. According to the various experiments thus far recorded by professors and others, all are agreed as to the essential ingredients of plant food, viz., nitrogen, phosphoric acid and potash. What will they cost to begin with? Of course this must be calculated from the lowest market rates of the commercial substances containing them. Ammonia sulphate, the main source of the first, nitrogen, costs about 6 cents per lb., and contains from 20 to 30, say 25 per cent, of the desired element; Nitrogen therefore will cost about 24 cents per lb. Phosphoric acid, the second essential, constitutes from 9 to 12, say 10 per cent. of most phosphatic guanos or mineral phosphates, and these latter are sold for about \$25 per ton—making the acid, at this rate, worth 12½ cents per lb. Bone dust however is a much more fruitful source of it, containing nearly 30, say 25 per cent of the acid, and also a small quantity of ammonia. Fine bone dust is worth \$30 per ton. Phosphoric acid obtained from it would therefore cost (allowing for the contained ammonia) say 4 cents per lb. The third ingredient, potash, is most cheaply obtained from its own muriate, which costs about 3 cents per lb., and contains some 50 per cent. of potash, which will consequently be worth 6 cents per lb. We have thus the value of the three essentials, viz.—Nitrogen, 24 cents; sulphuric acid, 4 cents; potash, 6 cents per lb. Let us apply these to one or two of the tables published in previous numbers of the FARMER. To produce 100 bushels of potatoes, for example, over and above the ordinary yield we must use 21 lbs. of nitrogen at 24 cents, which makes \$5.04; 34 lbs. potash at 6 cents, \$2.04, and 11 lbs. phosphoric acid at 4 cents, \$0.44—making a total amount of \$7.52 for the extra hundred bushels. Of course, something more must be allowed for the time and labor of application. Say then that the whole costs \$12, instead of \$7.52, and still the profit must be very handsome if we succeed in producing anything like a hundred extra bushels of produce. At the very lowest rate, potatoes are worth 30 cents per bushel, or \$30 per hundred bushels; the margin of profit here would therefore be \$18. Again, for 35 bushels extra, per acre, of wheat, we require, according to the table, 41 lbs. nitrogen, \$9.84; 24 lbs. potash, \$1.44; and 20 lbs. phosphoric acid, \$0.80—in all \$12.08. Wheat is rarely sold under \$1 per bushel. Should the experiment prove successful therefore, the profit here would be \$12.50, or say \$10, allowing for the application. For 25 bushels extra of oats, nitrogen 23 lbs., \$5.52; Potash 20 lbs. \$1.20, phosphoric acid, 12 lbs. \$0.48; total, \$7.20. In this case the profit would be almost unappreciably small, but still it would be something. These, it will be observed, are in every instance the profits per acre. In order to put the matter in a fuller and better light, we must take into consideration the average quantity of ground put under each crop, and get the profits per annum. Suppose then 30 acres wheat, 5 acres potatoes, and 10 acres oats:

30 acres Wheat at \$10.....	\$300
5 " Potatoes " 18.....	90
10 " Oats, say " 5.....	50
Total profit	\$440

Here then is a profit of \$440 on 45 acres, and only three different kinds of produce. Assume that the figures are too favorable; make a liberal allowance for contingencies; reduce the whole one half, and still there remains a profit of \$220—not to be laughed at, let us add. Evidently the experiments are worth trying at all events; but we would recommend them on a small scale, say a quarter or half an acre, to begin with. If they prove nearly as successful as the advocates of artificial manuring claim, they can easily be extended. For our own part we have not quite as much faith in the new theory as it possibly merits, and we should be happy to hear of its being thoroughly tested in Canada.

If any of our readers furnishes us with particulars during the coming season, we shall take great pleasure in publishing them.

Leaves from Farming Experience—No. 8.

The box of a Scotch farm cart is usually about 6 feet long by 4 wide, and 16 inches deep. It will contain about 44 cubic feet when well heaped, and if a board 6 inches wide is fastened on the front and sides, that cart will hold two cubic yards more. Spread from 15 to 20 cart loads on every acre, once in four years, all hay and straw to be cut short. Get as much of the water evaporated as possible; it is of no use as manure, and costs three times as much to draw and spread as if it were nearly dry. In 100 pounds farmyard dung there may not be more than 50 pounds of plant food. It appears that from 30 to 40 bushels of lime shells are necessary to the acre every nine or ten years, and as more than a fourth part of all inorganic substances taken off the field by a crop are used up or assimilated by cows giving milk, or young cattle, besides the grain sold, these substances must be returned in dressings in addition to all the stable manure which can be collected on the farm.

The green crops need from three to four times the amount of inorganic substances that grain crops do, but as the yard manure is put on the crop just before the grass, and again in the fall, before the third or last year of hay, it gives the grass more than an equal share of the cattle manure. Thus, pearl ash bruised, 22 pounds; ammoniated superphosphate, 33 pounds; common salt, 25 pounds; plaster, 25 pounds per acre yearly, will cost about \$437.40, and \$140 for lime, also, 20 pounds of cement or waterlime are wanted per acre yearly. I spared no expense in making compost heaps on the most approved methods, but it was a very expensive way to get nitre or ammonia. Nitrate of soda and sulphate of ammonia can be brought from Britain to Montreal at five cents per pound, not half the cost of it made in nitre beds. In a cart load of compost there will be only a few pounds of nitric acid, whereas in 100 pounds nitrate of soda you will have 63.40 of nitre, and 36.60 of soda. Sulphate of ammonia might be made now in America since the acid is so much cheaper. I have paid six cents per pound for it, now it is less than three cents. I have tried to show that by cultivating and manuring well, crops will be good, and by feeding well, and dairying, the profits will be still greater. Manure is the great question; water in it is worse than useless; rotten straw, too, is of little value; a small quantity of ammonia may be in it, and a few pounds of inorganic substances per ton. I have seen the leaves of turnips and mangolds recommended as food for cattle. I altogether differ from this opinion. In 100 pounds of leaves there are over 6½ pounds nitrogen, over 5 lbs. phosphoric acid, and nearly 7 pounds of potash. In an acre of mangolds there are said to be seven bushels of salt, most of it in the leaves. But, if dangerous to cattle, these leaves are good to make crops grow. My turnips were commonly very good. Sometimes, where the leaves were plenty, we carted away the half, and spread them, ploughing down immediately. There was always a good crop after doing so. The annual cost of the top-dressing will be about \$2.60. It will be an advantage to use 100 pounds of salt, which will supply 40 pounds of soda; also, 100 pounds of plaster, to supply plenty of sulphuric acid, and attract nitric acid from the atmosphere. A good crop of hay will use that amount, and turnips 25 per cent. more.

Bell's Corners, Ont.

JOHN ROBERTSON.

Continued next month.

Plaster of Paris.

The vexed question of plaster, its properties, its application and results, continues to occupy a large space in the Agricultural literature of the day, and yet in the deductions made, and conclusions drawn, writers are apparently as far in the dark as ever. A's experiments conflict with B's and even with themselves. C tries his hand and arrives at results which entirely upset A's and B's, and so the

struggle goes on, each drawing his own inferences and controverting them alternately. That a complete knowledge of plaster and its effects has not yet been mastered few scientific men will deny. Notwithstanding the attention heaped upon it, perhaps more than on any other known fertilizer so called, its operations, if indeed they can be called such, are so very different on the same fields and crops under, apparently, similar circumstances, but at different times, that no one needs consider it disparaging to admit at once that he knows but little about it. A wholesome result of this controversy, however, is the series of facts that are gradually but surely coming to light. We are reaching the truth step by step and patient practice will in time enable us to master the whole. We know, for example, that the various effects formerly attributed to the action of plaster, arose not from that source at all, but from the condition of the soil at the time of application. We know that on soils containing an excess of sulphuret of iron its application is a mere waste of labor, for little or no action will follow. Common lime, however, applied to such soils would exert a beneficial effect by disengaging and combining with the sulphur of the sulphuret, forming sulphate of lime, in other words, plaster of Paris. We know that plaster has a powerful affinity for ammonia, and is therefore invaluable as a conservator of that gas in the manure heap and in the soil. We know that it is partial to clayey soils, and that a goodly supply of water or damp is indispensable to its beneficial action. It is an indisputed fact too that itself appears to attract and retain moisture to a considerable degree. The mode of its action, however, or the manner in which it is said to fertilize, is not at all so clear. This is one of the many problems that have yet to be solved. It seems a feasible thing that, as the mineral constituents have a tendency to become fixed in long cultivated soils, the elements of the plaster, becoming separated by the influence of water and solar heat, seize upon these minerals previously inert, and act as a stimulus to chemical action throughout the entire surface of the land. The fact too, so obvious to all experimenters, that the first application of plaster is usually attended with more visible results than any that follow would seem to favor this idea; for the surface soil having become to a large extent satisfied to the depth of cultivation, no further effects will be so very marked in their character until such time as the subsoil takes its place.

Ideas for Hop Growers.

Hop-growers will be interested in the following extract from a communication to the *London Agricultural Gazette*, in which will be found some valuable new ideas.

"Hop-growers are having the old vines that are left in the hills cut off in the late autumn and carried away at once. They pay one penny per 100 hills for cutting these, and give the vines into the bargain, which serve for heating ovens and coppers. The reason for this is, that the flea (*Haltica concinna*), so very troublesome in the spring to the young shoots, is supposed to conceal itself in the hollows of the vine during the winter. Mr. Kibble, of Tunbridge, published a little pamphlet a year or two ago to demonstrate this, and since then care has been taken to get rid of these vines before the insects emerge in the first mild spring days. There are still the cracks of the hop-poles where they may be harbored; these also serve as comfortable winter quarters for the red spiders, (*Acarus peltatus*), which are so minute that they can hardly be detected without a microscope, but do infinite mischief in hot, dry summers. It would be difficult to evict the flea and the red spider from the poles, though some had suggested that these should be washed over with some composition that would make the quarters not very pleasant retreats.

"A discussion has been going on in Kent as to the somewhat recently adopted custom of grubbing all the male plants in the hop-grounds. Not very long ago it was usual to have so many male plants to an acre, and to treat them just like the female plants, as it was thought that the latter would not be fertilized unless a male plant was within a certain distance. Male plants are banished. Hop-grounds are literal gynæcea in these days. No male plant dare show his graceful flower clusters within the charmed precincts of the 'garden of girls.' Yet, curiously enough, the female plants are as productive, and the hops are as good and as plentiful as in the time when there was at least one male to 200 or 300 female plants. Although it has been strenuously denied that the hops now are of the same rich, full-conditioned quality, and that they are as plentiful, practical growers, factors, merchants, brewers say that there is no perceptible difference in this respect. Fertilization must be brought about by the agency of the breeze. Pollen is conveyed long distances on the wings

of the wind; its granules are minute, light, and would be easily wafted and disseminated throughout many plantations. A single male plant produces an immense quantity of pollen, and the pollen of wild plants is as efficacious as that of the cultivated plants; so that the wild plants seen growing in every hedge in the hop districts are probably the fertilizing agents in those grounds where cultivated male plants are tabooed. Of course, if it were desirable to obtain plants from seed to propagate hops by seedlings, instead of by cuttings, the usual practice, great care must be taken to obtain pollen from true, pure sources. There is not the least necessity for this, and probably growers are wise in the absence of anything like definite scientific information, to leave the process of fertilization to nature. It is manifestly impossible that this can be brought about by the agency of insects. The only safe theory is that the 'wind in its courses' is the real agent."

Plant Growth.

At the Central New York Farmers Club meeting recently, Mr. J. V. H. Scovill treated the subject of plant growth from a somewhat unusual, though by no means new, standpoint. Taking the figures of recent experiments by Professor Johnson, which showed a cubic foot of ordinarily good wheat soil to weigh, when dry, 86½ pounds, common arable land 80 to 90 pounds, and rich, mellow soils from 60 to 80 pounds, he proceeded to deduce as follows, regarding the necessity of thorough and timely cultivation. Taking these facts into careful consideration we are able to comprehend how large an amount of available plant food nature generously provides upon an acre of land, and this is seldom used in American culture, for there are few farmers who stir the soil to the depth of 12 inches. There are some few favored spots where nature seems to restore itself and supplies with a generous hand the plant food abstracted from the soil by the growing plants. This is especially noticeable in some locations where annual overflows leave a rich deposit; and it is remarked that the rich valleys of the Seneca river in Ohio, though bearing wheat and corn for sixty years, show no perceptible exhaustion. The great proportion of our soil being upland, the ingredients composing it are coarser and to the cubic foot it is heavier, and as a consequence there is less available plant food. The sources of supply are the application of manures, phosphates, nitrates, &c. The more thorough is the tillage of the soil, the finer its pulverization; the more frequently it is stirred the more vigorous and healthy are the growing plants. This frequent stirring of the soil facilitates the absorption of ammonia and nitric acid for the uses of the plant. Rain-water has been frequently analyzed for ammonia, which was found in minute quantities, and this property may also be absorbed from the atmosphere by the leaves.

I have observed these influences more perceptibly in the cultivation of the hop than of any other plant. At that peculiar season of the growth when it is just in the burr, I have noticed that with many hills the growth was apparently stationary, but when I used the plough and the cultivator freely and threw fresh dirt about the hills, new vigor seemed imparted; often a change was perceptible in a few hours. Bassingault experimented with this very fertile soil of his garden, which was especially rich in nitrogen, which, were it in the form of ammonia, would be equivalent to more than seven tons per acre taken to the depth of 15 inches, or if existing as nitric acid, would correspond to more than 43 tons of saltpeter at the same depth. The same authority made some beautiful experiments with the sun flower. In a soil destitute of nitrogen was obtained a crop weighing (dry) 4.6 times as much as the seed. In a second pot, with the same weight of seeds, in which the nitrogen was doubled by adding .0033 of a gramme in form of nitrate of soda, the weight of the crop was nearly doubled—was 7.6 times that of the seeds. In a third pot, where the nitrogen was trebled by adding .0066 gramme in form of nitrate, and the crop was nearly trebled also—was 11.3 times the weight of the seeds. The experiments were also continued by using garden soil which already contained a certain proportion of nitrogen, and beyond a certain proportion there was no perceptible increase in the weight of the crop.

A Barn Cistern.

A very small outlay—fifty to one hundred dollars—will sometimes obviate a vast expenditure of time and trouble. Where barns and outbuildings are already closely adjacent to running streams or good ponds, the utility of a barn cistern will not be apparent. But when the nearest water supply is from a quarter to half a mile distant, what is the result? Irregular and inadequate watering to begin with, and, in stormy weather endless inconvenience to the owner and his stock. A serviceable barn yard cistern could be made at a very trifling actual outlay. The digging could be done by the farmer himself at odd hours, and all other expenses connected with it, waterlime, plastering, boarding, &c., would cost but a mere trifle compared with the great subsequent advantages conferred. A writer to

the *Maine Farmer* gives his views and experience on this matter thus:—

This cistern has been built and in constant use for twenty years. It is cemented on the gravel, without bricking or stoning, except on one side next to the cellar wall; here it is strengthened by a thin wall of stones laid in cement. From near the bottom a pipe is run through the cellar wall and carried under ground to a warm and convenient corner of the cellar, where it empties into a tub for supplying water to the stock without requiring the labor of drawing or pumping. The cistern is shaped like a common set kettle or farmer's boiler, being about ten feet deep and eleven feet across at the top, and holds one hundred hogheads. It was covered at first with two-inch chestnut plank laid on chestnut sleepers, but the planks rotted, and have been replaced by green chestnut timber, hewed on two sides and laid close together, filling the crevices with cement. These are still sound, and bid fair to last many years.

Over the timber there is about eighteen inches of loam, which entirely excludes the frost from the water and sides of the cistern. Owing to an imperfect waste-way, the cistern has occasionally, in years past, overflowed and softened the bank behind the cement, allowing the pressure of water from within to crack the cement shell and cause a slight leak. The leaks were stopped by brushing the cracks over with a thin coat of cement. It has been tight now for several years.

The cost at the time it was built was only about fifty dollars, including the piping and cave troughs on the barn, and a pump for drawing water from the top. Six barrels of water lime were used, with about double the quantity of clean, sharp, coarse sand. The lime cost, at the time, only a little over two dollars per barrel. The pump cost about ten dollars, and the cave troughs a little more, leaving some fifteen dollars for the digging, covering and work of setting the cement. The digging was all done in March, when other work was not pressing.

If we were going to build again, we should, by all means, build larger. This has never been dry but once in twenty years, and the number of animals kept has never been less than ten, and often nearly twice the number; besides, water is used for washing carriages, and in dry seasons it is drawn from for washing at the house, and to supply neighbors who are less fortunate in a water supply. Still, there has not been a full supply at all times, because the capacity of the cistern is insufficient for holding all the water that falls on the roof.

Improving Pastures.

I have had much experience in improving pasture land of almost every description, and used many kinds of fertilizers in their reclamation, and came to the conclusion many years ago that the plough was indispensable in their improvement. I am aware that much depends on the nature and condition of the soil. When cows were kept on my farm, their manure was not evenly distributed, and being taken out of the pasture nights, the grass failed. Two years since, some eighteen horses and colts were kept; they are very destructive, stamping out the grasses with their incessant running and frolicking, and their droppings (except the liquid) are of very little account, if left on the field and exposed.

As a last experiment I am trying sheep, and for two seasons, and the best one (it must be admitted), is the profit of early lambs. My sheep have already had sixty-nine lambs, with the loss of only two, and some of them weigh over thirty pounds. The second reason is the "improvement of the pasture." In that I have not been disappointed. In the first place, my pasture will keep more than I expected, and although they fed in spots where the feed is sweetest, and, of course, have their manure there, it was not the pasture that needed to be improved the most, except to be enriched. People have expressed their surprise at the results. In passing over the pasture where the sheep frequent most, you would say it was newly top-dressed, and that the grass had thickened wonderfully. On another portion good red top hay was mown, showing that my one hundred and thirty sheep and lambs were not an overstock. Sheep are great scavengers, and there is hardly anything that grows naturally on the lot but they will eat, except a coarse grass that always follows the cutting of wood. There were some seven or eight acres of this description, where wood was cut four years ago; the piece was ploughed imperfectly, harrowed, and grass seed sown, but being a dry year, the coarse grass got the advantage. Horses eat it, but sheep will not; horses would not eat an oak or birch sprout, birch or blueberry bush, but sheep eat everything of the kind. Every day you find them looking for variety, no matter how good the grass is. I cannot say yet as to the profit, but the pasture is improving, equivalent, almost, to the cost of keeping in summer.

H. S. Randall, the best authority, says: "that four hundred sheep will, if properly managed, manure and improve from year to year forty-five acres,"—a statement which, from my own experience, I fully believe in. I do not say the business will be continued on my farm for a great length of time, but some reports shall be made satisfactory in regard to them, if not prevented by dogs or disease.—*Cor. N. E. Farmer.*

Smut in Wheat.

A correspondent, writing to the *Western Farm Journal*, says on this subject: The question has been asked through our agricultural journals scores of times, in the past twenty years, and as many answers and remedies recommended. In an experience of wheat-growing of over twenty years, but one sure remedy have I been able to find, that would entirely prevent smut in wheat, and that is Blue Vitriol. I have washed seed wheat in strong brine, as strong as salt would make it; while the wheat was damp have sifted on airslacked lime just before sowing. The salt and lime were beneficial to the wheat, and, no doubt, to some extent prevented smut, but in no case, with me, entirely so.

Recipe.—For eight bushels clean wheat, 1½ pounds Blue Vitriol in 3 gallons of water; on the day or evening previous to sowing take the amount of wheat designed for the day's sowing, place it on the barn floor, and apply the vitriol water a little at a time, keep shoveling the wheat over as you apply the vitriol water until all the wheat is well saturated, it will be in good condition to sow next morning. I have let it lay three days before sowing, without any detriment to the seed. The vitriol should be dissolved with hot water; then fill up with cold water in proportion as above indicated.

Some years ago I made a strong brine, for the purpose of floating out, or off, some oats that were in my seed wheat; after the wheat was dry, or partially so, after being put through the brine, I applied the vitriol water; a neighbor, knowing of this treatment, said to me that not one grain of this wheat would grow; that the brine was all the wheat could stand, and that anything as powerful as Blue Vitriol would certainly kill it. The wheat was sown, and we both had the satisfaction of seeing it come up, and grow, and make a good crop. Some eighteen years ago I tried this vitriol wheat on a small scale as an experiment, taking two bushels of seed from the same bin that I took seed from for my main crop, and treated it to the vitriol as above stated. I sowed it the same day and beside the main crop, all put in the same manner; from the seed of this two bushels not a smut head nor a smut ball could be found, for it was not there, while the main crop was quite smutty, so much so that at harvest time it could plainly be seen up to the line of the vitriol wheat, proof beyond doubt. There are some varieties of wheat that are quite sure to smut, and, as a rule, they are of our best varieties; in these I will pay to prevent smut, as every bushel of smut balls costs us as much to raise as a bushel of wheat, and this is lessened in value by reason of the smut. There is no need, or any excuse for growing smutty wheat; as a rule, we farmers do not take pains enough with any of our field seeds, from wheat to potatoes.

Rotation for Gravel Loam.

At a farmers' meeting held in Michigan, recently, J. W. Wing, of Scio, gave the following system of rotation employed on his farm, which consisted of gravel loam. We copy from the report of proceedings in the Michigan Farmer: I will take a piece of clover sod that has been mowed one year and pastured two, break it up late in the fall or spring, and plant it to hoed crops, corn, potatoes, rutabagas, beets, etc. When these crops come off, put upon the land what manure can be spared, plough the land again in the fall or early in the spring, and sow it to oats or barley (barley is best for the next crop). When this crop comes off, plough the land again as soon as possible, drag and cultivate well, and early in September sow to wheat, with three quarts of timothy seed, in the fall, to be followed by six quarts of clover seed per acre in the spring, the clover to be mowed one year and pastured two, and left as we found it for the second rotation.

If I wished to sow more acres of wheat than my stubble land furnished I would plough up a sod when the clover was in bloom, cultivate well, and sow to wheat as before, and immediately upon the taking off of this crop I would plough the land again, harrow thoroughly, and give it a dressing of compost or fine manure, cultivated in; then sow to wheat, timothy and clover. If the land and seed are clean, the second crop will often be as good and sometimes better than the first. I think a clover sod sowed when the clover is in bloom, is as good as siftings of manure to the acre. If any one thinks otherwise, let him dig up a cubic foot of such sod, wash all the earth out, and weigh the roots and clover, and make his estimate from that.

Blue Grass.

Blue grass can be sowed any time of year, almost, but it should be sowed when the ground is moist, or just before a rain or snow. The best time, however, is in early spring, from the last of February to first of May. Sow on the surface, after barley, spring wheat, or oats have been harrowed in. If sown on wheat, it should be done early in the fall, and if sown on old meadows or pastures, they should be harrowed with a sharp harrow. If sown on snow, mix with the seed about as much damp, unleached ashes; if the ground is bare, mix with the seed about half the bulk of land plaster, rubbing the two thoroughly together before sowing.

The quantity of seed depends upon circumstances. If sown on mellow ground and brushed in, three-fourths of a bushel to a bushel per acre will be sufficient; if sown on hard ground, or the seed is not brushed in, more will be

required. It is a good plan to sow about half a bushel of blue grass and a few quarts each of clover and timothy per acre. After the two latter have run out, the blue grass has possession, with a good sod and root.

The best soil is limestone, or loam with dry subsoil; but it will grow on any kind of land except a poor sandy soil, or soil that is under water a large portion of the time. Red top is the best grass for the wet soil.

Experience has proven that land well set to blue grass will yield double the pasture of our common grasses, and it is more nutritious—stock fattens faster on it and milk and butter are much better flavored. Blue grass affords much better winter pasture than any other grass. Many people think that what is called June grass in some localities, is blue grass, but this is a mistake. June grass is light and almost worthless, and dies out in summer, while blue grass is heavier than most other grasses, and lives the year round, as well as year after year. I had the privilege last summer of seeing seven different varieties of this grass at Cincinnati, as they were sent from the field, tied up in bunches. Some of these were much better than others, and those who purchase seed should therefore be careful to know what they are getting.—*Cor. Ohio Farmer.*

A Good Hay Rack.

There are many forms of hay and grain riggings, says the *Country Gentleman*, but as far as my experience and observation extend, the one shown in the accompanying illustration (fig. 1) possesses more desirable qualities than any other. The dimensions of each piece are given, and by referring to the cut, its construction is made an easy matter by any person handy with tools.

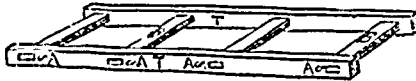


Fig. 1—Combination Hay Rack.

T T are bed pieces of pine or other straight-grained light wood, 14 or 16 feet in length, 8 inches wide and 3 inches thick; if of oak or other hard wood, 2½ inches thick will give sufficient strength. Four cross pieces, *B*, of hard wood, 1½ inches thick and 6 inches wide, are morticed and firmly secured to the bed pieces. This constitutes the frame or foundation and is shown in fig. 2. It is frequently used separately, to haul rails, boards, stones, manure, &c., and is a convenient, strong, and handy arrangement for the purpose. In fig. 1 is shown the rigging complete, of which its four cross pieces or arms, are 7½ feet in length, 5 inches wide, and 2½ inches thick.

If designed for a "sectional rigging," and to prevent side movement, a half-inch groove is cut into the lower sides of the cross arms, so that they fit closely upon the bed pieces. To prevent a forward or backward movement, eight strong iron hooks are attached by staples to the sides of the cross arms, and when placed upon the bed

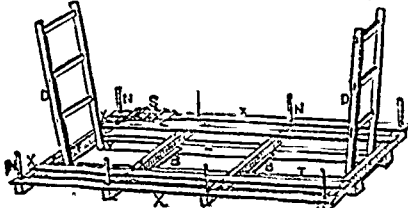


Fig. 2—Frame or Bed Pieces.

pieces are readily hooked into the staples, *A*. Thus arranged, one man can easily place the rigging upon or take it from the wagon. Or if desired, bolts may be used to fasten all together, by passing them through the cross arms and bed pieces; there is not 25 cents difference in the expense.

Standards, *D*, can be either stationary or hinged so as to be quickly lowered, raised, or removed, by a small bolt as shown at *Y*. The standards should be 6½ feet high, and quite strong, to withstand the pressure of the load, as well as to serve as a ladder. The boards, *X*, should be of the same length as the bed pieces, and 1 inch thick and 6 inches wide, of straight-grained light wood. Wooden pins or stakes, *N*, are inserted as shown, and should be only slightly sharpened. Should the hind wheels project above the boards, *X*, then bridge over them as shown at *S*. Paint, and keep under shelter when not in use.

ROTATION IN PENNSYLVANIA.—A Pennsylvania farmer gives the following as the usual rotation practised in that State: We put lime on a sod field, turn down for corn next year, cover with well-rotted stable manure, and turn again for corn, then two crops of wheat. The second time we sow wheat we also sow clover and timothy, then mow or pasture one year; then we begin and turn to corn again. So, we come round to grass every four or five years. We believe in clover as the crop to get up the soil. We think the best way to get up a thin soil, is to mow a clover field for hay; then, when the second growth is grown about fifteen inches, turn cattle or sheep on to trample down the clover. Then put on about seventy-five or eighty bushels of lime per acre in the fall; the following spring, turn the clover and lime down and plant in corn. Clover, with lime and a little manure, will bring a quite thin soil to a good rich soil in a few years.

Management of Grass Lands.

Prof Stockbridge addressed the recent meeting of the Maine Board of Agriculture on this subject. We extract as follows: There are many sterile pastures—soil with no nitrogen and little phosphoric acid in it, because the cattle have carried it all off in milk and bones. This must be top-dressed. The land has been robbed of its mineral elements and its nitrogen, and you must top-dress it to make it bear a crop. If you can get them, use wood ashes. Even at 35 cents per bushel the speaker said he could get rich on the poorest farm in New England. This is just what has been taken from the land, and if they can be put back, it is just what is wanted. But it is not enough. To 20 bushels of wood ashes use 50 lbs. of sulphate of ammonia, and you have for a cost of \$6, a top-dressing for an acre of pasture that will last for three or four years. If you have not wood ashes, use 180 lbs. sulphate of ammonia, 70 lbs. muriate of potash, and 100 lbs. of a good superphosphate. Mix this and apply it to two acres. The third class of pastures are those that can be ploughed. Sunshine and air renovate the soil, and pastures that may be ploughed and pulverized, should be. It may have been in sod 50 years, and if there is any clay in the soil it has become hard and impervious to water and air, therefore it should be ploughed. Thoroughly till this pasture, manure it with the mixture just spoken of, and seed it with herds grass, blue grass, red top, red and white clover, and about two bushels rye to the acre. The rye will start quick, the cattle will eat it readily, the rye will protect the grass, and by the second year the grass will be well grown. By this course the speaker has seen land brought up from where it took five or six acres to keep a cow, to where it took but two, and all pasture lands of this description would be benefited by this course.—*Ohio Farmer.*

Ploughs and Ploughing.

In times past farmers have thought any plough good enough that would cut a wide furrow and run level. But we notice more inquiry of late, and the better class of cultivators are experimenting with all the new inventions in hopes of finding one plough that combines all the merits, and none of the defects so common to almost all now in use. We have had several very good working ploughs, so long as we could keep them bright and have them scour; but a damp day or two with a plough not in use, or even sometimes if left out over night in damp weather, and it could not be made to scour all day in our black, clay loam soils. One-horse ploughs, especially in fine, well-worked ground, would scarcely ever scour—not doing good work, and, of course, drawing hard. In sheer desperation we have tried every plough recommended by the seller, on condition that if it scoured we would pay for it, and if not, return. Some steel ploughs would do pretty well, but on certain soils in a dry, mellow condition they would clog. Last spring a very homely plough, made at Albion, Mich., was recommended by a party selling it here, and we took it home, without the least idea of being able to use it. We tried it, and kept trying it, but have never found a place where it would not scour; even though left wet a week it does not rust deep, but will scour the first rod—the surface being made so very hard that there seems to be no wear to it, and the rust cannot get hold. We have since seen another make of chill-hardened ploughs that works nearly as well. These chill-hardened cast-iron ploughs must supersede all others on black, sticky soils. A light two-horse plough of this kind runs quite as easy for one horse as an ordinary cast-iron plough for two, and does much better work. We have decided to discard all our old cast-iron ploughs and substitute those instead.—*Cor. Rural New Yorker.*

Large Seeds Preferable.

A series of carefully conducted experiments in Europe and America afford striking results in favor of the use of large and carefully selected seeds for sowing. Not only had these yielded larger crops from the same number of plants, as compared with the small, but a much greater percentage of the latter had frequently failed to germinate at all, notwithstanding that in both cases the seeds were perfectly formed. The reason assigned is feasible, viz., that the greater vitality of the larger plants enabled them to overcome obstacles which the smaller ones could not surmount.

Professor Caldwell of New York publishes two of these experiments in the *Tribune*:

Beans and peas were planted in the garden, small and large seeds of each kind being planted on adjacent plots, the beans 12 inches apart each way, and the peas in rows 10 inches apart and 2 inches apart in the row. Not only was the crop carefully harvested and measured when ripe, but the progress of growth was closely watched during the season. The larger and more uniform growth of the plants from the larger seeds, from the beginning to the end of the

season, is very plainly exhibited in the condensed tabular form in which we have arranged the results of these experiments. Height is given in inches, and weight in ounces, if not otherwise specified.—

Beans

Date.	Description.	Plants from	
		Large seed	Small seed
May 23.....	Height of plants	6 3	5 0
	Average number of leaves	12 5	10 11
June 9.....	Height of plants	12 5	10 11
June 11.....	Number of plants in bloom	45	12
June 17.....	All the plants in blossom Ten average plants taken up from each plot. Average height of plants	24	20
	Average number of leaves on each plant	13	11
	Aggregate weight of the ten plants when dry in grains	337	576
July 31	Pods fully formed. Whole number of pods	8183	2769
Aug 5	Crop harvested. Total weight of vines and pods	210	183
	Weight of seed, first quality	102	121
	Weight of seed, second quality	30	25

In whatever way the plants are compared, and how ever minute the measurements that are made, the advantage remains always with the plants from the large seed. To give one or two instances: of the ten plants taken up June 11, all but one of those from the large seed had 12 leaves, as given in the table, and the odd one had 13 leaves; on the other hand, of the plants from the small seed some had 10, some 11, and some 12 leaves, and one had 13. The uniformity of the plants from the large seed was marked. At the rate given in the above table, the increased yield per acre of seed of the first quality that may be obtained by the use of large seed rather than small, would be 250lbs. A similar course of experiments with peas gave the following results:—

Peas.

Date.	Description.	Plants from	
		Large seed	Small seed
May 23.....	Height of plants	6 3	4 5
June 6.....	Height of plants	13	10 12
June 19	Ten average plants taken up from each plot. Average height of these plants	44	34
	Average number of leaves	15	13
	Average weight of the 10 plants, green	11 5	1 0
	Average weight of the 10 plants, dry	12	1 0
July 20	Crop harvested. Total weight of vines and pods	201	192
	Weight of seed, first quality	45 3	19
	Weight of seed, second quality	19	37

In the case of the peas, as well as of the beans, the plants from the larger seed are better throughout the season than those from the small seed; the superiority of the former is specially marked in respect to the quality of the seed harvested, as shown in the table.

Professor Lehmann of Munich also followed out a similar course of operations with the latter plant and found the results still more striking. In one of these series of experiments 20 per cent of the small seed failed to send plants to the surface, while only 9 per cent of the plants from the large seeds failed to appear. In the other set of experiments the corresponding figures were 10 5 and 6, between seed of medium size, and the largest size there was no important difference in this respect. Lehmann divided his seed into three sizes, small, medium, and large; 100 plants from each size of seed yielded 8, 11, and 13 oz., of seed respectively, about the same space being allowed to each plant. As to the quality of the produce, it was found that from the small seed three times as much seed had been injured by insects or was imperfectly developed, and the produce from the medium-sized seed had twice as much, as an equal weight of the crop from the large seed. On comparing the weight of the crop with that of the seed from which it came, it was found that if the same space were given to each plant, a given weight of seed, whether large or small, yielded nearly the same weight of crop, provided of course, that the same proportion of seed came up in both cases.

Facts about Clover.

Clover seed bids fair to be very scarce the coming spring; at all events it has suddenly gone up in price, and farmers who have it to buy find that they have to pay two or three dollars per bushel more than they expected. Clover seed has been too low several years, and the advance is a healthy indication. We hope it will not lessen the quantity sown per acre. It is better to get a good seeding wherever you attempt to seed, and if the price of clover goes up too high, leave some without seeding; plough the stubble and sow with wheat in the fall. In some cases—as where the land is very rich—it will pay to grow wheat after wheat. While clover-seed is so dear, it will not pay to try to seed after oats. There was generally a poor "filling" of clover heads last fall, and owing to the low prices for two or three years, many farmers did not try to save seed. We hope they will let their clover grow the coming year, and save a good crop of seed. It will pay in the improvement of the soil if not in seed sold.

Scientific men in Europe have found out, by investigation, that while healthy clover plants in a good soil are forming 100 lbs. of stems and leaves that will make hay, the roots below, divested of dirt, will weigh 66 pounds, allowing two years for growth, and three cuttings of the clover, two to the second year, and one the first. Clover roots and stubble more than pay the cost of production as manure to the land, whether you fertilize for a crop of corn, oats, wheat, barley, or what not. A turf that has grown four years has been worth six tons of hay for manure. It is good economy to sow about one hundred pounds of land plaster to the acre of clover, to enlarge the crop. Let all farmers learn how to make sterile or thin land become fertile. It is as easy to make poor land become fat in sod and manure, as it is to make a poor pig gain in flesh. Make grass and clover labor for you.—*Pacific Farmer.*

Cheap and Convenient Gates.

A writer in the *Rural Home* says: I have just made gates to replace some old-fashioned pairs of bars that I am heartily tired of opening and shutting. They are cheap, durable, and very easily made. Each gate is twelve feet in length by four feet in height. Five boards four inches wide are used, besides battens and braces. Battens should be placed on both sides making three thicknesses to nail through. It does not take more than thirty-three feet of boards, worth perhaps sixty-six cents, to make each gate. Add to that ten cents for nails, and the value of one hour of your time, and you have the whole expense.

A gate of this kind will outlast a framed one costing \$4, and as no hinges are used, that expense is saved also. It is held in position by means of a stake driven in the ground four or five inches from the post; not in a straight line, but a little more than the thickness of the gate towards the drive-way, so that when opened the gate can be turned half way around and be parallel with the drive-way. It is kept a few inches from the ground by a strip, nailed to both stake and post, on which one end rests when shut, and on which it slides half its length and then swings round as on a pivot when opened.

The strip is usually placed under the second board, in a space arranged for it, by cutting away two of the battens. This strip takes the place of hinges. A gate of this kind can be made in much less time and at as little expense as a pair of bars, and is certainly much more convenient.

Varieties of Grain.

The following results, communicated to the *Farmers' Union* by Mr. C. Y. Lacy, followed the testing of different kinds and quantities of wheat and oats. The object was not to produce large crops, but to show which varieties were most productive, and for this purpose land in very poor condition was selected, the presumption being that those varieties which gave the best results under the circumstances, were best adapted for poor soils, while proportionately increased results would follow on better soils. Three sets are given.

SET I.—VARIETIES OF WHEAT.

Soil dry and sandy, a part sandy with considerable vegetable matter. Ploughed about five inches deep, April 12th to 18th, and harrowed before sowing. Seed sown April 20th, with a Horicon seeder. Peruvian guano was then sown broadcast by hand, at the rate of 300 pounds per acre, and covered with a double stroke of the harrow. Difference in time of ripening slight, and not noted. Harvested August 3rd.

The following table exhibits the results:—

	Seed per acre, in lbs.	Product per acre, in pounds.	
		Grain.	Straw.
Arnoka	56	195	1,615
Oran	109	389	1,660
Fife	97 1/2	375	1,670
China Spring	107 1/2	350	1,425
Mediterranean Spring	107 1/2	445	1,405
Mixture of above five	165	502 1/2	1,477

SET II.—VARIETIES OF OATS.

The soil, its preparation, and the manner of sowing seed and applying fertilizer same as in Set I. Seed sown April 21st. Annual fertilizer applied at the rate of 300 pounds per acre.

The following table exhibits conditions and results

	Seed per acre, in lbs.	Product per acre, in pounds.	
		Grain.	Straw.
Canadian	105	560	785
White Schonen	372 1/2	522 1/2	852 1/2
Silver White Queen of the Earliest	102 1/2	450	510
Excelsior	105	425	625
Black Norway	87 1/2	622 1/2	842 1/2
	72 1/2	535	820

SET III.—DIFFERENT QUANTITIES OF SEED.

The soil, its preparation, and manner of sowing seed, and applying fertilizer the same as in Set I. Seed sown

April 21st. Peruvian guano applied at rate of 200 pounds per acre.

The following table shows the results:—

	Seed per acre, in lbs.	Product per acre, in pounds.	
		Grain.	Straw.
Fife Wheat.....	100	4 5	1,410
Fife Wheat.....	75	4 30	1,300

It will be noticed, in Set II., that the Silver White oats were the earliest. Owing to this fact, they were more injured by the gophers than any other, which partly accounts for the small yield given in the table. The Excelsior were observed to shell badly in harvesting.

OATS AND BARLEY.—Although oats ripen later than barley, says the *Country Gentleman*, this, instead of being an objection, is an advantage. The oats are a support to the barley, and extending their heads above the smaller grain, have a better chance to develop and mature; the ripened barley shrinking somewhat, gives a still farther chance to the associated grain. The crop is to be cut, as in the case of the peas and oats, when the tips of the latter are in the dough state. The swaths will lie high and loose, letting the air through readily, drying the crop with little difficulty, and lessening the danger of spoiling in the swath in case of foul weather." This mixture—barley and oats—is said by our contemporary to be one of the best general grain feeds used, and good for all kinds of stock. We may add that it is especially valuable for fattening swine.

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

FENCES AND WASTE LAND.—We know not who the writer of the following is, but it is good as gold to every farmer who will heed its suggestions: "If a farm of 160 acres is divided by fences into fields of 10 acres each, there are five miles of fences. If each fence is now one rod wide, no less than 10 acres are occupied by them. This is equal to 6 2/3 per cent. of the farm, and the loss of the use of the land is exactly equal to a charge of 6 2/3 per cent. of the farm. But nearly every fence row in the country is made a nursery of weeds, which stock the whole farm, and make an immense amount of labor necessary to keep them from smothering the crops. Much damage always results to the crop from these weeds, and if these expenses are added to the first one, the whole will easily sum up to 20 per cent., or a tax of one-fifth of the value of the farm.

To remedy this, we would have fewer fences, or we would clean and sow down the fence rows to grass and clover, and mow them twice a year. 10 acres of clover or timothy would, at least, supply a farm with feed and a few tons of hay every year. We would, in short, consider the fence rows as a valuable part of the farm, and use them as such."—*Maryland Farmer.*

CISTERNS FILTERS. The best way to provide a filter for a brick cistern is to put a partition through it of brick, having the pump upon one side and the receiving pipe upon the other. No filter can be made of sufficient capacity to receive the water from the pipe and allow it to flow through into the cistern without, in a heavy shower running over and wasting the water. The partition should be curved, swelling out toward the side into which the water runs, to prevent the water pressing it over in case the opposite side should be empty, and should be built of brick laid flatwise, in cement, and plastered well on both sides with the same. In laying the partition each alternate brick in the bottom course should be left out, and upon the floor of the cistern, and entirely across it, on the receiving side, about a foot from the partition, should be built a brick wall eighteen inches high. The space between the partition wall and this low one should be filled as follows: First, coarse gravel, six inches, coarse sand, three inches; pounded charcoal, six inches, and fine sand enough to nearly fill the space. The receiving pipe should be bent so as not to allow the water to pour upon the filter. A cistern thus built will furnish, as long as it lasts, purer, better, and more healthful drinking water than any spring or well in the world. Should the filter become foul in time, the packing in the box may be easily removed and clean materials put in its place.—*Cor. Inter-Ocean.*

Horticulture.

Fighting the Potato Bug.

EDITOR CANADA FARMER:—I purpose giving your readers the benefit of my experience in combatting the now too well known enemy of the potato raiser, the potato bug. There are but two ways of dealing with this pest, poisoning and picking. I plant my potatoes as soon as there is any warmth in the ground. If the potatoes have sprouted in the root-house before planting, they come up a week earlier. Almost as soon as the potatoes appear above ground, bugs may be seen on them, but the old bugs do little or no damage. I therefore allow them to enjoy themselves as long as possible. It is the young bugs that do the mischief. These appear just as the Early Rose potatoes are showing bud. I let them alone as long as possible, but when I find that they are doing an injury, I apply poison. There are two ways of doing this; it may be applied in water or it may be mixed with flour, lime, ashes, etc., and dusted on. I put two table spoonfuls of Paris green in a painful of water. It should be applied with a watering can, but it may be sprinkled on the vines with a bunch of hay or pea-straw. Applied in this way, two pounds of Paris green will cover an acre. I have found this the best way of applying the poison. It enters into the vines and the rain will not wash it off. One application will keep the bugs off the vines till the Early Rose potatoes are ripe, and only one half the quantity of poison will be required. The usual way of applying Paris green is mingled with flour. It should be applied early in the morning when the dew is heavy; it will then adhere with some firmness to the vines, forming a sort of paste. Some, rather than risk using poison, pick the bugs. When the potatoes have been above ground about a week, they go over them, picking carefully all the bugs and removing all the leaves on which eggs have been deposited. They go over them in this way two or three times a week, till the young bugs appear. They then wage war with clubs and old milk-tins. They strike the vines with their clubs; the bugs all fall and if the tins are held close under them a good many must fall into them. No one who has to pick the bugs himself will think this a good way of dealing with them. I would rather have my Willie and Sammie at school than grovelling among the mud in search of bugs like toads or Chummen.

I have often heard the question asked how is it that you may pick all the potato bugs off a patch and in two days' time find just as many on it as before it was picked. The explanation is found in the fact that new regiments of bugs are hourly marching into camp. They know instinctively where potatoes are and they walk or rather run—they seldom fly—in a direct line to the nearest patch. Quarter of a mile from a potato patch you will meet Captain Bug posting for his life to join the nearest army, and not far behind him you will meet the whole troop, every member of it seemingly determined to overtake his leader.

Markham, 21th April, 1876. GEORGE GARDNER.

The Oleander.

Make cuttings six inches long of old wood and place them in shallow water until they emit roots, then pot them.

An oleander is never so pretty as when confined to a single stem; therefore rub off all side shoots as they appear, reserving only a foliaceous top sufficient to carry on its growth. At the end of a second year we shall have a stem, say three feet high, perfectly straight and dividing at its top into three branches. If now it be permitted to grow unchecked it will soon display the loose, naked habit which so mars the beauty of the oleander as a house plant, while it demands a space that it scarcely merits. Let us cut off these three branches to within four inches of the main stem. Each branch will at once push a verticil of three buds, so that we shall have nine branches instead of three. These, when again cut back a few months later, will again trifurcate, producing twenty-seven, and so on until a thick ball of foliage is provided that, with its clean, elastic stem and double rose-colored flowers—produced more profusely for this course of manipulation—will prove a plant more attractive than any one could suppose who has never tried this form of Oleander cultivation. Afterward we have only to cut it back season after season as it transgresses desired limits.

Oleanders are so far from squeamish that they will suffer the rudest treatment without resentment. We have two plants about eight feet high so closely alike that we never have distinguished one from the other. They are planted out in the Spring, taken up in the late Fall with all the earth that readily adheres, placed in the cellar and the ball of earth and roots covered with sand. Thus while they are suitable for shrubberies, as single lawn specimens, or in borders of whatever description, displaying anywhere marked distinctness of aspect, they are really of no trouble whatever. If it is preferred to pot them for the conservatory or sitting-room it is well to know that the roots may be crowded into the smallest pot that will receive them, working in as much soil as possible and supplying plenty of water.

Oleanders are quite hardy. We once exposed a plant to 20 degrees for 30 minutes without injury except to the leaves. We remember a tree in Savannah, Ga., twenty feet high, growing in a court-yard, and it may be that they are hardly further north.

If a unanimity of voracious authors did not so pronounce, we should doubt that they (the *Nerium oleander* species at least) were excessively poisonous, from the careless manner in which we have pruned and handled our own specimens for ten years without conscious injury.—*Cor. Country Gentleman.*

A New Lettuce.

For several years, a Lettuce of a very peculiar character has been grown here, and principally by German people. The leaves are very much cut, as shown in the engraving, while the whole plant forms a globular mass of foliage, quite singular and handsome. It is very hardy, and not only endures cold weathers, but heat better than most kinds. In fact, it is the only sort popular in our market in warm weather. This variety does not seed well, as it keeps its eatable head so late, and we have had the greatest difficulty in securing seed. Our German market gardeners have usually found it difficult to save enough



seed for the next season's sowing. We consider it a very tender, useful lettuce; and, though we do not desire to over-praise anything new or comparatively untried, we think this shows sufficient evidence of merit to warrant a trial in other sections of the country. It is called the Cut-leaved, and we have now secured a pretty fair stock of seed.—*Vick's Floral Guide.*

Planting Street Trees.

I say get your trees from the nursery if they can be obtained of sufficient size, but in the country we must resort to the forest to obtain those large enough to stand the depredations of street cattle. As to time of planting I prefer the fall after the leaves have fallen. The ground then will become compact about the roots and the tree will be ready for an early spring start. I have transplanted from the fall of the leaf until the leaf had nearly full size, by taking off all the leaves. I have succeeded well in January when the ground was suitable.

I prefer the elm for street planting for the reason that it makes a more rapid growth than the maple, is transplanted with more certainty of success, is not sunburnt on the south side in our hot summers as the maple has been of late years, which sets the borer at work and nearly ruins the tree.

One of the most important points in transplanting is in the manner trees are taken up. Great care is necessary to prevent bruising the bark from the roots and in giving sufficient root to support the tree until it becomes established in the soil, and if to be transplanted in a different soil from that which it was taken from, every particle of soil should be removed. For instance if taken from a clay and removed to a sandy soil, the clay upon the roots will become dry and hard. Remove most of the original head, but I prefer saving a few twigs if possible—I think a tree starts more readily.

Select trees that have a low head and those that have stood in as open ground as possible. To prevent the sun-burning of maples, take a narrow board of sufficient length to shade the trunk of the tree. Bore in it two holes near one end, through this put a cord to tie round the tree, placing the other end on the ground on the south side of the tree.—*Cor. Mich. Farmer.*

Making Fruit Ladders.

I construct my fruit ladders simply thus, and while they are quite efficient, they are surely cheap enough: For a 12-foot ladder my sides are one by three inches of the common mountain pine, free from knots. I place them upon my shop floor (the ground would do as well if I had no shop) on their edges, with the foot to a crack or straight edge, so as to have everything square. I then place the two ends for the foot just two feet apart, and for the top four inches. My strips for steps I split from any old boards which are sound and one inch thick, making them two inches wide (three for the lower ones are best), and eleven in number. Sawed strips would be more convenient than split. The first is nailed just 12 inches from the bottom, the rest 12 inches from top to top, except the last two, which are 15 inches, the top one being four inches below the top. I use eightpenny nails, and put two in each end, which is all that is necessary. I then turn it over and nail one strip about three feet from the bottom, and one six inches from the top, and the ladder is done. Any boy who can handle a saw and hammer can make one and not be compelled to carry so much lumber through the orchard. Shorter ones would not necessarily be so wide at the bottom, while a 16-foot ladder would be better a little wider, say three feet, and perhaps four inch sides would be best for one of that length, but three inch sides are stout enough for a 12-foot ladder. I also take heavy wire (old pail bales are good) and make hooks to hang my pails on the limbs while gathering fruit. I always use old tin pails to gather in; they do not bruise the fruit as baskets do; they are light and will hold as much as a man wants to handle in a tree top. A 12-foot ladder need not cost over 25 cents, besides the time of nailing together; 52 nails are enough.—*Cor. Rural Press.*

Melon Culture.

I have been living here in Clay County, says a writer to the *Rural World*, for twenty years, and have never failed to raise a good melon crop, let the season be good or bad. Perhaps there is a better way to raise them than mine, but I will give mine and insure it not to fail if strictly carried out.

As to the land, I prefer what we term second rate land, the first or second year without manure, and perfectly clear of trash or litter of any kind, with south or southwest exposure. Break as deep in the fall as possible, but in the spring plough lightly or harrow well. The object is to get the best top soil a little distance from the surface. My time to plant in this latitude is about the 10th of May. My distance of planting is eight by twelve feet, and if the land is very rich, twelve by twelve. I find the best way to prepare the seed for a sure stand is, to soak the seed in warm camphor-water, twenty-four hours. Be sure to plant deep enough to keep the seed from drying, and no deeper.

But the main part is the after culture. This is where so many fail with melons. I am speaking of watermelons, of course. I begin cultivating as soon as the plants show the third leaf, by breaking and removing any crust that may have formed on the hills, as well as to take all the hard crust from around the plants with the fingers as deep as the plants will bear. I then dig up the hill deeply and prop fresh earth around the plants. Do this as often as every ten days, and oftener if it rains and packs the ground. Plough deep between the rows once a week, and as close to the vines as you can. Continue this culture until the vines are beginning to run. Then give them a deep close ploughing; then don't permit the land to be stirred any more, but take a hoe and level the ground around every hill for a short distance ahead of the vine, and as soon as the vines cover that space, repeat the process, until the whole patch is level. I think this leveling process is the most important to make good melons, especially during a dry season. Year before last, when it was so dry that but few raised their seed, I had plenty of melons that would weigh from twenty to thirty pounds—and just as good as a melon could be. The foregoing is my plan. Who has a better one?

Small Fruits.

In engaging in this business one needs practical experience to grow them for market. For family use there is no sort of danger of overdoing the business. Create a demand in your own locality for the best quality of these fruits, and let your high aim be to never lower the standard of the quality of your fruit, nor your standing for integrity and virtue in selling and marketing.

The blackberry and raspberry will flourish in any good garden soil. In setting, choose strong plants and cut them down to within six inches of the crown. Plant in rows 4 by 6 feet, restricting to the hill. Cut away the old wood as soon as the fruit season is past. Blackberries should

be set 8 feet apart and the canes annually shortened to four feet. The best varieties are Dorchester Kittany and Sable Queen.

The gooseberry and currant are so nearly allied that the same cultivation is adapted to both. The great drawback in raising this fruit is the imported gooseberry sawfly which kills the foliage. A decoction of poke root will destroy this scourge. The main essentials in growing these fruits are good soil and dressing applied annually. Trim occasionally to induce new wood, hoe to keep down weeds, and mulch to keep the ground cool and moist. The Cherry, La Versailles and Red Dutan are the best red varieties, the Black English, Black Naples and Yellow fruited Black, the best black kinds. Houghton's Seedling, American Seedling and Mountain Seedling, are the best gooseberries.

The strawberry requires a deep and rich soil. Manure and thorough cultivation are the foundation of success in cultivating this fruit. It is a great feeder and will appropriate almost any kind of fertilizer. For field culture plant in rows three feet apart, and one foot in the row. Keep the runners clipped as fast as they appear. Take off two crops, plough in and cultivate to some other crop two years, then plant to strawberries again. For garden culture plough in every year. Always set plants in the spring, choosing healthy, strong plants of the previous year's growth. By following this course the land is kept clean of weeds and good crops are realized. In all operations do the work well. Mulch in the fall with leaves and leaf mould, or straw and swale hay, first running the two last through a straw cutter. Remove the mulch from the crown of the plants the next spring between the rows to keep the fruit clean. All things considered, Wilson's Albany is as good a variety as we can plant.

In Favor of Black Currants.

A correspondent of the *German Town Telegraph* writes in favor of this excellent but much-neglected fruit, doubtless the most valuable in every way of all the currants. He says: "My opinion is that the Black English or Black Naples, all things considered, is the most profitable. Black currants have with me proved to be entirely free from disease or vermin. No hellebore to be used here. The black currant bears better than the red or white varieties.

"In 1874 I grew from six square rods ten bushels of black currants. In 1875 the same bushes bore only three bushels. The crop of 1874 was so very large as to greatly exhaust the bushes, which accounts for the light crop in 1875. Probably the two years will present a fair average. If so, we shall find that at eight cents a quart (the price at which they were sold) they paid at the rate of \$143.73 per acre yearly,—a good profit, surely.

"Few people fancy the black currant at first; but, like the tomato, a taste for them is to be acquired, and when once acquired, it is never relinquished. We all know that an acquired taste is much more lasting than a natural one. Black currants, unlike most other kinds of fruit, can be indulged in even by sick persons. They make the very best of jelly, and for preserves cannot be excelled (if, indeed, equalled,) by any other fruit."

Apples for a Commercial Orchard.

O. H. P. Lear, of Hannibal, Mo., writes to us as follows in regard to the varieties of apples which he has found it most profitable to raise for market:

"After twenty-six years of experience in growing apples for market and testing one hundred and thirty varieties of the leading sorts recommended in the books, I have received more money from three varieties, viz. Winesap, Gemton (Rawles Janet) and Willow Twig, than from all the other varieties combined. The Ben Davis has proven more valuable than either of the three varieties above named, but it was not known here when I put out my first orchard of forty acres. I was the pioneer in planting improved fruit for market in this part of the country; had no experience in fruit growing, and worse than all, my neighbors knew no more than I did; we all thought that the man who had the greatest number of varieties had the best orchard. We all made the same mistake. If I had set out the three first varieties named, it would have been a success. The Gemtons have been gradually failing for a number of years, the trees decay early, overbear alternate years, and consequently the fruit is very small; it is now discarded. The Willow Twig has not been a complete success with me, yet it is a success all around me. The Wine Sap has failed once in twenty-six years; the tree is very hardy—the fruit is rather small, but it bears handling better than any other sort. The Ben Davis is a perfect success all over the West. The tree is hardy, a good grower, bears young, and is full every year. Its fruit is very attractive in appearance, and sells at from fifteen to twenty-five per cent. higher than any other variety—the grower does not have to hunt buyers, they hunt him. I am removing my old orchard at the rate of 200 trees yearly, and will in future plant nothing but Ben Davis. I will also set them between all my old trees, as they (the old ones) will be gone by the time the young trees begin to bear.

If all the apple trees within marketable distance of Hannibal were Ben Davis, they would bring half a million of dollars annually into the County, as we are in the centre of the finest fruit growing region in the West.—*Practical Farmer.*

THE PEAR TREE SLUG.—This larva is not so easily destroyed by hellebore as most other species. The poison, if used in the liquid state, should be made double strength. The best plan is to first sprinkle with water, and then dust the powdered hellebore lightly on.

CANKER WORMS.—Apply tar, or some other sticky substance, around the trunk near its base. Be sure that all surface irregularities are filled up or the tiny young worms hatched from eggs deposited near the tree, will assuredly make their way up. Renew the sticky application frequently in mild, dry weather.

BUGS ON VINES.—A correspondent of the *Rural New Yorker* says: "Set a tomato plant into each hill of cucumbers or melons, and you will have no trouble from the plants. The plants can be tied to stakes, and if well pruned, when large, both subjects can proceed with their fruiting without detriment to one another.

TRANSPLANTING HICKORIES.—The *Gardener's Monthly* informs us that the "Hon. Leverett Saltonstall, of Massachusetts, reports that he finds no more difficulty in transplanting luckories than any other trees, if they have been transplanted when young, and this is the experience of nurserymen." He also says that the hickory tree will fruit in fifteen years from planting.

THE POTATO BUG.—"I have experimented for three years, with all the means at my command, in various ways, and I found that picking by hand was the cheapest way of conquering the Colorado potato-beetle. You can do it for five dollars an acre, out in Wisconsin, where there are millions and millions of them. So that it is not always safe to argue theoretically."—*President Chadbourne.*

THE PEERLESS POTATO.—A. M. Van Auker, of Fort Howard, Wis., writes in the *Rural New Yorker* of this potato as follows: "I endorse all that is said of this variety, it is the standard late potato here; many call it as good as the peachblow, but we do not think so, we consider the Compton's Surprise the best late potato, and the Peerless second. As we have to fight bugs, we want potatoes that yield well."

THE CABBAGE BUTTERFLY.—One remedial method is to search for its eggs (on the under side of the leaves) at the proper season, and destroy them. Another, to employ children with nets to catch the butterflies; and a third, to lay boards, elevated a few inches above ground, between the cabbage rows, with a view of luring the worms to select such places for their chrysalis locations, and thus secure their destruction.

ORIGIN OF PEARS AND APPLES.—The pear (*Pyrus communis*) and apple (*Pyrus malus*) are found in their wild state in the mountain woods of the greater part of Europe, and from these indigenous species have been raised the whole of our orchard and garden varieties. Their anchorage by cultivation, and the perpetuation of varieties by grafting, have been celebrated by poets from the time of Ovid, and continue to the present day.

THE ETHIOPIAN Lily IN WATER.—Many years ago I saw a number of strong roots of this lily put into a 20-inch tub, which was then filled with good soil and submerged about a foot deep in a pond. The result was most successful, as, although the foliage died down each winter, the plants came up again the succeeding spring with renewed vigor, and a finer group of this calla I have never seen than this was a year or two after submersion.—*London Garden.*

THE PLANT (*Rhododendron maximum*) discovered by R. Morrison in the wilds in the rear of Sheet Harbour, N. S., is a beautiful evergreen, from six to twenty feet high, having leaves from four to ten inches long, with corolla one inch broad, pale rose color or nearly white, greenish in the throat or upper side, and with yellow or reddish spots. Now that it has been growing wild in Nova Scotia, it will probably ere long become better known, and take rank as a favorite garden ornament.

TREES SPLITTING.—When I find a forked tree that is likely to split, I look for a small limb on each fork, and clean them of leaves and lateral branches for most of their length. I then carefully bring them together and wind them round each other, from one main branch to the other. In twelve months they will have united, and in two years the ends can be cut off. The brace will grow as fast as any other part of the tree, and is a perfect security from splitting. I have them now of all sizes, and I scarcely ever knew one fail to grow.—*Prairie Farmer.*

THE PEACHBLOW.—The Peachblow has not been unreasonably pushed, and, so far as my experience goes, it is not only the best of all American sorts, but it is as good, and in some respects better, than many of our standard English varieties. I have grown the Peachblow and found it good, and I have seen it grown extensively by better growers than myself, and they and their customers have found it good also. Further, I have known a farmer in Lincolnshire grow it by the acre, and although he charged the "tip-top" market price for the produce, such was the fame of the Peachblows among the consumers of the neighborhood that the demand could not be met. It is a heavy cropper, ripening early, and is of good quality. It would be well to know if its good qualities and general usefulness under ordinary field and garden cultivation are sustained. My remarks refer to a period of three years ago.—*London Journal of Horticulture.*

DISTANCE FOR PLANTING TREES.—Many per ones, when planting trees, set them so close together that they have not room to spread their branches. They are compelled to grow upward, and when old, are so high that it is impossible to gather the fruit without injury. The following approximates correct distances for planting trees on most soils. Standard apples, large growth, 33, and small growth 28 feet apart. Peach trees, 16 feet, and dwarf pear trees 12 feet apart. To plant an acre of land at the above-mentioned distances, it will require the following number of trees: 33 feet each way, 42; 28 feet each way, 56; 25 feet each way, 69; 16 feet each way, 170, and 12 feet each way, 300.—*Ohio Farmer.*

PLANTING APPLE SEEDS.—Take three or four times the quantity of sand that you have of apple seed, and mix the seed and sand well together, and put in shallow boxes, and expose to the winter weather, to freeze and thaw. They should not be too wet nor too dry. They should be stirred occasionally, and kept out of the reach of fowls, as they will eat the seed. As the warm weather approaches, the seed will begin to germinate, and at the proper time for planting the ground should be deeply ploughed and finely pulverized to receive the seed. Rich soil is needed, and if free from weeds so much the better. Most persons drop the seeds with the sand, in rows 2 feet, or 2½ feet, or 3 feet apart, so as to admit of horse cultivation. The plants must have clean culture, and thorough hand-weeding and proper thinning, so as to be ready for grafting at the end of one season's growth. A naturally well-drained soil should be chosen.—*Rural World.*

FRUITS AT THE CENTENNIAL.—The Secretary of the Illinois State Agricultural Society publishes the following directions regarding the selection and preparation of fruit for the Centennial:—Only those apples should be selected that are fair in form, color and size, and perfectly sound throughout. Even the slightest bruise should win condemnation.

What is necessary is to keep the apples free from air and sufficiently dry and cool. To accomplish this, let them be closely wrapped in several thicknesses of paper, carefully packed in a box or barrel, and then if the cellar is not sufficiently cool—just above freezing—place them in an out-house and cover with straw, which is held down by boards. Of course they must not freeze.

Another method is to place a thin layer of plaster or perfectly dry sand in a box or barrel. On this place the apples, though not so as to touch each other. Cover these with the sand or plaster, and then put in another layer of apples, and so on till the box or barrel is full. By this means apples have been kept for two years in a perfect condition.

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

HOW TO PRUNE THE APPLE.—The customary advice is to thin out when the heads are too compact and head back, if too open, and the requisite amount of labor to be bestowed must not be amenable to any set of rules, but be governed altogether by the judgment of the operator. The best system of pruning however for the apple, and pear as well, is as follows. After first determining the proper height for the first tier of limbs to start out, which should be governed somewhat by the taste of the owner (I prefer three feet from the ground), three equi-distant branches should be allowed to remain, and all others in the immediate vicinity cut away. These limbs, by the way, ought to form as nearly as possible what botanists term a whorl or vertical, that is arranged in a circle around the stem. Then about 18 inches higher up another whorl of three limbs may be allowed to emanate, all others meanwhile being rubbed off, and so on, each succeeding year, until the top is formed. There will be no difficulty about the top being too open, as the young shoots, if cut back, will make it compact enough, and indeed all very luxuriant shoots must be headed in somewhat to preserve a good shape. By this system I have seen the most unruly growers brought into entire submission, and formed into as comely trees as one would wish to look upon—open heads turned into compact tops, and vice versa, as well as spreading varieties forced into a compact growth of short branches.—*New York Tribune.*

Live Stock.

A Good Cow.

Long in the face, she's fine in the horn,
Quickly gets fat without cake or corn,
Clean in the jaws, and full in the udder,
Heavy in flank, and wide in the loin

Broad in the ribs, and long in the rump,
Straight and flat-backed without a hump,
Wide in the hips, and calm in the eyes,
Fine in the shoulders, and thin in the thighs.

Light in the neck, and small in the tail,
Wide in the breast, and will fill the milk pail.
True of the bone, and silky of skin,
Airy without—a meat-market within.

—*Tanaka's Notes.*

Baulky Horses.

EDITOR CANADA FARMER.—Last summer I succeeded in curing one of the most inveterate cases of baulkiness I ever know. The animal had grown old in his sin, and was, moreover, one of those case-hardened stagers that turn their heads around and look you steadily in the eye while the fit is on them. I had tried whipping, petting, the ear-wash, gravel in the mouth, backing, poking, in short everything without effect, until at length, on one occasion, becoming thoroughly enraged (for the horse had come to a dead stop in the middle of a river we were crossing) I sprang out, hitched a logging chain around his neck, and proceeded to drag him out by means of another horse. For upwards of ten minutes he stood his ground, and it really seemed as if the head alone was to come without the body, but finally discretion prevailed and the body followed like a lamb. From that day to this no farther attempt at baulking has been made. Once, indeed, about a week after the occurrence just mentioned, he acted like one who is desirous of renewing an old habit, but a mere rattle of the chain brought him immediately to his senses. I am not recommending my plan for general adoption, be it observed, [neither do we by any means.—ED. CANADA FARMER.] but simply recounting my experience of a long-continued and thoroughly stubborn case.

Waterloo County, Ont.

READER.

Calves Running with Cows.

A correspondent of the *Live Stock Journal* says:—Very many farmers make a great mistake in the management of their cattle by permitting the young stock to run continually with the milking stock, as it is a detriment to them both, and the injury is apt to be permanent. Most farmers take the calf away from the cow when a few days old and bring it up on skim milk and other food until it can subsist on grass alone, when it is turned out to pasture with the cows and left to run with them and the bull until ready to drop its first calf. This is one of the most prolific reasons that the cows do not milk as heavily as they should, and the trouble experienced with young heifers sucking the cows. I have seen some heifers, even after they had become cows, such persistent "suckers" as to attempt to draw milk from every cow they pastured with, which necessitated stabling, a separate pasture, or putting a band, bristling with sharp nails, on their noses, as the only remedies beside the butcher knife. Even when calves are brought up away from the cow, and taught to drink from a bucket, they are apt to try to suck each other in the field; but this can be cured by putting the above named band on the nose of the unruly member. Always have a separate enclosure for the young stock to run in, where they can, during the spring and summer, have plenty of grass to pick on; but do not turn them into this until they are thoroughly weaned. We always tether our calves while feeding them milk, moving them once or twice a day, and even in winter we tether them out on mild days to get a good sprinkling of sunshine, which is as essential to a healthy growth and development of cattle as with the human being.

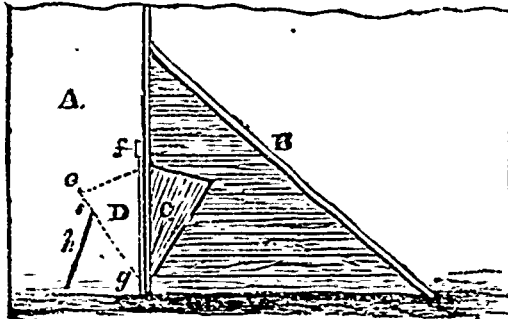
The Way to Dress a Veal Calf.

In the first place procure a sharp knife, having a point that turns up a little, the edge of which should be whetted on a fine gritted stone until it is keen. Then have another sharp knife rounding on the edge, at the point, to flay with. Grind and whet the edge sharp, as one is more liable to cut the skin with a dull knife than with a sharp one. Grind the carving knife also, and whet the edge sharp, when you are not in possession of a good butcher's knife.

Cut the throat of the calf close to the under jaw. After the blood has ceased to flow, turn the calf up on its back, and let the operator rip the skin, making a slip the entire length of the carcass, from the throat over the centre of the breast in the line of the navel to the vent. Let him now stand by the side of the carcass, with his face looking the way the head lies, and taking the fore foot in his left hand, run the point of his knife in the line of the cleft of the foot and cap of the knee, up the front of the leg and into the central slit of his bosom. For the hind leg, having reversed his position, let the slit be made in the line of the heel, over the centre of the cap of the hock, down the back of the ham into the central slit. In this way the hide, when spread out, will have a square form without long projections. Next hang the carcass up by the hind legs and allow it to remain suspended for six or eight hours. Let the entrails be removed as soon as it is hung up. By allowing the carcass to hang for a few hours prior to removing the skin the flesh will appear much nicer and of lighter color. The usual way is to rip the skin of the forward legs on the inside, which is wrong. It is always more advisable to leave a small quantity of flesh on the hide, than to cut the skin only a part of the way through it.—*New York Herald.*

A Safety Manger.

In answer to several correspondents we give in the present number of the CANADA FARMER an illustration of the safety manger described in Vol. xi, p. 23. The cut affords a transverse view of the stall and manger. A. is the feeding passage-way; B., the side of the stall. D., the manger, opened out into the passage-way to be replenished. Its position is described by the dotted lines. C., the manger, replaced, after having been filled, and ready for the animal to feed. At g. are two or more strong T. hinges upon which the manger swings. At e. is a projecting part, seen in the illustration, which comes



against the partition as the manger is replaced, preventing it from falling wholly into the stall. f. is a neck or bolt (there may be three or four if necessary) which, when the manger is adjusted, is turned or slipped over the projecting portion e., thus keeping everything in its place. A slight wooden leg h, hinged to the inside at i, acts as a support to the trough while it is being filled, and hangs listlessly out of the way of harm or danger when the manger is closed up. The inevitable safety of this plan lies in the fact that the feeder is not even seen by the animal he or she is feeding, much less does he come within the range of its horns or teeth. They are, in fact, completely separated from each other, for, in feeding, one side of the trough closes up the aperture in the partition, and in replenishing, the other does the same thing.

A Sheep Barn.

A Michigan farmer, who engages largely in the sheep business, writes the following description of his barn to the *Western Rural*.—"The barn is thirty feet wide and fifty feet long with eighteen feet posts. This is large enough to hold the hay for 100 sheep and 300 bushels of wheat and the sheaf besides. In the centre of the barn is the threshing or the drive floor, fourteen feet wide: this leaves a bay on each side of the floor, and extending two feet below it, eighteen feet wide and thirty feet long. These bays have each a small door opening into the yard in rear of the barn to pitch out the hay directly to the sheep. This saves throwing the hay on to the floor, and prevents handling it over so much. There is a small manger under each door to receive the hay as it is thrown out, which prevents the sheep from treading on it.

On either side of the floor, and extending the whole length of it, is a box or bin twenty inches wide and four feet high covered with lids or trap doors. These bins are very handy to receive the wheat when threshing, and will hold about three hundred bushels.

Immediately in rear of the barn is the yard running back 100 feet in length and sixty-two feet wide. On the right of the yard is the shed 100 feet long, twelve feet wide,

covered with boards, and boards up at the sides. This shed is high enough to drive a waggon the whole length of it to draw out the manure.

The space for the sheep to go in and out is at the junction of the barn and shed, and can be shut up to keep the sheep from storms.

There are two entrances to this yard, one opposite the barn, and the other on the left. The yard is enclosed on two sides with a tight board fence, the barn and shed forming the other two sides. The feeding racks run all around the yard, except the barn side and the entrances.

This barn, shed, fences, racks and all, can be built here in Michigan for about \$500. So much for the plan. My manner of wintering sheep is as follows: I would say here that I never fed a mouthful of grain to sheep in my life. At the commencement of haying I always pick out the brightest and best hay for the sheep barn; it will take about ten loads of hay to winter 100 large sheep, besides what straw they will pick over.

The great secret in wintering sheep so as to keep them thriving, is to keep them out of the mud, and out of the rain storms. To do this always at the beginning of winter, and before the sheep are turned into the yard, I cut down a portion of the straw stack, and spread it all over the yard, say about a foot in thickness; this will do to commence with; and regularly every day after that, I cut down a small portion and spread it evenly over the yard for the sheep to pick over. I would say here, that I feed hay in the morning and at night, and straw at noon. In this way I have wintered sheep for the last fifteen years, and have frequently sold them to the butcher in March."

Pulled Wool and Sheep's Pelts.

The following directions for taking the wool from sheep's pelts, we find in the *Ohio Farmer*. It says:—Prepare a board three feet wide and three or four feet in length, with one smooth side; and spread a pelt on the smooth side of the board, flesh side up. Have mixed some lime and water, about the consistency of good rich cream, (lime mixture such as is suitable for plastering or laying brick will do, but you must use a little more of the latter.) Wood ashes mixed with water, as with lime, will start the wool quicker, but it frequently cuts into the skin, and makes it so tender that the skin will tear in pulling. Spread a thin layer or coating of the lime mixture all over the flesh side, then fold the flesh sides together carefully, and roll up, and lay in a moderately warm place from six to twelve hours; the wool will then be ready to pull. Then place the board at an angle of say forty-five degrees, unroll the pelt, scrape off the lime, and lay the flesh side upon the board, holding the neck in one hand, and with the other slide or push the wool off in a whole fleece, which can be easily and nicely done in ten minutes. Then roll it up, same as if shorn wool. Put the fleeces separately in a dry, airy, place for six or eight days, to let the moisture escape that is natural to lately-shorn wool, as well as that absorbed from the use of the lime mixture. Last year we had a similar lot of wool to that we now have, and sent it to a wool manufacturer. Their sorter valued it at forty-five cents per pound. Calling such wool worth thirty-five cents per pound this year, we got for the wool of each pelt one dollar and ninety-two and a half cents, or one dollar seventeen and a half cents more than the highest price the pelts would have brought.

KEEPING BOARS.—We read about the care bestowed upon stallions, rams and other breeding animals, but rarely do we ever see a word on the care of boars. They are usually raised with breeding sows, and run and worry and become nothing but ruins. They go days without food. They disappoint their owners and everybody else. Now, it is just as important to take care of a breeding hog as it is of a horse, and a good snug pen or yard should be used to enclose them. They can be well fed here, and made to grow; and if their services are needed, it is easy to have a door or gate to let breeding stock in. If this plan is followed, one will have a far better stock. The slops of the kitchen, sour milk, vegetables, bran and soaked corn can be fed to him, and he will be a credit to all concerned.—*Rural World.*

AS FOR HORSES' NOONING, says a clever writer, I would rather my team should go through the day without dinner than be allowed only sufficient time to swallow it, if they are to be put to heavy work. In fact, I have an idea from experience with a horse team, when driving upon the road all the time, that they had better have an hour's rest without dinners than to have an hour to eat it in, and then be put directly at work. I have seen many teams upon the road every day that were never fed at noon, and they kept in as good condition, and were able to travel as many miles in the afternoon and carry as heavy loads as those which were fed at noon and then put immediately at work again. The noon feed must be carried undigested until night, and can be carried easier in the wagon than in the horse's stomach. The same reasoning may not hold good with oxen, inasmuch as their work is not, or should not be, so hard as to prevent them from chewing their cuds as they work.

A Parson's Method of Colt-breaking.

A minister writes his practice of breaking and harnessing colts as follows, to the *Golden Rule*.—When the foal is fifteen months old we begin to educate him to harness. Most colts, remember, are timid. They are born so. The first day, we simply put saddle without the back strap on, buckling up the belly-band loosely. This is done many times, increasing the pressure. Then we take the neck collar, and put it over his head, first permitting him to smell of it, and touch it with his nose, until he is entirely convinced that it is not calculated to hurt him. In like manner we add part to part until the colt is fully harnessed. He is then allowed to stand with the harness on until he has time to reflect upon the whole matter, and become accustomed to the pressure of the harness against his sensitive skin, for we must remember that all this performance seems very queer to him, and startling. When he has fully composed his mind, and settled down into conviction that everything is all right and as it should be with him, he is then walked about, the harness still on, and brought back every few minutes to the spot where he is to be unharnessed, and taught to stand as long as it would naturally take to remove the harness. Straps are loosened, buckle-tongues started, saddle and collar eased; in short, everything done that would be done in unharnessing, save removing the harness. After several times, this standing still while being unharnessed has come to be, in his mind, a part of the programme, and he understands it and assents to it as such. Once learned, in the case of an intelligent horse always learned. This same process should be gone through with in the case of a high-spirited valuable colt, once or twice each day, for a week at least. And remember that he is learning many lessons in one, including that the greatest of all a colt can learn, viz: to have confidence in and yield his will to man. Have great patience at this point of his education, and proceed, step by step, advancing no farther than your pupil's success justifies. During the harness exercises, accustom the colt to pressure against breast and shoulder by tying long cords into the buckle either side of the collar, and pulling gently, causing him to brace himself, as he would naturally do, against it. This gives him the idea of drawing weight somewhere behind him, and, by permitting him to pull you along, he will grow to feel that he can pull anything.

Experience in Feeding Cows.

At the meeting of the Dairymen's Association at Newport, Mr. H. M. Smith of East Orrington—who has for more than years furnished milk to the Penobscot Exchange, Bangor, gave an interesting account of his manner of feeding and general management of cows. He keeps, usually, fifteen cows, chiefly grade Durhams, although he has some grade Jerseys, of which he has a high opinion. As his object is the production of milk, he has about half of them come in from the first of September to the first of January, the remainder through the spring months—there being two months during mid-winter and mid-summer when he does not wish to have calves dropped. He has fed cotton seed meal for twenty-five years, and his experience has taught him that it is a profitable feed, although it stimulates milk production, and he is satisfied a cow will continue to give milk for a longer period, but of less quantity, if not fed oil meal. His feed now is three quarts Indian meal, and two quarts cotton seed meal, to each cow per day—fed dry—half at night and the other half in the morning. He has a good pasture, supplied with pure water, and is satisfied his cows do better in summer from having extra feed in winter. The cotton seed meal is too heavy a feed for hot weather, and he does not begin giving it till September, feeding through the winter and gradually stopping off about June. The meal costs \$2.10 per hundred pounds in Bangor. His cows average three gallons each per day, or \$15 per month when in full milk.

Breaking Baulky Horses.

Balky horses, says a writer to the *Kentucky Home Journal*, may be divided into three classes. 1st, such as do not like to go from pure laziness, or stop when tired and refuse to go any further. This is a balky horse in a very mild form, and can generally be cured by any good horseman.

2nd. Embrace such horses as are really stubborn, and refuse to go from a headstrong disposition to have their own way. This class are, generally, the most troublesome, but, in fact, are the easiest to break; and, when once broken, seldom make any more trouble.

3rd. Are timid horses combined with a stubborn disposition, and often refuse to go from fear as well as stubbornness. This is the worst form of the balky horse and the hardest to manage, but can be broken so as to work good, but can never be considered really safe.

One important point should always be remembered in breaking horses; always speak kind and pleasant, though

you may use a commanding tone and even harsh means, but never lose your temper.

Now suppose we are to commence to break a baulky horse of class second, and that he is sufficiently gentle to know what is wanted of him. Put on your harness and hitch him to anything you desire, either single or double, as you feel disposed, and give him the commanding word to go ahead. If he goes, you have nothing to do or say but let him go on and do your work, but if he refuses to go, take him out immediately, take all the harness off except the bridle, and take a small rope the size of a plough line, and tie one end to the bit on the right hand side, and pull it through the ring of the left under the chop, pull his head around to his left side, and slip the rope under his tail like a crupper and make it fast, keeping his head tolerably close to his side. Now all is ready, so let him go, and take a good long whip and make him go, talking kindly to him, all the time. He will travel like a dog after his tail, for he can travel no other way, but after a while he will fall down, when you will immediately let loose the rope and let him get up, now talk kindly to him and caress him.

Your work is now half done, for you have only to tie the rope to the other side of the bit, and pull his head around the other way, and make it fast like a crupper, the same as before, and start him off again and let him go till he falls down a second time, let him get up immediately and hitch him up, and you will, probably, never have any more trouble with him. I have tried the above many times, and have never known it to fail.

Breachy Horses.

EDITOR CANADA FARMER.—Having noticed several times directions published in your columns to prevent breachy horses from jumping fences, I send you a description of one of our prairie tricks for the same purpose, believing it will be of benefit to some of your Canadian readers. The "blind" is made of a strong piece of harness leather, large enough to cover the animal's eyes nicely, and cut something like the accompanying illustration.



The spaces in the cut represent holes or openings made in the leather, about a quarter of an inch wide, through which the horse sees his way; the lines of course represent longitudinal and cross bars of leather left. The whole thing can be made in twenty minutes. It is fastened to the halter, and the horse turned out. This is the theory. A horse never jumps a fence unless he sees the top of it. Now, this apparatus so closely resembles a fence that he takes it for one, and raises his head higher and higher to see the top rail, until he finally turns round and walks off, disgusted with the experiment. The leather may be rounded below if preferable.

FRANK TRUMAN.

Haysville, Franklin Co., Iowa.

The above is certainly ingenious, if efficient, which we doubt. However, it is worth trying.

ED. CANADA FARMER.

Sticking Fat Hogs.

From boyhood we have been accustomed to stick fat hogs when they were to be slaughtered. We have tried several ways, but we like the following the best of all: Turn the animal on his back, and let one man stand astride of him and hold the fore-legs down firmly against the chest of the hog. The stickler then places one hand on the under jaw of the swine and presses it down until the mouth of the squealer is closed. Let the jaw be held down firmly. Then with a sharp knife, cut a slit two inches long, about midway between the jaw and the breast-bone, in the middle of the throat. Now, aim the knife directly towards the root of his tail, and thrust it in to the handle and draw out the blade quickly. When stuck in this manner, we never knew a hog fail to bleed satisfactorily.

Another way is to let the animal lay on the right side and press back the head. If the point of the knife is entered half-way from the jaw to the breast, thrust down along the wind-pipe straight, and the point carried toward the surface by a turn of the wrist, the sharp edge will divide the left *vena innominata*. If carried still further before cutting outward, it will pierce the aorta leading from the heart. Either of these will be a good stick. A little observation while doing the work will enable the operator to learn quickly just the place to touch with an eight-inch blade. Above all things, avoid what is called "shoulder stick," by which the flesh will be discolored and mangled. If the first thrust is not successful, try again immediately. In dressing a hog, a little examination of the vital parts will easily show you how to use the knife for bleeding.—*Practical Farmer*.

BREEDING SOWS.—The best formed sows only should be saved for breeders, and when one such is found and proves to be a good mother, keep her, even for four or five years. From the young sows select only the very best.

ROUGHING HORSES.—A simple mode of roughing horses, practiced in Russia, consists in punching a square hole in each heel of the shoe, which in ordinary weather may be kept closed by a piece of cork. When the ground is slippery, the cork is removed and a steel spike inserted. If this steel-rough be made to fit the hole exactly, it remains firm in its place, and is not liable to break off short at the neck, like some of the screwed spikes.

WHEN SHOULD COWS CALVE?—Where the outbuildings are warm and comfortable, the first of February is recommended by a writer to the *New England Farmer*; but where the reverse is the case, the first of May. After long experience of the first mentioned date, he is confident that he gains annually one-fifth more milk and butter than he would from having the calving time come in in May or later.

HOW TO CHOOSE A COW.—At recent meetings of a Dairymen's Association in the Eastern States, experienced dairymen said they attached much importance to the color of the inside of the ear of a cow as a test of her butter producing ability. A rich yellow color on the inside of the ear, one speaker said he had never known to fail as a sign of a good butter cow, one that would give rich milk. Dr. Sturtevant regards the color of the ear as a good guide, but calls attention to the necessity, when observing, for clearing away the secretions that may have accumulated on the skin and which may be darker than the skin itself.

RAISING CALVES.—If, says the *Rural New Yorker*, a calf gets a fair start on milk, its food may be changed to whey by adding a porridge of oatmeal, oilcake, buckwheat flour, or something of this kind to supply the necessary constituents lacking in the whey. We have sometimes seen good calves raised on a small quantity of milk by adding the liquor from steeped hay. Where conveniences are had for steeping hay and only a small quantity of milk can be had, this plan may be resorted to; but if good, sweet whey can be obtained, the porridge or oatmeal, or oilcake will require less labour in its preparation and is easier to be regulated as to the quantity required.

BUTTING RAMS.—Rams at a certain season of the year develop combative propensities, and their fights frequently terminate fatally. A correspondent of the *Ohio Farmer* has hit on a novel method of preventing a display of their rude butting warfare. He says:—"It is well-known that they always 'back-up' to get a start to butt. Stop their backing-up and you disconcert them entirely. To do this, take a light stick (a piece of broom handle will do), about 2 or 2½ feet long. Sharpen one end and lash the other end securely to his tail; the sharpened end will then draw harmlessly on the ground behind as long as his majesty goes straight ahead about his business; but on the attempt to 'back-up' he is astonished to find an effectual brake in the rear. Don't laugh and call this 'all gammon,' but if you have a butting ram, try it, and the time to laugh will be when you see him jump out sideways, and whirl round and round, trying to upset the machine, which will keep behind him."

USE OF DEAD HORSES.—A dead horse or other animal, says the *Germania Telegraph*, should be skinned, and roughly cut up into as many small pieces as possible. A plot of ground a few rods square should then be ploughed deeply, and the carcass thrown upon the soil in the centre of the ploughed ground. Some freshly dry-slacked lime should then be scattered upon the heap, so as to cover it thinly but wholly. The loose earth is then heaped over it, a foot in depth, and the pile covered with boards, so that dogs cannot get at the heap and tear it up. If the least smell is perceived, more earth should be thrown upon the heap. In three months the heap may be dug over or turned over with the plough, and well mixed. The bones that cannot be broken up should be taken from the heap, and the fine matter will be worth at least \$20 per ton, to use in the hill for corn. The larger bones may be broken up and buried among the roots of grape-vines or fruit-trees.

SPAYING SOWS.—In answer to a query as to the best and simplest method of spaying sows, a correspondent writes to the *Country Gentleman*.—"I have spayed hogs for 30 years, both in the side and belly, and I am satisfied that spaying in the belly is the most expeditious and safest mode. So satisfied I am of it, after a long experience in spaying, that for the last fifteen years I have never spayed in the side, but spay altogether in the belly. The mode I adopt is to swing the sow up by the hind legs, when the intestines drop down forward, which leaves a clear way to get at the ovaries. I then make an incision in the belly, about two and a half inches in length, between the last four teats, and reach the ovaries readily and cut them off. In sewing up the incision, it takes more care than in sewing up the side; for if the inner muscular coat is not taken up and sewed with the skin, it may form a pouch in which the intestines will lodge—but I never had but one or two accidents of the kind happen. The matter from the wound escapes more readily from the incision in the belly than from the side. The best age to spay is when the pigs are six months old, but it can be done at any age over six months; and after the operation has been performed, it is best to turn out the hogs where they can get to water freely and wallow in the mire.

The Dairy.

Milking Qualities of Holsteins and Ayrshires.

At a recent meeting of the Elmira, New York, Farmers' Club, the following reports were handed in. They are interesting as showing the comparative milking merits of the Holstein and Ayrshire cow. The first is from G. S. Miller, Madison Co., and has reference to the Holsteins. He said:

Cr. Princess calved April 18, 1875; from April 20 to February 5 she has produced 12,148 pounds of milk. She is now giving twenty-one pounds per day, so I expect she will give more than 13,000 pounds within the year. She gave during one day last June seventy-six pounds of milk. I began keeping a record of her milk in April, 1870, and from that time to Feb. 4, 1876, she has produced 59,699 pounds of milk! At the end of her six years I think her record will be over 60,000 pounds. I have milked four Holstein heifers, during their first season in milk, with the following result:

"No. 1 began milking at nineteen months, and produced 4,695 lbs. of milk.

"No. 2 began milking at twenty-two months, and produced 5,214 lbs. of milk.

"No. 3 began milking at twenty-five months and produced 4,764 lbs. of milk.

"No. 4 began milking at nineteen months, and produced 4,299 lbs. of milk.

"The two-year-old heifers produced as much milk as good native cows generally produce at maturity. I shall be glad to see a report of your meeting, and hope breeders of all other breeds will meet with you with their best figures."

Following this report came the second from Mr. Cushing and others narrating their experience of Ayrshires:

Four Ayrshires imported by Mr. Cushing in 1873, yielded in one year as follows:

Flora, 7,728 lbs.; Venus, 5,163 lbs.; Juno, 5,307 lbs.; Cora, 4,623 lbs. Average for four cows one year, 5,705 lbs.

Mr. F. H. Appleton, of West Peabody, Mass., gives a record of three cows, for one year, August 1871, to August 1872, at 8,159½ lbs., 7,728½ lbs., and 5,277½ lbs., respectively. Average for three cows for one year, 7,055 lbs.

Mr. E. F. Miles, of Fitchburg, Mass., gives the yield of his dairy of about eleven cows for five years, from 1869 to 1874. General average per cow, 5,614 lbs.; best year's average out of five years, 6,292 lbs.

Dr. E. E. Sturtevant gives record for eight years of his dairy, from 1867 to 1874 inclusive. In 1867 25 natives were kept; 1868, 1869, 1870, about 23—cows a mixture of Ayrshires, Alderneys, and so called-natives kept; in 1871, 1872, 1873, and 1874, Ayrshires only kept, about 13 in number. Average for 25 natives in 1867, per cow, 4,675 lbs. Best average in three years with mixed cows, 5,768 lbs. General average with 13 Ayrshires for four years, 5,543 lbs. Best average in four years with all Ayrshires was in 1872, 13 cows—no heifers—6,047 lbs. In all these years, with about 50 cows and four different owners, but four cows have made over 8,000 lbs. in any one year, and one of them a native.

Cheddar Cheese-Making in Factories.

EDITOR CANADA FARMER.—At the conclusion of my last paper I promised to contribute another on the system itself, in which I would explain the process. I now hasten to do so. The peculiar characteristics of this method, of which I have already spoken, will be noticed as I proceed to show how this fine class of dairy produce is manufactured. We will suppose as a thing of course, that the Austin rakes have agitated the milk during the night; that cold water has been employed to cool it; and that a portion of the morning milk has been added. We raise the temperature of the whole to 80° Fahr., during the summer, and 82° in the spring and autumn; and then add the rennet, of which one pint is calculated to coagulate 200 gallons in 60 minutes, or less. Sour whey is also added, the quantity entirely dependent on the season of the year and state of the milk; experience proving that, in spring and autumn, much more is required than in

summer, as in the latter season the acidity develops much more rapidly than in the former ones. If coloured cheese is made, annatto is now stirred in; and here let me say that, although I hold the fancy for artificially colouring cheese to be ridiculous, yet to those who do colour their goods to please fanciful consumers, I recommend the liquid annatto prepared by Mr. Nicholls, of Chippenham, Wilts, England, as the best for both cheese and butter.

We will suppose the 60 minutes to have elapsed, and the curd to be ready for manipulation. We take a curd



FIG. 1.

knife, Fig. 1, the blades of which are six inches apart, and as long as those of an ordinary American knife, and cut lengthwise and across, leaving the curd in large blocks. No horizontal knife is used. A skimming dish, Fig. 2, so called from being also used to skim milk and whey, next comes into use, with which the curd is turned over—at the commencement slowly, and with as little breakage as possible, gradually increasing in speed and breaking the curd smaller, until it is in lumps of 5 or 6 inches in diameter. Then the breaker, Fig. 3, is introduced, and by it the mass is gradually broken down to the size of peas, the whole process of breaking occupying from 30 to



FIG. 2.

60 minutes. The curd should be broken evenly, and present from the beginning the same appearance as regards size, throughout the length of the vat, while the whey should be clear, so much so as to reflect surrounding objects. This old rule, simple as it is, I find correct in practice, though, by bearing it alone in mind, there is a danger of breaking too slowly and turning out a hard curd. It is now ready to scald, the steam is applied, and the breaker which was held as in Fig. 3 in breaking, is now inverted, as in Fig. 4, to scour the bottom of the vat and prevent the adhesion, through heat, of the sinking curd. These implements, the skimming dish and breaker, clumsy as they appear, are far from being so, and, in



FIG. 3.

skilled hands, are capable of performing their work perfectly. The latter is made of wood and brass wire of nearly one eighth of an inch in diameter, the theory, which is still upheld with successful results, being, that the curd should not be cut, but should split apart, as it naturally will do when this breaker is used.

In scalding we raise the temperature to from 95° to 100°, though seldom above 98° in the spring and autumn, when, for the proper development of the acidity, the greater heat is required. The thermometer having indicated the necessary degree of warmth, the steam is turned

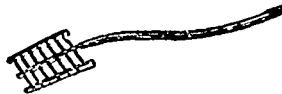


FIG. 4.

off, and the curd stirred with the breaker until the whey is separated from it, a point where only judgment based on experience is of any use, and no rule can be given. The curd feels as we say "shotty" upon rubbing it in the palm of the hand, and squeezing it, you find it comparatively dry. It is this thorough separation of the whey from the curd that I mentioned in my last as the cause of the great keeping quality so desirable in cheese.

Brailsford, England.

JOHN OLIVER.

Concluded next month.

Typical Relations of Milk.

In a recently published volume of the proceedings of the Ohio State Board of Agriculture, Dr. Sturtevant gives a lengthy paper on the above subject which may be summarized:—The pliability of the animal to meet man's requirements is shown to be not confined to external shape but extended to the functions. There are some curious relations, however, apparent, between the outward form and the secretions—as exemplified in the three different forms of udder in the Ayrshire, the Jersey, and the Holstein cow. Each form of udder is accompanied by a typical distinctness in the milk globules, as seen by aid of the microscope, and there are some curious and interesting suggestions about preserving the type of udder in the Jersey and Ayrshire, for instance, if we wish to retain in the one case the special quality, and in the other the large quantity of milk produced. Of those breeds in which the milk or butter globules are largest, the cream rises the soonest; and of those which have the globules most equal in size, the cream yields the most butter. It has been found that the milk of two cows, differing in quality (that is to say, differing in the size of microscopic globule) will yield, if churned separately, more butter than if churned together. The Jersey milk separates its cream more completely than either the Ayrshire or the Dutch, and its cream usually churns into butter more readily. This tendency is considered to render the Jersey unsuited to the purposes of the cheese manufacturer, as a portion of cream rises during the process of manipulation and is lost. The entire digest is well worth the attention of those Shorthorn breeders who would cultivate the dairy properties of their cattle, and make the most of their dairy produce.

IN THE SHORT-HORN herd of Mr. Whitman, of Fitchburg, Mass., one of the cows gave, in one month, 1,200 pounds of milk, and in one year, being in milk eleven months, 9,200 pounds; and one of the calves, fed on cooked food in part, weighed, dressed, at thirteen months, 547 pounds, which indicated that such food makes both flesh and milk in abundance.

AT POINT REYES, Cal., there is a dairy farm of 45,000 acres, on which there are 3,000 cows. The farm, together with the cows, is rented in part to several tenants. They make from \$1,000 to \$2,000 per annum clear of all expenses. The yield from the cows is reported to be excellent; some of the butter ranches show an average of \$80 per cow through the whole herd of 200.

WE SEE IT STATED that an Ohio Dairyman proposes making a mammoth cheese for the Centennial Exhibition, which will require one day's milk from 20,000 cows. The proposed weight of this cheese is 25,000 pounds, and a car will be made for it upon which it will be put to press. This will much surpass the Canada cheese which was made at the Ingersoll factory. This cheese was six feet ten inches in diameter, three feet high and twenty-one feet in circumference, and weighed 7,000 pounds. It required thirty-five tons of milk to make it, or one milking from 7,000 cows.

STREAKS IN BUTTER.—We have recently met with this question, says the *Practical Farmer*, and would reply that the only cause for streaky butter ever occurring, in our experience, is the insufficient working of the salt through the mass. Unless great care is used, butter is always of different colors before the first working (after salting.) Some portions will have little or no salt, and be of a lighter color, and the dairy-woman should work so as to mix these portions with that thoroughly salted, or she will have streaky rolls or tubs of butter. A very little care, when working the second time, will prevent this result.

MILKING COWS.—The milk of cows soon after they have calved contains more butter, and is much more easily churned, than it is afterwards. About five months after calving the milk undergoes a change, and the cream is not only less in quantity, but the butter globules are smaller. The reason why milk froths in churns is that when it sours, alcohol is formed by the decomposition of the sugar of milk, and this causes the milk, when shaken, or beaten, to foam or froth. If this froth exists to a large extent, butter will not come, and the milk is useless for churning purposes. The longer a cow is milked after calving the less is the yield of butter, and the less nourishment is there contained in her milk.—*Land and Water*.

TURNIP TASTE IN BUTTER.—A writer in the *Live Stock Journal* says.—The disagreeable taste given to milk and butter when the cows are fed upon turnips, may be effectually corrected by the use of a little common nitro (or saltpetre), but the common mode of using this preventive is not the best. It has been usual to put a lump of saltpetre in the milk-pail. But it will sometimes happen that the nitre remains undissolved, and the milk will retain the objectionable flavor. Instead of this, make a strong solution of saltpetre—say a pint of boiling water upon an ounce of saltpetre; and when thoroughly dissolved, put it in a bottle and stand in a cool place. Before milking, put into the milk-pail a spoonful of this solution, or more, according to the quantity of milk expected, and all turnip flavor will be entirely destroyed. The same substance will, also, in a great degree, destroy the bad flavor given to butter by the yellow crowsfoot or butter-cup. This has been tried in our family, and found serviceable. Another equally, if not more efficient plan is to scald the cream, after the saltpetre has been inserted.

Veterinary.

Shoeing Horses.

There are very many methods of shoeing horses, each claiming special superiority. But I think that no particular rule can be exclusively carried out in every case with advantage, not even where the feet are perfectly sound. For instance, a flat foot requires to be shod in a different manner from a hollow or concave foot. A great deal depends on the kind of work the animal is required to perform. The kind of shoeing required by a draught horse is probably altogether unsuitable for one which is used as a racer or hunter. But I think there is one general rule which will apply in every case, and that is to endeavour to preserve, as far as possible, the natural shape and condition of the foot. No doubt shoeing is a necessary evil, but very much of the evil can be obviated by a careful performance of the operation. With regard to cutting, or paring the feet, there is by far too much of it done; at the same time I am inclined to think that some are a little too fastidious in this matter. For instance, we are told by pretty high authority that the drawing knife should be banished from every forge, and that any trimming that the foot may require should be done by the rasp, and the rasp only. Now, I for one, must admit my inability to comprehend why such a restriction should be put on the use of the drawing knife. It is certainly not a very dangerous or formidable looking instrument, especially when in the hands of those who are properly qualified to use it; and if cutting or paring is at any time necessary I certainly think that the knife is the most proper, as well as the most scientific instrument to accomplish it.

With regard to the theory that the sole never requires paring, I think that as a rule it is not entirely correct. Of course we are told that the sole relieves itself of its waste material by a natural process, and, no doubt, this is quite correct as long as the foot is not encumbered with a shoe, and is permitted to come in more immediate contact with the ground where the consequent friction no doubt very effectually assists in the removal of superfluous horn from the sole, as well as from the rest of the ground surface of the foot. And there are certain forms of feet, such as flat or panned feet, which, even when shod for a considerable length of time, certainly do not require any paring from off the sole, frog, or even the walls, with the exception of the toe, when, as the growth of horn seems concentrated in this particular portion of the limbs of feet mentioned, we are to be periodically curtailed of its superfluous growth. But there are other forms of feet in which the growth of horn is so very abundant that when shod, sometimes even for a very limited period, their partial deformity, from excess of horn, is very evident; and this abundant growth is usually not by any means confined to the wall of the hoof, but is also manifested to as great an extent by the sole, and sometimes proportionately so by the frog. I have often, on removing a shoe from a foot of this description, found an accumulation of waste horn covering the sole, varying from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch in thickness. A large portion of this waste material has no fibrous connection whatever with the true insensitive sole, and certainly can serve no good purpose in being allowed to remain attached thereto; for, if the hoof had not been shod, no such accumulation would have taken place. And I think that, for the good of the foot, all such decomposed debris should be entirely removed from it; and this can be best accomplished by the free use of the drawing-knife. Of course the sole should not be pared to any particular degree of thinness, as a general thing, when the true fibrous structure is reached, the process of paring should immediately cease. The wall and bars should also be reduced to their natural proportions—but I think that it is scarcely ever necessary to touch the healthy frog with a knife. In hazarding an opinion regarding the kind of shoe best adapted for draught horses, I do not hesitate to make choice of the ordinary seated shoe. Very true, this shoe is condemned by some persons as being a great cause of corns in the feet—in fact, a regular corn producer. And I have no doubt that if this shoe is not properly made, or rightly applied to the foot, it will produce corns as well as any other form of shoe. Prof. Williams, in speaking of this form of shoe, remarks that it has no bearing on the hoof,

only on those parts where it should not have a bearing. I infer from this remark that he is of the opinion that what is termed the ordinary seated shoe rests too hard on the heel, especially on that portion in which corns usually appear; and has no bearing on the sole where he says a shoe should in every case have a bearing. Now, with regard to the too hard bearing on the heels, I deny that it is necessarily a characteristic of this shoe, but is surely so when not properly fitted and applied.

W. A. DUNBAR, V.S.

(Continued next month.)

White Skin or Lung Worms in Sheep.

At a recent meeting of the Ohio Sheep Breeders' Convention Dr. Townshend, of the Agricultural College, spoke of lung worms in sheep. He described these worms which infest the lungs of sheep in large numbers, as follows.—The females are white and about as thick as No. 8 sewing cotton and four inches in length, and full of ova. The males are fewer in number, of a yellow color, and only about four inches long. This was a description of these worms as found in a sheep sent to the college some two years ago, that had died with them. He said he had not had an opportunity to observe these worms at other seasons, and could not fully state their natural history—so far as his examination went there were no young strongly in the sheep, but all were matured. What might have been if the examination had been made at other seasons, he could not tell. It is probable that the eggs or young worms are coughed out of the air passages in the spring, and live for a time on grass or in the water to which the sheep have access. In ponds and streams in early summer we may find immense numbers of little nematoid worms, evidently in an early stage, for they are sexually imperfect—we find what appears to be the same worms in the larvae of several aquatic insects, such as Libellula, Agrion, Ephemera and Phryganea. We find the worm in fish and birds, and particularly in meadow larks. Still, how they get out of the sheep and how they get in again, and where and how the balance of their life is spent, he could not tell, and said so far as he was concerned this is a missing link. I had trouble from them in sheep was always at one season of the year. As a remedy he recommended, first fumigating in a close room by burning sulphur, which caused violent coughing, and then give turpentine in teaspoonful doses once a day for several days.

Hose in Calves.

The round thread like worms that infest the respiratory organs of calves and lambs appear yearly to extend their annoying attacks. Fresh quantities of the embryos appear to be scattered over old pastures and sheep-walks. No process has yet been proposed successfully to cleanse the grass or stagnant water supplies from the parasite germs or embryos. Rooks and other birds do not sufficiently or thoroughly clear away the pests or the lower creatures on which, in some of their earlier forms, they fasten. The embryo forms of many of these parasites are very tenacious of life, and appear to retain vitality for many weeks, or even months, until they find a suitable lodgment in which they can flourish. The thread worms are always most destructive to young and indifferently reared animals, and thousands of calves and lambs pine, cough, and die from their attacks. Most cases occur on old grass, well sheltered by plantations or lofty hedges, not too closely cropped down and grazed during the early part of the season, or perhaps also in former years with young stock. On grass grown on the rotation, and especially during the first year, there is comparative immunity from these attacks, merely because there has been no mud for the embryo worms. Of course calves and lambs do suffer when grazing on such one-year-old grass, but only if they have previously picked up the parasites from other situations. How long they are carried in the system before they are matured and begin to cause serious irritation is not yet known. To destroy them is not difficult, provided proper means are taken before irritation has seriously weakened the restless, choking patient. The inhalation of the fumes of burning sulphur or of chlorine is very effectual, care being taken not to suffocate both calves and worms. The most handy effectual remedy for calves is about an ounce of turpentine given fasting by the mouth in linsed oil, lime water, or milk, and repeated every second morning for a week. By cake, corn, good hay, and other nutritive fare, the calf must be meanwhile be well nourished.—N. B. Agriculturist.

Rick-backed Lambs.

There is some uncertainty as to the cause of this complaint, which attacks lambs when about a week or a fortnight old. Some authorities consider that it arises from a derangement of the kidneys; others, who certainly ought to know something about the diseases to which sheep are subject, hold that it is produced by a spinal affection, while a third, and quite as numerous party of veterinarians, contend that undue relaxation of the round ligament of the hip-joint is the sole cause of the troublesome disease. A very intelligent authority has expressed his opinion that the original cause of the disease arises from the ewes having an insufficiency of nourishing food before lambing. With this theory we are inclined to agree, as we know it is but too often the case that ewes in an advanced state of pregnancy have an over-liberal allowance of roots, the munitition of which, as far as bone and muscle forming material are concerned, are too well known. The authority in question, Mr. Woods, whose excellent lecture on the Diseases of Sheep is well worthy of perusal, adds.—“I know a farm occupied by a person who fed his ewes on turnips only, and he had a considerable number of rickety lambs every year. He was followed by another tenant who fed his ewes generously, but not extravagantly—that is to say, he gave them a reasonable allowance of bran with cut hay chaff—and he had no rickety lambs. I know another farm where the tenant fed his ewes generously, but not extravagantly; for he gave them bran, a few crushed oats, and chaff, and he had no rickety lambs. Another tenant followed him who fed on turnips alone, and he had many rickety lambs. These are facts, and facts are stubborn things, and difficult to be got over. An old shepherd of forty years' standing in this county and the county of Suffolk, is of opinion that if healthy lambs were taken from so-called healthy land at three weeks old, put on to a farm that had the character of being unhealthy.—Eng. Live Stock Journal.

HOG AND CHICKEN CHOLERA.—G. A. W., Tuscola, Ill., writes to the Chicago Tribune:—“You call for experience and I give you mine with chicken cholera and hog cholera. About six weeks ago some of my turkeys died with cholera, and two of my hogs had the disease. I commenced feeding scalded bran and shorts, with plenty of alum and sulphur in it, to both hogs and turkeys, and since that time I have not lost a turkey, and the hogs are well. I would recommend this in winter, when it is difficult to have sour feed. My own opinion is that it is a preventive as well as a cure.”

SCRATCHES IN HORSES.—First cleanse the heels from all dirt and other foreign matter with a strong suds made by means of carbolic soap and warm water. This done, dry the parts well and be careful to remove the soapy matter thoroughly from the sore, in order to prevent the collection of dirt. Then dress the heels with a lotion composed of carbolic acid, one part, cold water, forty parts, three times a day. In one quarter of an hour after using the lotion, rub over the diseased surface with glycerine, and keep the parts supple with it. Give him, mixed in his feed of grain, night and morning, one and a half ounces of liquor arsenicalis each time, and continue this treatment for a time after his heels have dried up.—Turf, Field and Farm.

HEAVES IN HORSES.—A distinguished farmer and veterinarian, skilful in the treatment of horses, says that after trying various methods, experience has convinced him that the following is the best treatment for horses troubled with the heaves:

“Feed no hay, but give in its place a quantum sufficient of clean bright straw, whole or uncut, with as many oats with it as the animal will eat, having previously soaked them in cold water for five hours, with from three gills to a pint of oil meal (flax seed) every day.” Horses so treated are said to have worked well and experienced almost complete relief. The heaves, in this quarter of the country, we believe, is generally regarded as an incurable disease—especially in its more inveterate stages. If the foregoing remedy be as valuable as it purports, its publication will probably benefit thousands.

DOG DISTEMPER.—Of course, treatment, to be successful, must be conducted according to the nature of the disease, and its present stage. What may be proper treatment in one stage, will be entirely wrong in another, and may prove disastrous to the animal. So, in asking for a remedy for dog distemper, you will understand that we must necessarily be at a loss to know what is proper to recommend. However, if the dog is still alive when this comes to you, it is most likely that he has reached a crisis and needs some tonic treatment. The following will in that case be useful: Iodide of iron, three grains; powdered nuxvomica, one grain; salicine, three grains; extract of gentian, twelve grains; powdered quassia, as much as sufficient to form a pill mass. Make into pills. Compound twenty-four such pills, of which number a pill should be given mornings, noons, and evenings. Keep dog warm and comfortable; and feed beef broth, and boiled fresh beef or mutton. Youatt and Spooner on the Horse, price \$1.50, and Youatt on the Dog, price \$1, are good, practical works.—W. Farm Journal.

The Poultry Yard.

Eggs and Boiling Water.

EDITOR CANADA FARMER:—I desire to state to you what I consider an extraordinary circumstance, and to ask your opinion about it. Some time ago a friend and I had each a hen sitting. His fowls were red and black game, mine grey game. I was very anxious to exchange some eggs with him, but he would not; neither could I purchase any of him. So I planned as follows. Our hens had been sitting about the same length of time. I took half a dozen eggs from under my hen, stole over and substituted them, unperceived, for the same number of my friend's, having first taken the precaution to plunge those I left with him into boiling water, in order to kill the chicks, and thus frustrate any possibility of discovery. Now here is the wonderful point. These eggs hatched, every one of them. The hot water never pleased them. What do you make of it? Is this an ordinary occurrence, or am I rather to regard it as a preternatural visitation of judgment upon myself for deceit?—for, of course, I was caught, and had to acknowledge it. Toronto. SUBSCRIBER.

If the "preternatural" view could restrain "Subscriber from similar deceptions in future, perhaps it would be as well for him to cling to it. The circumstance does not appear nearly so strange to us however. Among poultry-men in France an essential part of the system of hatching is to dip eggs repeatedly, and often into boiling water a couple of days or so before the chicks appear—the object being to coagulate any albuminous matter that may have got between the lining and shell, and thus prevent what they call "shell-dying," that is, death through some portion of the chick becoming adherent to the shell. Of course the dipping may be carried to extremes though, in which case we suppose the verdict would be "death from simmering." In several parts of Canada too, particularly Quebec, a similar practice is quite common.

GAMES AS LAYERS.—As some may have the impression that game fowls are only bred to fight, we will say that as layers and as table fowls no breed surpasses the game. They are hardy, easily reared, and if given plenty of range are less trouble to care for than any of the pure bred fowls. For farmers who are troubled with hawks the game is the best variety of all, as the game hen is always ready to do battle with hawk or any other assailant, in behalf of her young. They are good foragers, and will come nearer picking up their own living than any other breed. This to a majority of farmers, who do not care to give much time to their fowls, is a valuable point in their favor. The fighting propensity of the cock is the only drawback, and this can be very easily controlled by a little care.—*Am. P. Journal.*

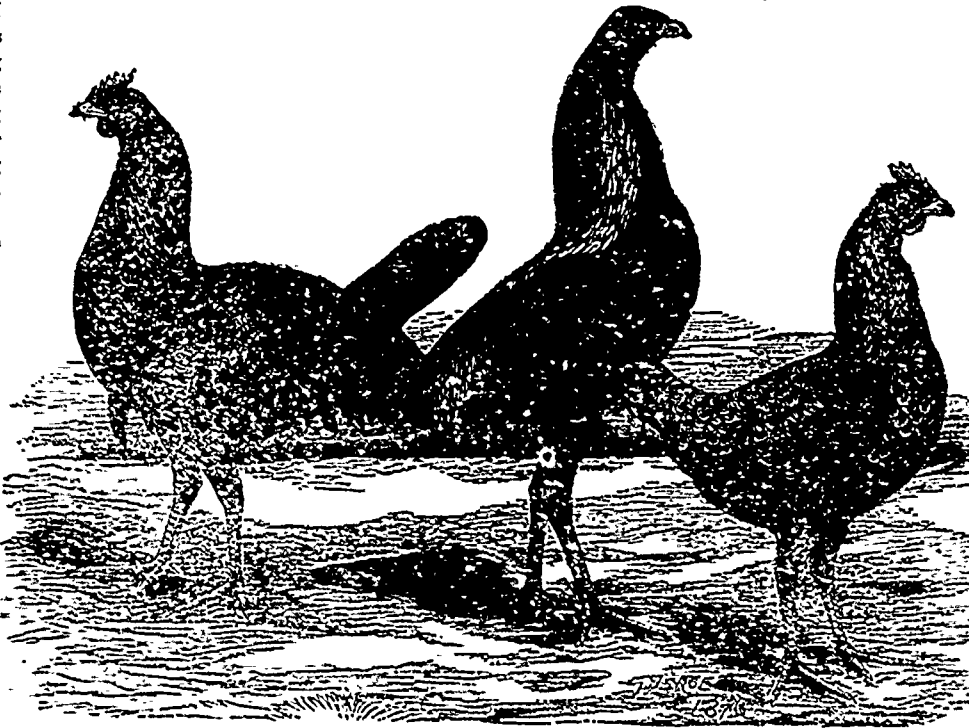
Barren and Fruitful Hens.

EDITOR CANADA FARMER:—We mean simply those that lay and those that do not. How are they to be distinguished? Thus:—Laying hens associate mostly with their fellows of the flock, while those that do not may usually be seen wandering about solitarily and, like the last rose of summer, blooming alone. Hens that lay are exceedingly musical after their style, that is they may be heard croaking and cawing over the "midden" the live long day, as happy as queens, and as industrious as bees; those that do not have scarcely a note to utter, unless fright or ill nature induces an occasional squawk. Laying hens, after they have eaten what may be considered a good meal, still force down a little more; their barren companions seem as careless and indifferent about the good things of this life as a stuffed baby. The combs and gills of laying hens are red, plump, fresh and glowing; those of non layers shrivelled, pallid and wrinkled. Laying hens are exceed-

ingly diligent and constant in their search for food, and always ready, when chance offers, to run into the barn, the stable, or any other place where they should not go; non-layers stave about listlessly in a maundering, if not positively foolish, manner. And, finally, the layers are first off the roost in the morning, and have their crops well filled ere their barren associates think of moving for the day. C. D.

Turkey Breeding.

"Breed only from the best," is a rule particularly applicable to turkeys, for they seem to be wonderfully susceptible to surroundings and influences, such as poor food, neglect, and in-and-in breeding, all of which tend to dwarf their growth and weaken their constitution. The best and most perfect hens should always be saved for breeding purposes. It is the practice in some neighborhoods to keep but one gobbler for breeding, for those living in that section. Now if, instead of keeping one of their own raising, the farmers would club together and buy a No. 1 Bronze, or whatever kind suits them best (perhaps a wild, or a Narragansett bird would be the choice of some), and keep only such males for breeding, selecting always the best hens, and giving the turkeys the care and attention due the noble birds, we should see a great improvement in their hardiness and size.—*Poultry World.*



"PURE GOLD," and Mates—The Property of D. ALLEN, Esq., Galt.

OUR ILLUSTRATION on this page represents "Pure Gold" and mates, red breasted games, owned by Daniel Allen, Esq., of Galt. At the great Chicago Poultry Show, where extraordinary merit was requisite to gain even a fifth prize, these birds carried off two first, four second, and two third premiums. Pure Gold was "claimed" at the Crystal Palace Show, England, at £15, about \$75. He was imported into Canada by Mr. J. Beswick, of Toronto, from whom Mr. Allen purchased him at a high figure.

DUCKS.—No farmer or poultry raiser, who has either stream, pond, or spring water on his place, should fail to improve the opportunity thus offered, and add to his stock at least a pair of these handsome water fowls, if he has them not already; and especially desirable is it, provided there are children in the household, as they will afford an almost endless amount of amusement to the little folks, in witnessing their Indian-file march to the water, their swimming and diving, and their "standing on their heads" in the shallows to reach kernels of corn thrown them, and which, sinking through the water, rest temptingly on the clean, sandy bottom. Their nightly return to the farmhouse for food, and the care of feeding and shutting them into their house or room, and the collecting of the eggs in the morning, give the little ones cares and pleasures, which they would not otherwise have; and this alone—to say nothing of the eggs for cooking, or the luxury of a roast duck occasionally—is abundant reason for their presence in the poultry yard.

The Apiary.

Questions and Answers.

At a recent meeting of the North-eastern Bee-Keepers' Association, at Rome, N. Y., the following questions were presented and referred to a committee, which answered them as follows:

Is it an injury to bees to have more forage in the spring than they need for brood rearing? Yes.

Is it necessary to give bees a flight that are wintered in cellar or house? No.

Which is the better method of swarming, natural or artificial, where box honey is the object, and you wish to double your stocks? Two of the committee prefer natural swarming; one prefers artificial.

Which is advisable to produce, box or extracted honey, when you have a ready market for either? Both.

Should an excess of honey be removed from the hive in the fall or in the spring? In the fall.

Is it important with the Italian bees that the guide combs in the surplus boxes extend from bottom to top of honey boxes? The more comb the better.

What is the best method of preventing after-swarms? Introduce a young, fertile queen.

Is there any sure cure for foul brood, save the destruction of bees and comb? Yes, by preventing brood rearing, by the free use of the extractor, and by smoking the combs with brimstone.

ROBBER BEES AND WASPS.—

Should wasps or robber bees attack a hive, the only plan is to narrow the entrance, so that only one or two bees can pass at the same time; this enables them the better to defend their gates and generally to hold their own against all invaders. A very simple and easy plan of doing this is to saturate a piece of woollen rag with spirits of turpentine, and put it into the entrance of the nest, leave it there for the night and the next morning every wasp will be dead. A wasp's nest, when removed unbroken, is very extraordinary and beautiful in its construction, and a curiosity quite worthy of preservation.

SELECTING BEES.—If you wait until June to purchase bees, you can judge for yourself by visiting the hive between the hours of eleven and three, and if you see the bees crowding in and out of the hive, with their legs yellow with pollen, you will know that they are good workers, and not drones, and will remunerate you for the expenditure in becoming their possessor.

STINGS.—If the bees have stung you, press the hollow part of your watch-key or a small tube over the sting to extract it, and bathe the place with aqua-ammonia, or moisten saleratus and put on it; for the poison is acid, and must have an alkali to neutralize it. Soft soap will often prove the best antidote for a bee-sting.

Making HIVES.—If you make your own hives, select well-seasoned lumber; put them together accurately and substantially, and well paint them. Hives thus made cost a little more, but are the cheapest in the end. The reader must here bear especially in mind that the use of frames in hives is public property; that he can make and arrange them as he has a mind, without caring a "continental" for any patent. It is also well to recollect that large yields of honey are less dependent upon this or that sort of a hive than the man.—*Am. Farm Journal.*

SITUATION OF HIVES.—I have found that ranging hives under a south wall is the worst situation possible, the heat sometimes being so great that all work is entirely suspended for some of the most valuable hours of the day, and moreover, they are exposed to all the storms of wind and rain which prevail from that quarter. I have made a trial of almost every point of the compass, and find east, or a point north or south of this, to be the best. A straw hive will last three times as long in this as in the first named position.—*Farmers' Union.*

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

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

The Canada Farmer

TORONTO, CANADA, MAY 15, 1876.

Farming on Shares.

A Book Farmer, of Kingston, writes for our views on the above subject, the different systems of farm partnership, various equitable methods of adjustment, and, furnishing one illustrative case, in which the proprietor supplies all the seed and the tenant does all the work, asks:—"What proportion of the returns should each receive?"

Partnerships may be formed in agricultural pursuits as well, and as profitably, under favorable circumstances, as in other branches of business. The different forms of such partnership are, however, legion, depending very much, as to variety, on the taste and shrewdness of those interested. We have never seen any fixed principle figured out on the subject, but there are certain rules adopted by pretty general consent, and these, we doubt not, are found in practice, as they would likewise in theory, to be based upon the well-known, equitable laws of business fellowship, that is to say, the profits are allotted in proportion to the amount of capital each invests in the business, whether such capital take the form of land, stock, cash or labour. When A. and B. invest equally in a rented or purchased farm, each performing also his fair share of the work, the problem becomes an exceedingly simple one; they divide the spoil equally between them. Should A., however, perform all the labour, circumstances being in other respects as in the last case, B. would be entitled to about one-third, instead of one-half, the dividend. A common method of partnership with aged or retired farmers is this: The proprietor hands over the land and stock to his tenant, on the understanding that, at the expiry of the term, it shall be returned to him in as good order, and as well stocked as when he left it. If then, he also supplies the seed annually, he receives half the marketable productions together with one-third the hay, the tenant doing all the work. Or, if the tenant furnishes both seed and labour, the proprietor then receives but one-third of all. We have known both these systems to be in satisfactory operation for years, and believe that the actual results and apportionments, reduced to figures, would show fair, proportionate returns on the capital invested by each respectively. In entering upon joint partnerships for farming purposes, we would strongly urge that two points be kept rigidly in view, viz.: first, a large, well cleared farm, second, good soil—not that these affect the principle of division, for principles are fundamental and stationary—but they will most materially affect the returns to be divided. We should be happy to publish any remarks our readers may have to make on the general subject.

Fruit Statistics.

Never having noticed any extracts from the census of 1871 in your columns, on the growth of fruit in the Dominion, and believing such figures would be interesting to the general public, especially to those who had proposed exhibiting at the Philadelphia Centennial this summer, the following facts are submitted.

FRUIT.	ONTARIO.	QUEBEC.	N. B.	N. S.
Apples, bushels.....	5,456,504	400,903	126,335	342,513
Grapes, pounds.....	1,023,331	88,029	1,705	8,167
Other fruits, bushels...	242,505	106,508	2,471	12,730

It is found that Essex grows the most grapes, that county producing 217,862 pounds. Elgin the most apples, 240,-

252 bushels. Halton the most other fruits, 25,045 bushels, probably principally strawberries and gooseberries from Oakville.

It will be noticed that Ontario stands a long way ahead of the other provinces on the list, and this fact should be widely circulated as showing more forcibly than anything else the adaptability of her climate for settlement. It is greatly due to the Fruit Growers' Association of Ontario that fruit trees have been distributed into every county of this Province, and it would have been well had some substantial assistance been rendered this society by the Government, to enable them to make a creditable display of these productions at the world's fair. Many a time has the writer been in the markets of Liverpool and Covent Garden, but, strange to say, no Canadian fruits are quoted there. All apples from this continent are called "American," a term synonymous with United States, so that Canada gets no credit for its products, although we have already shown at the Boston Exhibition in 1874 we can beat any State in the Union, having carried off more prizes than any of them.

It is yet to be hoped the Ontario Government will reconsider its decision, and grant a sum of \$2,000 to enable this Province to make some sort of a show of our beautiful fruits, in their season of ripening.

Ottawa.

P. E. BUCKE

Paris Green.

The season is fast approaching when many think it in order to make a liberal use of this poison. The CANADA FARMER has already expressed its views on the subject freely, and we have seen or heard of no sound reason for modifying them in the slightest degree. Upon those, however, who will persist in this dangerous method of insect extermination, we would earnestly urge great caution. Several reports reach us from the other side wherein the careless application of Paris Green to potatoes resulted in direct poisoning. In one case the drug was allowed to come in contact with a sore on the hand, which swelled enormously, but was reduced by vinegar and salt. In another, inhalation of the powder resulted in severe pain in the head and a copious discharge from the nose for two weeks. In a third the poison was permitted to enter a hole in the boot leg, and caused inflammation of the limb. One man narrowly escaped with his life from inhaling the dust, which he foolishly supposed he could exclude by wearing a veil over his face. Reports are likewise quite numerous of various other injuries to old and young, from carelessness in the handling or application of the drug, all of which point to one or other of two issues, either not to use it at all, which is far better, or, if it must be employed, to use it with the greatest possible caution, and, in every case to have its antidote, the hydrated sesquioxide of iron, at hand.

Importation of Foreign Cattle.

In view of the contagious cattle disease now prevailing in many parts of Europe, and the expediency, in order to prevent the introduction of such disease into Canada, of placing proper restrictions upon any further importations, an Order in Council has been published, first, prohibiting the landing of any foreign cattle in the maritime provinces, except at the harbours of St. John, Halifax, and Quebec. Second, provision is made for the thorough inspection of animals landed at these ports, by officers appointed for the purpose, who may either pass them as fit to enter, or detain them in quarantine. Third, the supervision of the inspecting officers extends also to vessels, cars, vans, fodder, litter, blankets, and other objects having been used in animal transportation; also, by the remaining sections, to the treatment and even destruction of cattle detained in quarantine, should such be deemed necessary. The expense of attending to and providing for any cattle, sheep, or swine detained, is to be borne by the the owners thereof, with the exception of that for the use of grounds and shelter; and such cost, if incurred by the Inspector of Quarantine shall, in the event of the owner failing to comply, be paid before the animals are permitted to leave, and, in case of further refusal or neglect to pay, the Inspector shall, by order of the Minister of Agriculture, cause the animals to be sold to meet the costs, the balance, if any, to be refunded.

Education of Farmers' Boys

EDITOR CANADA FARMER.—I read with interest your remarks in last FARMER about "Farmers' Boys and the Schools," and believe the grounds urged to be well taken, although the continual want of a boy's assistance, especially after he grows up to be of some service, cannot very often be afforded. But my present object in writing is to ask a query. I have a boy on my place who is about eleven years of age. He can read tolerably well, but that is about the extent of his knowledge. Now I purpose sending him to school unremittingly for two years. To what special branches should his attention be directed in order that the very most may be made of the time? Of course I intend to bring him up a farmer.

Owen Sound.

READER.

If two years are to cover his active school life, let him be thoroughly drilled in the "three R's" reading, writing and arithmetic; and, if possible, give him a knowledge of grammar. In pursuing the first three, time may be very materially economised. For instance, let his reading book be not merely a "reader," but a volume of good, practical knowledge as well. He will thus learn to read, and be storing his mind with useful information at the same time. Direct his attention likewise, as soon as he is able to write with moderate facility, to simple book-keeping, that is book-keeping by single entry, in the pursuit of which study he will find ample scope for penmanship and figuring combined, while it will also afford him a fair knowledge of accounts—quite sufficient for all practical purposes on the farm. With reading, writing, and accounts, many a man has made his fortune. The foundation is a very safe and sure one, and may in after years be supplemented to any extent. With reference to grammar, no one should be ignorant of it. It is necessary in writing ordinary letters to a friend or to the press, in addressing a farmers' club or any meeting, and even in ordinary conversation.

Farm Wagon Tires.

EDITOR CANADA FARMER:—May I ask your opinion, through the FARMER, with reference to cold and hot set wagon tires? You are of course aware that, in ordinary wear and tear, the setting of these, from its frequency, constitutes our main annual item of expenditure in connection with wheeled vehicles. I speak from my experience of hot setting. Of the cold system I know nothing. What is it, and what are its merits?

Ottawa.

SUBSCRIBER.

We give a practical carriage maker's reply. He says:—Cold setting is undoubtedly best and most durable, provided it be done by mechanics who thoroughly understand their business—but "there's the rub." In the ordinary hot method, it stands to reason that a plentiful application of cold water, while it tends to shrink the heated tire, also swells the wood, thus throwing both wood and iron out of their normal condition. A reaction necessarily follows, tending to restore things to their wonted equilibrium, and this reaction alone, without the aid of wear and tear, must prove detrimental to the tightening, for the wood shrinks and the iron relaxes. Cold setting is effected by means of a machine which, pressing against the entire outer periphery of the tire, closes gradually upon it, forcing the iron literally into itself, and thus tightening it around the wheel. Here also nature is violated, but only in the case of the iron. The reaction will therefore be single instead of double, as in the case of hot setting. As stated, however, cold setting must be done by an expert. The one main point on which everything depends, is to have the tightening proceed just so far, and not a hair's breadth farther. Whenever you observe the hub beginning to rise during the process, look out for an infirm wheel.

Danger of Carrying Money.

EDITOR CANADA FARMER:—The case of the poor farmer who, after disposing of a load of grain at Hamilton, was murdered on his way home, by two loafers who were aware that he had \$30 in his pocket, tends to corroborate the opinion I formerly expressed, that whenever a farmer has sold a load of grain, he should at once deposit his money in a Bank, or else provide himself with a revolver, which he may legally carry about with him. The law forbids carrying knives, steel-knuckles, or skull-crackers, but not revolvers. The objection that the Banks generally close at one o'clock on Saturdays may easily be obviated. If a farmer resides twenty miles from town, he can easily

have his load prepared the evening before, and, by starting at four o'clock in the morning, allowing him seven hours for his journey, he will be in the market by eleven. One hour is sufficient to enable him to sell and deliver his grain and put up his team, and, after he has deposited his money in the Bank, he can attend to his horses, get his dinner, and transact any business he may have on hand afterwards, and return home at his leisure. If however he should be waylaid by any vagabond, he could use his revolver, and even if a coroner's inquest should be the result, no jury would return any other verdict than "justifiable homicide." I trust that the Minister of Justice will allow the law to take its course on the two murderers now under the sentence of death—remembering "mercy but murders, pardoning those that kill." SARAWAK.

Educational and Matrimonial.

EDITOR CANADA FARMER In taking up the April number of your valuable paper, which, as usual, is filled with useful information, I was glad to notice three articles in particular, two being communications from "Sarawak," in which he discusses the educational and matrimonial questions, and an editorial on "Farmers' Boys and the Schools." Now, Mr. Editor, being a farmer's son, and still living in what is termed a state of single blessedness (I question the correctness of the term), I take a great interest in both the above questions, which I consider two very important ones to the farming community, and would like, with your permission, to say a word in the matter. About the question, "what is the reason farmers' sons are not so well educated as others of their age?" I do not think it is owing so much to the injudicious programme, but I think "Sarawak" hits the nail pretty fairly on the head when he says that many farmers, having had no education themselves, cannot see the necessity of educating their children, and I would add, especially if they expect them to follow the same occupation as their fathers. Of course, if they intend them to enter a mercantile or professional life, they seem to think they are in duty bound to give them the very best education they can afford; but, if they are going to be farmers, so long as they can do a little "reading, writin and cipherin" that will do, and the difficulty is many of their sons are of the same opinion. I have seen boys at school who thought if they could read and write, and reckon up what a load of grain or pork would come to at a given price, that was sufficient, as they intended to "stick to the farm," and therefore were not particular whether they learned any more or not. But convince a boy that nature only unlocks her treasures to those who have the key of knowledge, and in order for him to become a thorough, successful farmer it is as necessary that he should know something about botany, chemistry, &c., as it is for a doctor to understand medicine, a minister divinity, or a bookkeeper mathematics, and he will most assuredly study more earnestly, as he will then have an object before him. I think, too, that many farmers' boys miss a great deal because their fathers think money spent in a library or papers is little better than thrown away; and I would recommend all those who cannot afford to send their sons to school all the year round until they are fourteen, to supply them with good books and papers—the CANADA FARMER, for instance, should be in every Canadian farmer's home—and they will then find the boys will not get so "rusty" during the summer months, as any boy who can readily read the newspapers may soon gain a sort of practical education from them.

As to the second question, I would like to know what "Sarawak" means by a lady. He seems to infer that farmers' daughters are not such, when he says that "if a young farmer is such a fool as to marry a lady instead of looking for a farmer's daughter, who, from being brought up on a farm, knows how to manage a farmer's house, nothing better than running into debt, &c., is to be expected." Now, sir, allow me to say, all farmers' daughters do not know how to manage a farmer's house, neither are all ladies useless creatures with wasp-waists, crooked backs, "garments tied in a knot behind." But give me the hand and heart of a young woman who has health, piety, intelligence, industry and economy, and I care but little whether she was raised in the city or on the farm. I will have a lady for a wife who would adorn either kitchen or parlor.

Bramley.

COUNTRY YOUTH.

Catching Skunks and Racoons.

EDITOR CANADA FARMER:—In the FARMER for 1875, p. 160, may be found a method of trapping skunks, and afterwards disposing of that very good looking denizen of our Canadian woods, whose room is generally considered more agreeable than his company. But the FARMER for March contains an unnecessarily cruel method of first trapping and then shooting the poor animal, whose principal fault seems to be that he is in bad odour with most people, and spoiling a good fur into the bargain. One of my neighbours, who was one of the first settlers in this part of the township, tells me that when he first came to reside here, skunks were rather numerous, and that his sons used to kill them with long sticks. Two or three of the boys would go together and surround the skunk so as to keep his attention engaged, till one of them finished the sport by a well aimed blow on the head. When a skunk sees a man approaching he seems to fly, but walks up to his enemy until he comes within range, and then turning his "Western end" as a Yankee girl would call it, let's fly a discharge from what a sailor would call his "sternchaser," and coolly walks off. The Indians sometimes shoot them, which can easily be done, as a well directed charge of shot at the head at a distance of twenty yards, which is beyond the range of a skunk's artillery, effectually deprives the animal of the chance of making a reprisal. Not satisfied with shooting the skunk the Indians afterwards proceed to make a dinner, or supper, as the case may be, of his game. In this case the glands containing the odorous matter must be immediately cut off, as if that operation be delayed for a quarter of an hour the flesh becomes unfit to be eaten. Bewick, in his natural history of quadrupeds states that there are several varieties of skunks in different parts of the world, four of which he describes. But however much they may differ in size or colour, they are all distinguished by possessing a perfume, which, so far as pungency is concerned, far exceeds the most famed preparations of our fashionable perfumers. The skunk seldom destroys full-grown fowls, as they are generally able to escape his attentions, but he is sometimes destructive amongst the chickens. A sure and quiet way of checking his destructive propensities would be to place a properly medicated piece of fresh meat in his way, only taking care to place it somewhere where other animals may not get at it, and therefore the bait should be laid down in the evening, and if not eaten during the night, take it up early the next morning. I remember an instance of a skunk being caught in a snare that was set in the bush for hares that proved troublesome amongst the turnips. The snare was attached to a long stick forced into the ground, then bent down and secured in such a manner that when a hare was caught, the stick would fly up and keep it suspended a few feet above the ground. The old farmer going his rounds one evening found a skunk hanging in the snare, and in the innocence of his heart, not being acquainted with the nature of his prize, pulled up the stick and brought it home. Then proceeding to a field not far from the house, he fixed the stick in a partially decayed stump, leaving Mr. hare hanging by the neck until he was dead. In about two days the offensive smell was completely dissipated, so that the skin was taken off, stretched and dried like any other fur. The latest market report I have seen quotes skunk skins at from 20 cents to 50 cents each. A racoon is likely to do more mischief in a hen roost than a skunk, because he can climb up the frame of the building, and spring on the unsuspecting chickabiddies when they are fast asleep. A racoon visited my barn one evening in May, about three years ago, and killed one of my hens, but as only a small part of the fowl was eaten, I conjectured Mr. Coon would return the following evening, so taking out the gizzard of the fowl I enclosed therein a strong "scalding," and on going to the barn about ten o'clock, Mr. coon was found lying dead on the floor, fast in "the sleep which knows no waking"—consequently he paid for his supper with his only jacket, which at the season of the year was in good order.

SARAWAK.

THE BOARD OF AGRICULTURE of New Brunswick has, as such, ceased to exist, the duties hitherto performed by it having been transferred to the Executive, where they are specially supervised by the Hon. J. L. Inches, Secretary for Agriculture. Mr. Inches has just published his first

report in a pamphlet of 150 pages, which gives a very interesting account of the live stock interest inaugurated by the Province, and so well carried out for the benefit of farmers by the local societies. The latest purchase included thirty-six short-horns, eight Jerseys, thirty Ayrshires, four Percheron horses, eight cotswold sheep, fifteen Leicesters, fifteen Berkshire swine, twelve Chesters and two Yorkshires—all purchased by the Provincial Government, and again sold at auction to the local societies, in the purchase of which they were allowed to take advantage of the legislative grant in their aid. The expenditure is a judicious and popular one, which cannot but prove as advantageous to farmers as it is honourable to the Government. By this simple method of appropriation the agriculturists of New Brunswick have done for them what, in many cases, they would be quite unable to do for themselves.

THE IMPRESSION generally prevails that, during this season, farm help will be considerably cheaper than for several years back. At the same time there seems an evident disposition on the part of farmers to engage but as little extra assistance as they can possibly get along with.

The late, open season has been favorable to the performance of many chores that formerly had to be deferred until spring and summer. There is therefore nothing particularly on hand but the regular field work, and this they purpose doing within themselves. Would it not be well, however, in view of the probability of low priced labor, to have odd prospective jobs done about the farm? Under-drawing and the like can probably be performed at a lower rate this summer than for many summers to come, and, although the work may not be immediately necessary, still it is worthy of consideration whether, all things considered, the future may furnish a more promising opportunity. In the United States many farmers are taking advantage of the state of affairs and turning it to what must ultimately prove a highly profitable account.

ONE OF OUR HALIFAX exchanges describes the Government fish-breeding establishment at Bedford, N. S. The building is situated on the northern bank of the River Sackville, at the foot of a railway embankment. It is a neat, light structure, one story and a-half in height. The ground floor, with the exception of one small room, is devoted to the breeding troughs, tanks and filters. Four sets of troughs run down the length of the hall, there being fourteen rows of troughs in all. At the farther end is a large receiving tank for the river water, which is first purified by filters and then distributed amongst the troughs by pipes five-eighths of an inch in diameter. The troughs measure 43 feet long, by 10 inches wide, and the same depth, and are divided off into convenient lengths by open wooden partitions. The temperature of the water within is always made to correspond with that of the river without. The egg trays were at first made with perforated zinc bottoms, but Mr. Wilmot, the officer in charge, found that they answer their purpose much better if made of earthenware. The zinc induced chemical action with the iron in the water, which proved injurious to the eggs deposited. The depth of water over the tray varies. In some rows it is three inches with a surface current only. In others it reaches five inches, with both a surface and bottom current.

SO FAR AS WE can learn from correspondents and other sources, the effects of our late abnormal winter are not likely to prove as prejudicial to the crops as was at one time anticipated. Open winters, while of course necessarily attended by drawbacks, have also their salient points, of which practical men are not slow to take advantage. In that just over, farmers were able to perform, and did perform many out-door operations which the severity of ordinary seasons usually compels them to defer till spring. In this way they are now far ahead with work of all kinds on the farm, and can, in consequence, dispense with a good deal of hired labour. In early spring ploughing was far advanced, and everything got in readiness for sowing under the most favorable auspices. Of crops in the ground over winter, fall wheat, early sown, on mellow soil, has escaped uninjured, and promises as well as in any former year. On heavy clay lands however, the reverse has been the case, and both it and clover have suffered severely. Fruit will be a comparatively light crop throughout the coun-

try, many thousands of buds having succumbed under the ordeal of successive freezing and thawing during the spring months. The lightness however, will not, it is believed, far exceed that common to our orchards every alternate year. The prospects for spring wheat look, on the whole, fair, and with a favorable season from this out, there is no good reason to doubt that it, together with other crops growing or to be grown, will result in a remunerative average yield to the husbandman. There is a marked tendency, we notice, in many parts of the country this year to change seed—farmers exchanging with one another and with others at a distance. The idea is an excellent one. Let it be intelligently carried out and the result will prove both profitable and instructive.

THE NEW FERTILIZING THEORY, at present so much in vogue with Americans, should be received cautiously. A most important point seems to be altogether ignored by its advocates, and that is the renovating or strengthening of the soil *per se*. They apply their artificial manures in definite quantities, according to special formulas, but these are admittedly and immediately extracted again by the crop intended to be sown, leaving the soil as it was before. Now the very process of germination and growth, or rather the vital principle that underlies both, is of itself exhaustive, and, other conditions being equal, impoverishes the soil more and more with every successive cropping. What will follow? Why that as the land becomes poorer, the formulated quantities of fertilizers must be increased to produce the same results, and then the distinction between expenditure and income may dwindle into a very fine one indeed. We are no opponents of prepared fertilizers by any means, except in so far as they are supposed to supersede all other manures. We would have them, like everything else, kept in their proper place. At best their action is but spasmodic and transitory, and for thorough, lasting, permanent benefit to the soil, they are not to be compared with an abundance of good barnyard manure. The American theory will merit the encomiums heaped upon it, only when shown to hold good in a ten or twelve years' course of successive experiments upon the same soil.

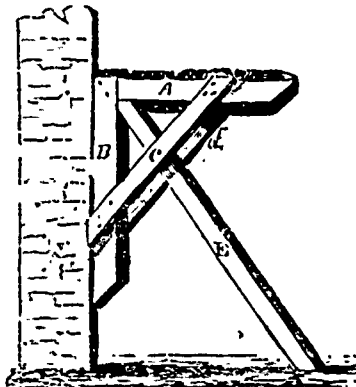
PROFESSOR KOLBE, of Leipzig University, in the course of experimenting with salicylic acid, has made the discovery that it is a most powerful antiseptic and anti-ferment. Milk, treated with it, in the proportion of about .04 per cent. of acid, remained uncoagulated thirty-six hours longer than other milk not so treated. Eggs, immersed for an hour in a solution of the acid, were, at the end of three months, as fresh as when submerged, and meat dusted over with it in a powdered form, retained its freshness for several weeks. These discoveries naturally lead to speculation as to the probable utility of the compound in dairying and other farm interests. In so far as its effects upon the animal system are concerned, the professor, after repeated tests on his own person and that of others, concludes it quite harmless when taken in the fluid state. Beginning with doses of $\frac{1}{2}$ gramme, dissolved in water in the proportion of 1 to 1,000, he gradually increased the strength until each dose contained $1\frac{1}{2}$ grammes, without the slightest bad effect. The same experiments were also tried upon other medical men with similar results. Administered in powder form however, the acid was found to attack and injure the mucous membranes of the mouth and oesophagus. Meat therefore, over which it had been dusted, had to be washed carefully with water before cooking. The discovery is quite a recent one, and its further development will be watched with interest.

IN PURCHASING artificial manures, farmers would do well to deal only with responsible parties in whom they have full confidence, for in this, as in most other branches of manufacture, some men are to be found who systematically defraud customers by the sale, at a high price, of worthless compounds. In England the practice is, to some extent, counteracted by the exertions of Dr. Voelcker and other practical chemists, who publish annual reports on the analyses of purchased manures, submitted to them for examination. And, as an illustration of the constant watchfulness that is needed year after year even with respectable firms, we might add that, last season, one of these, who had long retained the confidence of agriculturists and the public, had been caught selling for \$20 per ton an article which, on analysis, proved to be worth only \$6.25. In the

States frauds have been, and still are, perpetrated to such an extent that it has been found necessary to memorialize the New York State Legislature on the subject. A bill has accordingly been introduced by Senator Selkreg, which provides that commercial manure sold or kept for sale in the State shall have affixed to every bag, barrel, or parcel thereof containing 50 lbs. or upward, a printed special name or trade mark by which the same may be known, with the name and place of the manufacturer or importer, together with a true specification of the guaranteed per cent. of the phosphoric acid soluble in water, the phosphoric acid insoluble in water, the nitrogen, and potash contained therein, and also the quantity of fertilizer contained in the package, and the date of the manufacture or importation. A fine of \$10 being imposed upon violation of any of these provisions.

Portable Scaffolding.

The accompanying cut illustrates a method of temporary scaffolding which combines strength, cheapness and lightness with the utmost facility of movement. It may be made of 4x4 pine or hardwood scantling. A, B, are two pieces, say 3 and 4 feet long respectively, mortised or jointed together at the ends, as shown in the engraving; C and D are merely strengthening braces; they may be made of 1 inch or inch and a half boards. E is the bracing pole, which may be made strong or weak to suit necessity, and which is adjusted, at its upper end, to fit nicely into the angle of A and B. The whole thing is the work of but half an hour. Two or three such are made and adjusted against the wall as shown, when two-inch planks are laid along on top of them, and the scaffold is ready. Is it too low? Move the lower end of E nearer the wall.



Or, is it too high? Reverse the movement. The most irksome annoyance connected with ordinary scaffolds is that of raising and lowering them. Here, either can be done in a few moments. For ordinary repairing about barns and outhouses nothing can be handier, while it can be made sufficiently strong for almost any purpose, even bricklaying and stonemasonry.

Milk instead of Soap.

A lady, writing to the *New York Times*, says: Without giving any recipes for making soap, I wish to tell all the hard-worked farmer's wives how much labor they may save by not using such vast quantities of this article. For nearly five years I have used soap only for washing clothes. In all that time I have not used one pound of soap for washing dishes and other kitchen purposes. My family has ranged from three to twenty-five. I have used cistern water, lime-stone water, as hard as possible, and hard water composed of other ingredients besides lime, and I find with all these my plan works equally well. It is this. Have your water quite hot and add a very little milk to it. This softens the water, gives the dishes a fine gloss, and preserves the hands; it removes the grease, even that from beef, and yet no grease is ever found floating on the water, as when soap is used. The stone vessels I always set on the stove with a little water in them when the victuals are taken from them; thus they are hot when I am ready to wash them, and the grease is easily removed. Just try my plan, you who toil day after day every spring to make that barrel of soap, and let us hear how it succeeds with you. I like the great barrel of soap on washing-days, but am glad to dispense with its aid on all other occasions. I find that my tinware keeps bright longer when cleansed in this way than by using soap or by scouring. The habit so many of us have acquired of scouring tins is a wasteful policy; the present style of tinware will not bear it. The tin is soon scrubbed away, and a vessel that is fit for nothing is left on our hands; but if washed in the way I have described, the tin is preserved and is always bright and clean.

The Spirit of Bargaining.

Money confers on its possessor two distinct gratifications, so distinct indeed as at first sight to appear incompatible with each other. There is pleasure in spending, and there is pleasure in saving, but these seem to imply two opposite mental conditions. Yet in one class of transactions the joys meet. The keen negotiator of bargains contrives to experience the two sensations simultaneously. There are people who would never willingly spend without saving at the same time, and who enjoy spending if it opens a way to the exercise of their talents in this direction, and this irrespectively of the value of the thing thus secured. We are not speaking of that weak craving for possession which is tempted by everything that comes with the recommendation of cheapness, not of the lover of bargains that are obtruded upon his notice, but of the promoter and driver of bargains. To the miser spending is an unmixed evil, a grudging and odious necessity. Others are born with as keen an appreciation of the delights of property who yet willingly spend their money so long as they have reason to believe themselves the only gainers by the transaction. Money is with them not merely a medium of exchange, it is a mental stimulant. When the Duke of Marlborough took out of his secretary a purse of broad pieces, and, after viewing them with visible satisfaction, bid his friend "Observe these pieces well! they deserve to be observed; there are just forty of them; 'tis the very first sum I ever got in my life, and I have kept it always unbroken from that time to this day," he was illustrating the miser's temper. Quite different from this is the instinct of barter which leads the boy who for the first time finds himself the owner of a shilling to recognise money as a whetstone to his sharpness, the weapon wherewith he is to get the better of his fellows and win the battle of life. He does not lay by his shilling, but plans with it how it may be fructified, get more than it's worth, and become the mother of many shillings. Now, of course, barter is the essence of trade. Buying and selling are acts necessary to success in trade, but they may be carried on in their proper sphere without telling upon either temper or conduct beyond that sphere. Observation and experience show that nobody is so open-handed as the successful merchant. It is not trade that makes the higgler, but something much deeper and forming part of the man's nature. Nor does the necessity of bargaining make him. In some countries every purchase is a hand to hand encounter of wits. It is an understood thing that the seller asks more than he expects to get, and that it would be a mere extravagance to yield to a first demand. There are obscure trades where barter is still the rule with us. In fairs and markets there is legitimate room for it; we may see in our streets invitations to the unwary couched in the announcement that no reasonable offer will be refused; the pedlar chaffers with his customers on equal terms. It is only where the temper shows itself out of bounds that it may be noted as a feature of character. The tendency of civilisation is to keep the active spirit of barter out of sight. In our ordinary retail dealings fixed prices are the rule. If grocers are exorbitant, we do not beat them down, but join a Civil service store. Careful wives show their good management otherwise than by offering their draper less than his demand. Fine ladies do not complacently let out the fact to their friends, as does Mrs. Delancy in her first widowhood, that they got their Court dress "a great pennyworth." Cheapening does not with us gain respect as a test of good housewifery, as we find it in foreign novels of domestic life. Nobody, in fact, bargains now except for the love of bargaining. And, except where the impulse is ungovernable, breaking through all laws of custom, ordinary buying and selling affords no room for its indulgence—in educated and polite circles, that is. It is a pleasure relegated to unlettered mediocrity.—*Saturday Review*.

How to Get Rid of Household Pests.

I have not seen a flea or bedbug in my house for many years. If an army of them were to be brought in, mercury would speedily exterminate them; but I think cleanliness the best and perhaps the only preventive. The common house-fly I do not molest, believing that it more than compensates for its trouble by clearing the atmosphere of effluvia and the animalcules which always arise from the putrefaction of decaying substances during warm weather.

So also with the birds, which are quite numerous here during the summer. Instead of shooting them or setting up scarecrows to frighten them away, I throw out every possible inducement for them to build in my fruit trees. The birds capture a large share of the insects in the larva state, and thus the millers are prevented from depositing their eggs for future worms. As to the loss of fruit by the birds, the latter are always sure to be on hand in force in the season of ripe fruit, whether they come early to take the worms or not.

For the residue of insects that infest my vegetable garden, I find that the laboratory of the chemist furnishes materials fatal to them all, among which white hellebore and cayenne pepper are of the most utility. The bug or worm which cannot find vegetation unflavored with these

articles will seek its breakfast elsewhere and leave a garden unmolested.

A few drops of carbolic acid in a pint of water will clean house plants from lice in a very short time. If mosquitos or other blood-suckers infest our sleeping rooms at night, we uncork a bottle of pennyroyal, and these insects leave in great haste, nor will they return so long as the air in the room is loaded with the fumes of that aromatic herb. If rats enter the cellar, a little powdered potash thrown into their holes, or mixed with meal and scattered in their runways, never fails to drive them away.

Cayenne pepper will keep the buttery and storeroom free from ants and cockroaches. If a mouse makes an entrance into any part of your dwellings, saturate a rag with cayenne in solution and stuff it into a hole, which can be repaired with either wood or mortar. No rat or mouse will eat that rag for the purpose of opening communication with a depot of supplies.—*Scientific American*.

Wool Waste.

The large amount of wool waste produced at the woolen mills in farming districts, or within easy reach of farmers requiring nitrogenous manures, renders it interesting to note that from recent analyses at the Massachusetts Agricultural College chemical laboratory, Prof. Goessmann places the average content of nitrogen in this substance at from 5 to 6 per cent. The samples analyzed were from Franklin, Mass., and consisted of wool refuse and the sweepings of the mill; little bits of coal, chips, etc., were occasionally found.

From calculations based on German standards of comparison, which in turn have reference to the availability of the nitrogen for plant food, Prof. Goessmann places the comparative value of nitrogen in the different forms of nitrogenous fertilizers as follows:

In sulphate ammonia, nitrates of potash and soda, dried blood, meat, and Peruvian guano	25 cts.
In pulverized, steamed bones, fish guano, poudrette, and most artificial guanos	22 cts.
In finely ground bones, horn, and wool dust	19 cts.
In coarsely ground bones, horn shavings, woolen rags, wool waste, human excretions, barn yard manure, animal refuse from glue factories and tanneries, etc.	14 cts.

This indicates that ordinary wool waste is worth about \$15 per ton as a source of nitrogen. By composting it with moist, fermenting manures for a few months the nitrogen would nearly or quite all become available for plant food. The above figures represent the relative retail values. When a considerable amount is purchased, the figures should be placed at least 10 per cent. lower.—*Scientific Farmer*.

The Pig's Start in Life.

The pig, says Dr. Spalding in the *Popular Science Monthly*, is an animal that has its wits about it quite as soon after birth as the chicken. I therefore selected it as a subject of observation. The following are some of my observations:—That vigorous young pigs get up and search for the teat at once, or within one minute after their entrance into the world. That if removed several feet from their mother, when aged only a few minutes, they soon find their way back to her, guided apparently by the grunting she makes in answer to their squeaking. In the case I observed, the old sow rose in less than an hour and a half after pigging, and went out to eat; the pigs ran about, tried to eat various matters, followed their mother out, and sucked while she stood eating. One pig I put in a bag the moment it was born, and kept it in the dark until it was seven hours old, when I placed it outside the sty, a distance of ten feet from where the sow lay concealed inside the house. The pig soon recognised the low grunting of its mother, went along outside the sty struggling to get under or over the lower bar. At the end of five minutes it succeeded in forcing itself through under the bar at one of the few places where that was possible. No sooner than it went without a pause into the pig-house to its mother, and was at once like the others in its behaviour. Two little pigs I blindfolded at their birth. One of them I placed with its mother at once—it soon found the teat and began to suck. Six hours later I placed the other a little distance from the sow; it reached her in half a minute, after going about rather vaguely; in half a minute more it found the teat. Next day I found that one of the two left with the mother, blindfolded, had got the blinders off; the other was quite blind, walked about freely, knocking against things. In the afternoon I uncovered its eyes, and it went round and round as if it had had sight, and had suddenly lost it. In ten minutes it was scarcely distinguishable from one that had had sight all along. When placed on a chair it knew the height to require considering, went down on its knees and leaped down. When its eyes had been unveiled twenty minutes, I placed it and another twenty feet from the sty. The two reached the mother in five minutes, and at the same moment.

Jaborandi, the Newly Discovered Sialogogue and Sudorifico.

Dr. William Craig, Lecturer on Materia Medica in the Edinburgh School of Medicine, has recently been investigating the remarkable properties of this Brazilian shrub, and has embodied some of his researches in a paper read before the Medico-Chirurgical Society of Edinburgh, from which we extract the following interesting particulars:—The natural family of the jaborandi is not definitely determined. Dr. Craig believes it to belong to the rutaceae, or an allied order. The shrubby plant is found growing in the northern provinces of Brazil; boiling water extracts its important active constituents. The leaves and small branches are the medicinal parts, of which the most characteristic and powerful is a semi-fluid, yellow, pleasant-smelling substance, perfectly soluble in water, probably an alkaloid, and called pilocarpin.

A strained infusion of one drachm of jaborandi leaves swallowed by a healthy adult, produces in about twenty minutes a most abundant and continuous secretion of saliva, "the mouth is literally flowing with water; this continues for four or five hours, and during that period from ten to sixteen ounces of fluid may be easily collected." This far supersedes the effects of any known sialogogue; pepper, mustard, or tobacco produce only transient irritation of, and very moderate secretion from, the salivary glands, whilst even the effects of mercury or iodine in stimulating these parts fall far short of the jaborandi.

But still more striking and important effects occur. Water pours forth abundantly, not only from the mouth, but literally from every skin pore. The patient who has swallowed the moderate dose of the infusion within a quarter of an hour, is in a perspiration more profuse than can be produced by ammonia, acetate, ipecacuanha, or sweet spirits of nitre. Clothes or bed-linen are soon wringing wet, and for several hours the sweating continues. Dr. Craig declares that, despite these two very striking phenomena, jaborandi infusion in the doses indicated exerts no notable effect on the circulation or temperature, nor does it produce nausea or intestinal derangement. The gastric disturbance which has been ascribed to the drug, having been vainly looked for in Dr. Craig's repeated experiments, he believes to have resulted from the swallowing of considerable portions of the leaves and stems.

In febrile cases where the mouth is hot and dry, and the skin parched, Dr. Craig has with advantage given either the strained solution or the active pilocarpin, of which one grain corresponds to a drachm of the crude leaves. From the wonderful certainty and rapidity with which jaborandi, apparently without inconvenience or harm, pours fluid out of the system, it promises to be a valuable remedy for the removal of most forms of dropsical effusion. The manner in which it develops its effects is not as yet very well made out; like most potent remedies it first undergoes absorption; salivation is not produced by any local stimulation of the salivary glands whilst the medicine is being swallowed; it is found to operate as promptly and effectively when injected into the rectum as when taken by the mouth. Investigations are still wanting to show whether the active principle is distilled from the body with the superabundant secretions of saliva and sweat. Dr. Craig being interested in veterinary as well as medical matters, and being one of the examiners for the Highland and Agricultural Society's Veterinary Diploma, will doubtless at his leisure investigate the effects of jaborandi on the lower animals, in which it may prove a valuable curative agent.

What Birds and Insects Should be Preserved.

At a recent meeting of the Illinois State Horticultural Society, Professor Thomas, State Entomologist, and S. A. Forbes, Professor of Natural History in Normal University, submitted papers on noxious and beneficial insects; the best means of destroying the former, and preserving the latter. On the point "What insects should be preserved," Prof. Thomas said: I have seen persons when their trees had been damaged by leaf-lice, busily employed in destroying young lady birds which had just completed the job of eating up the leaf-lice, and were in great numbers running over the trees, busily engaged in searching for more. Toads, frogs, and lizards should always be very carefully preserved. Always be sure you are right, then go ahead. For instance, my grounds, orchard, and nursery, three years ago, at this time, were seriously affected by the apple leaf crumpler. I discovered that a few of them contained parasites. I hired boys to gather them, and instead of burning them as recommended, I merely threw them on a piece of bare ground, the parasites being mature, developed, the crumplers not being mature, starved, to-day I find the crumpler very scarce and nearly every one para-

sitized on my place. I could give other instances leading to the same happy results.

Great care should be taken of the beetles known as lady birds (*Hippodamias* and *Coccinellæ*), small, oval, turtle-shaped beetles, which may be generally known by their being marked black with red spots; red with black spots, and yellow with black spots; these are very common everywhere; they are the most insidious foes of leaf-lice (*aphides*), bark-lice (*coccidæ*), and many other noxious insects; the larvae or young of these lady birds have the same general characteristics of the young of the Colorado potato beetle, —(and their eggs closely resemble those of the potato beetle, only they are smaller and in smaller clusters, and as they are often deposited on the same plant care should be taken not to destroy lady bird eggs when mashing those of the potato bug, as I have often seen done; both the lady bird and its larvae are very voracious in hunting up and eating the eggs of this potato beetle)—only smaller, more slender, quicker in motion, and always shiny on the sides and back.

Professor Forbes, who is still engaged in his examination of the food and habits of birds, gave the following list of those that are really valuable in destroying noxious insects, and whose lives therefore should be spared: Blue birds, Titmice or Chickadees; Warblers, (small summer birds with pleasant notes, seen in trees and gardens); Martins; Swallows, Vireos (small birds called green necks); all birds known as woodpeckers except the sap-sucker (*Picus varius*); this bird is entirely injurious, as it is not insectivorous, but feeds on the inner bark cambium (and the elaborated sap) of many species of trees, and may be known from other woodpeckers by its belly being yellowish, a large black patch on their breasts, the tops of their heads of a dark, bright red; the male has also a patch of the same on their throats, and with the inner margins of the two central tail feathers white. This bird should not be mistaken for two others, most valuable birds, which it nearly resembles, to wit: The hairy woodpecker (*Picus villosus et vars*); and the downy woodpecker (*Picus pubescens et vars*). These two species have the outer tail feathers white (or barred with black), and have only a small patch of red on the back of the heads of the males only. The Yellow-hammer or Creeper (*Colaptes auratus*), is somewhat colored with yellow and should not be mistaken for the Sap-sucker: it is a much larger bird. The red-headed woodpecker (*Melanerpes erythrocephalus*) sometimes pecks into apples and devours cherries, and should be placed in the next division (2d). The Wrens, Ground Robin (known as Chewink), Meadow Lark, all the Fly Catchers, the King Bird or Bee Catcher, Whippoorwill, Night Hawk or Goat Sucker, Nuthatcher, Pewee or Pewit. All the Black-birds, Bobolink (?), American Cuckoos, Plovers, Snipe (Upland), Grosbeaks and other Finches (*Fringillidae*), Quails, Song Sparrow, Scarlet Tanager, Black, White, and Brown Creepers, Maryland Warbler, Indigo Bird, Chirping Sparrows, Black Throated Bunting Thrushes, except those named in the next class, and all domestic fowls except geese.

A French Agricultural Show.

The Paris correspondent of the *Times*, writing on Tuesday last, says: To-day I visited the cattle, sheep, pig, and poultry show at the Palais de l'Industrie, which is known by the name of *Le Concours Agricole*. The exhibition is very creditable, and is remarkable both for the cleanliness and neatness of the arrangements. Anything better managed than the long lines of stalled oxen, or the cages of poultry, cannot be imagined. The cross-bred Durham-Charolais ox, belonging to the Comte de Massol, which carries off the *Prix d'Honneur*, is certainly a magnificent animal, and would take a prize at the Royal or Bath and West of England Exhibition. Well fed, straight-backed, and broad chested, he looked the picture of lazy content, as he chewed the cud in his pen, separated from his less honored brethren. No less fine an animal is the red and white Durham cow, which also carries off a *Prix d'Honneur*. I may be mistaken, but I think this animal should be described rather as of the Devon than the Durham breed, having all the color and points of the former race, and none of the size of the latter. Of the other beasts, some of the white Charolais cattle are particularly pleasing to the eye, while a cross-bred Durham-Nivernais might be mistaken for a Hereford, and a gigantic cross-bred Durham and Swiss for the primeval ox. English breeds are again to the fore as regards sheep and pigs, M. Novette Delorme taking the *Prix d'Honneur* for a pen of capital Southdowns, and M. Legoux obtaining the same reward for a ten months old white pig of mixed Yorkshire, Berkshire, and Norman breed. In the poultry classes, the black Creve-cœurs are very fine. The most curious sight in the building is a machine for fattening poultry. A large circular drum, divided into compartments, each containing a fowl or duck, slowly revolves past a man on a pedestal, who, as each bird passes, catches it by the neck, forces a pipe into its mouth and gives a stamp with his foot, thereby shooting a paste composed of barley and Indian corn into the victim's stomach. The inventor asserts that his system is "very salubrious," but I should doubt whether a hen or duck would not prefer to forage, or at least eat, for itself. Indeed, I saw several of the prisoners evidently trying to commit

suicide by pecking at the green paint on their prison walls. The agony of the poor birds when their mouths were forced open, and their looks of astonishment on being released from their involuntary meals, excited a good deal of laughter among the crowd; but, as a farmer near me observed, it is to be hoped the invention will not be extended to a higher class of bipeds.

The English Sparrow.

In some respects this little foreigner deserves our welcome. But his distant origin and his cheery, home-loving ways, blind us to his betters at our doors. Before him we had native birds, greedy for worms, more pretty of plumage, and sweeter of song. We feed and pet this immigrant, but our own birds we shot and stoned, till they found neither pluck or numbers to fight the worm. Then the crawling pests so stripped to wintery barrenness the garb of "glorious summer, that in pure despair we took on trust this sparrow's boasted appetite for worms, to war against our petty foes.

He breeds so fast that if each one only ate a few, their numbers would make havoc among the creeping tribes. A little colony of eight, settled here four years ago, have filled the town. But as "early birds" after the worms, they don't eat a cent's worth. Enough sparrows have squatted on my two acres to eat all the worms off an hundred, and cry for more, yet the tormenting pests still strip my currant bushes right under their noses. Nor does the sparrow hunt other worms any better. In fact, as help against our foes on leaf and fruit, I set down the English sparrow as a failure and a fraud. But worse than this, I fear we may find him as big a pest as the worms he promised to eat.

Sad stories come to me of his picking out the fruit buds in the winter, and of his raids on the opening bloom of spring. Last year, near Newhaven, a flock swept off in a day the promised crop of a whole orchard. Last winter the squatters on my ground stripped my currant bushes of half their buds. They served a large strawberry bed in the same style. Hunger could not be plead for such vandalism. They shared with my fowls plenty of small grains, and garbage always within reach. These sorry habits, in such swarms of them as must soon fill the land, will by and by demand a premium for their scalps.

These sparrows, too, are mighty exclusive in their ways. Fellowship for other species is not one of their virtues. They are a plucky and fighting crowd, and more than a match for any small bird, except the little bully wren. I find the sparrow drives away many of his kind, more pleasing in plumage and in song, who formerly spent their summers at our door. The blue bird no longer tarries with us after his Southern winter tour. The northern mocking bird has deserted the pear tree top, whence for years at early dawn he filled the morning air with apt and gleeful mimicry of song. Not half so many kinds of birds spend their summers with us now, as before the coming of these sparrows.—*Cor. Gardener's Monthly.*

The Slaughter of Birds.

It appears that a single supplementary catalogue of a sale in London last month involved, by a moderate calculation of the lots, the plamage of 10,000 egrets (the white heron of India) and 15,000 humming-birds, besides other birds not so extensively, though still very widely, slain for similar purposes; and it is added that two or more sales are held each week in London, to say nothing of other capitals. Professor Newton justly points out that the coveted plumes are at their best, and the slaughter accordingly takes place, at the breeding season, a fact which will be peculiarly well understood by many thousands of our own readers; and he therefore points, not without reason, to the probable extinction of many beautiful birds unless the reckless destruction of life at such a critical period of the year can be in some way checked.

We confess we cannot write upon the subject in quite the same tone as some of our contemporaries. One of those already mentioned, for instance, after observing that a set of grebe-trimmings would require the skins of five-and-twenty birds, remarks in a leading article upon the subject that "for the matter of that the cruelty would be none the less if it took only one," and further suggests that the young lady who is to wear it shall ask her brother to shoot a pigeon "and bring it to her while it is yet alive, and let her, if she can, watch it dying,"—and all this that she may "realize the torture and suffering to which God's creatures are subjected, in order that her black velvet mantle may be trimmed." As always, so now, we protest against this way of treating such subjects, as neither sense nor sensibility, but simply—gush. So far from the cruelty being the same if it were only one, it is just the very number, as compared with the result, that forms the very essence of the entire question, and the strength of the whole appeal. If the young

lady supposed was to see a sheep killed that she may "realize" the suffering to which "God's creatures are subjected" in order that she may eat her dinner, it is very probable she would lose her appetite, but the argument would be beneath contempt. Many other animals are killed for clothing only, irrespective of food—take the whole fur trade for example—yet most of those who talk loudest in this way feel no scruple in wearing material which is by no means strictly necessary, since the "sheep's back" would furnish all that was really required. We question if the Baroness Burdett Coutts or any other lady, however humane, would or does refuse a fur muff, or other comfortable and becoming appendages, and still more do we fail to see why she should.

Do we then sympathize with—far less wish to defend or encourage—this bird-slaughter? Assuredly no, as our readers are perfectly aware. But let it not be put on false issues. Let it not be said, when thousands are slaughtered, that the cruelty "would be none the less if it took only one." Let it be clearly recognised that the cruelty would in that case not only be a great deal "less," but disappear altogether; and that the precise point and essence of the question really is the wanton, profuse, reckless waste of life for such paltry ends. Let it be seen and taught that the "morality" of taking animal life rests on, after all, the due relation or means to the end proposed. Let the question be put—as Lady Coutts has been herself careful to put it—on this ground to our wives, and sisters, and daughters, let them be asked whether, allowing it right to take life for clothing, and even ornament, therefore they think it right to take thousands of lives for such trifling results; and we have little fear that the force of the reasoning will be seen and felt by those whose good sense and good feeling can alone furnish the remedy.—*Engl. Live Stock Journal.*

Tobacco Mysteries.

One of the mysteries of New York, says the *New York Commercial Advertiser*, of which we have never seen in type an attempted explanation, is: "What under the sun becomes of the enormous quantity of this coarse brown wrapping paper which we everywhere see piled up to the ceiling in warehouses, or slying across the sidewalk from truck to store, like Parthian arrows darkening the sun, or perchance coming to the city from mills in the surrounding country, loading whole trains of freight cars?" This, surely is a profound puzzle, which few even among old residents can unravel. But here is the answer: ("Tell it not in Gath; publish it not in the streets of Askelon.") In brief, we have at this port an enormous export trade in straw paper between New York and Havana, where it enters into the manufacture of tobacco. The trade can be reckoned by thousands of tons. Not a steamer leaves port that does not take out from 2,000 to 5,000 reams, or in occasional instances as high as 30,000 reams. But very few days have elapsed since a steamer sailed with the quantity last named. It was long since evident that this heavy export of paper, that, too, all of a single description, the coarsest and cheapest, could not be for ordinary consumption. No market could possibly demand such quantities, unless people were inordinate shoppers, and did nothing except run to the grocery for small packages. The paper referred to sells at 26 cents per ream of eight or nine pounds, and when packed for export is usually packed into bales of 100 reams each. It is said that the exports are so large that our entire domestic consumption is scarcely equal to one-sixteenth of the total shipped to Cuba alone, while additional quantities are in demand for Brazil, Bermuda, etc.—very much of it, doubtless, going into the manufacture of cheroots and cigarettes. For this purpose, we are told, it serves admirably, the paper, under combustion, leaving no residuum other than a pure white ash. There is but one conclusion, as remarked by a leading dealer in the trade, that the great bulk of this paper is converted into cigars of the lower grade, and where returned under custom house brands, neatly boxed and fragrant with illusive odors, readily commands a sale. The peculiar manipulation which the straw paper undergoes in process of conversion is of course known only to the initiated. But it is well understood that when saturated in the juice of tobacco stems, and, perhaps, almost dissolved, the once despised yellow reams make a "filling" almost equal, if not superior, to the genuine leaf. In fact it is sometimes possible to detect, as we are informed, the delicate film of paper interlapped with leaves in the finished cigar, or neatly folding the exterior. To such a refinement of art has this business been carried, that by the use of machines rolled over the sheet of paper, an almost perfect impress of the tobacco leaf is obtained, the peculiar "spots" being printed as on calico. The waste and refuse of factories in like manner is carefully gathered, and, by intermingling with paper, once more acquires body and consistency, so that in subsequent use the votary of tobacco inhales it in his pipe, securing comfort and solace, or takes it pulverized into snuff, through the nostrils, imagining himself transported in dreamy lassitude beyond the cares and worries of this lower life—on a wisp of paper.

Animal Torture.

One of Miss Burdett Coutt's strongest arguments against the practice of vivisection is that it exerts a brutalizing influence upon those engaged in it. If we may judge from the evident progress made and making in this direction across the ocean, the Baroness's prognostications are true to the letter. An exhibition, says the *London Globe*, given the other day at Sheffield, deserves attention from the societies for the prevention of cruelty to animals. It was for the purpose of proving the merits of a new system of horse taming by means of severe shocks from a powerful galvanic battery. The first animal experimented upon was a bay mare, which after having the conductors attached to her hind legs, back, and neck, was thrown down and "lay prostrate, writhing in agony." While the unfortunate brute was in this position, a series of interesting tests were applied, apparently for no other purpose than to discover how much suffering an animal can endure. Having gone through this trial, including an application of the conductors to the lacteal quarters "without displaying much perturbation," the mare was set at liberty. The next experiment was of a much more exhaustive character, the victim being a mare blind of both eyes, and possessing "several other infirmities." Having used her heels pretty freely when the shock was first administered, she was immediately subjected to much more efficacious treatment. Here is the account of what happened:—"The machine was then put on full power, and the poor brute was brought to earth instantaneously, and lay there for some time." Odd to say, "when tickled, she let out savagely." Even, then, however, the miserable brute was not considered sufficiently tortured to demonstrate the power of the galvanic battery as a humane apparatus for horse taming. When the operators had grown tired of "tickling" their subject, "she was submitted to a still more fearful ordeal, and after intense agony again came in contact with the earth, where she lay, panting and gasping with her tongue out, the bit being broken in her fall." Very much to the disappointment of the experimentalists, this gentle treatment altogether failed to teach the blind animal good behaviour. At first she seemed subdued, although a lad in attendance "tried all he knew to make her exhibit her former temper." But when the stupefying effect of the fearful agony she had gone through wore away, she once more began to lash out, so that "it will require two or three more operations to subjugate her." We sincerely trust that before these take place the strong arm of the law will be invoked to stop such public exhibitions of cruelty. One of the strongest arguments against demonstrations by vivisection is that they exercise a brutalizing influence on spectators. What, then, must be the effect, seeing miserable animals writhing on the ground in the fearful agony consequent upon galvanic shocks from a powerful battery? If such experiments must be allowed for scientific purposes, the public have a right to demand that they shall be carried out in private.

Farmers and Auctioneers.

A case was recently decided in Britain in relation to the responsibilities of auctioneers, which will, no doubt, prove interesting to farmers in general. It is thus reported in the *North British Agriculturist*—At the Blandford County Court on Monday last, before Mr. J. E. P. Lefroy (judge), was heard the case of Samuel Green, farmer, Stalbridge, v. J. W. Horrell, auctioneer, Sturminster Newton. The claim was for £30, for damages sustained by the defendant not attending and conducting an auction sale which he had advertised of the plaintiff's effects. Mr. Atkinson appeared for the plaintiff, and Mr. Dashwood defended. Some time ago the plaintiff became surety with his brother for a sum of money to the Sturminster Bank, and, being pressed for payment, and having other claims to meet, engaged Horrell to sell two ricks of hay, the produce of 13 acres, a quantity of feed, and some beans. The sale was advertised to take place at four o'clock, but the defendant did not put in an appearance until half-past eight, and the hay dealers and others had left. Plaintiff had, previously to the day of sale, but after the advertisement and bills appeared, been offered £34 for the hay by the late Mr. Coates, of Blandford, but could not so dispose of it. Being threatened with execution, he, the next day, sold the hay to Mr. Lewis, of Sherborne, for £75; and one of the parties who came to the sale stated that he would have given £95 for it. The feed was sold for £15; and the beans, one of the lots which Horrell offered, for £9. In consequence of the delay the plaintiff was obliged to proceed to a second sale, and the whole of his furniture was disposed of. The defence was plaintiff had no legal right to sell the hay without his brother's consent, and also his landlord gave orders the hay should not be removed; but it was shewn not only was the hay sold, but had been removed. In reply to his Honour, plaintiff stated that when he gave the defendant instructions to advertise the sale, he told him he was in want of money, and he knew the cause. Mr. Atkinson said, on Saturday last, in consequence of an execution, Horrell had become a bankrupt. He expected that there would be but very little for any one, but he thought his client, who had been badly used, ought to have as much as possible, and they were obliged to come to the court and prove their claim. His Honour gave judgment for the amount claimed forthwith.

A Mysterious Bird-Charmer.

I witnessed the other day one of the celebrated sights of Paris, of which I had often heard before, but never before seen. Crossing the Tuileries Garden on one of the late mild days my attention was attracted by an immense commotion among the sparrows which abound in that locality. They were chattering and flying to and fro, and finally collected in swarms at a single point. There I saw the cause of their agitation, the well-known bird charmer of the Tuileries Garden. She is a person about thirty years of age, pale, with very black hair, dressed in the deepest mourning, and wearing no bonnet. She was surrounded by birds that hopped and perched right at her feet, or flew circling round her head, apparently without the slightest fear. She would hold out a bit of bread, and instantly three or four would hover around it with rapid whirling wings, like humming birds around a flower, some perching on her fingers, while others would peck at the coveted morsel on the wing. Then she would throw crumbs into the air, which would be adroitly caught by the swiftest winged birds before they reached the ground. A shower of crumbs brought the little creatures to their feet like chickens, nor did the presence of the bystanders that soon collected in great numbers appear to terrify her proteges in the least. They seemed to feel perfectly secure while in the presence of their benefactress. She walked eagerly on, followed by hundreds of the eager, muttering, chattering birds, and I lost sight of her in a distant walk. I am told that she sometimes sits down, and that the sparrows will then perch all over her, and will get into her lap to eat bread from her apron. No one knows who she is; she never speaks to any one, and pays no attention to anybody or anything except to her beloved birds, which she feeds daily through the winter.—*Cor. Philadelphia Telegraph.*

Another Patent Butter Swindle.

An enterprising firm in Marion, O., issues a circular which sets forth its readiness to transmit on the receipt of one dollar a bottle of some sort of secret mucilage, or powerfully condensed hair-oil, from which one hundred pounds of No. 1 butter may be made without further cost and without the slightest intervention on the part of the cow. In fact a herd of cows are delineated upon the circular, and represented as standing around a printed placard of the firm, which they are regarding with erect tails and other signs of astonishment. Whether they rejoice at the prospect of escaping the attentions of the daily milking-maid, or tremble at the thought that henceforward their utility is to be restricted to the single particular of beef, does not clearly appear from the expression of their countenances, which may mean anything; but they are obviously agitated with violent emotions. Perhaps they are wondering whether there are any fools in the world who will take such a low view of butter as to send their money to the firm and try the contents of the bottle. No intelligent cow would put faith in any such assumption. The animal is too well assured of its own fixed and invariable relation to the phenomena of dairy products. And yet it is quite likely that there are such fools, and that they send their dollars to the iniquitous and beguiling firm in sufficient number to justify the continued issuance of their swindling circulars. They are of a sort, however, who might be brayed in a mortar without getting the correct theory of butter, and so any effort to guard them from their folly would doubtless be thrown away. The country is full of schemes of the sort, but not many of them are such transparent and impudent devices as the one in question. The firm urges its mysterious mucilage with much zeal, offering chromes and prize-packages to its customers, and liberal bets that its butter cannot be distinguished from the authentic preparation by the most expert performer on pancakes. The terms of its manifesto justify the conjecture that some of the "sawdust" operators, whose work has become rather dangerous here in the metropolis, have shifted their ground to Ohio and gone into a new line of business.—*N. Y. World.*

Rolling Wool after Clipping.

The common practice of rolling up wool in any and every way, indiscriminately, is thus commented on by a writer in the *North British Agriculturist*.—Having had long experience in the stapling and manufacture of wool, and being very desirous of correcting a growing fault largely experienced by the trade, and which can only be counteracted by the growers of wools, I mean to call their attention in the first place to the slovenly and untidy manner in which the fleeces are got up at clipping time. The fleeces are rolled up any way, sometimes one side out, then another. Sometimes the neck, as it ought to be, forms the band, at another the breech, next the tail, and so on, with very often all the clippings, &c., from the sides of the stools carefully packed inside. Now, this is all very detrimental

to the farmer. Any stapler or buyer on inspecting wools for sale would naturally offer a less price for wool in this condition than he would do, and could afford, for wool cleanly and tidily got up.

When the process of clipping is being proceeded with, the fleeces after lifting from the clipper should be spread out on a sparred table, made large enough for a fleece when spread out. Those entrusted with this department should then denude the fleece of such impurities as naturally adhere to some of the breeches and tails, throwing them aside along with the clippings gathered from the stools, which can be otherwise disposed of, then turn in the belly of the fleece on each side from the shoulder to the breech, and roll up, commencing at the tail and finishing at the shoulder, the neck forming the band. The sparred table, which may consist of a few boards two inches wide, nailed on two or three cross spars, leaving an interstice of one inch between each, and about six feet square, and set on four inverted smearing tubs, does very well. A large portion of the loose sand, if any exists, is thus got rid of.

Blackfaced wool should be rolled up with the natural side out, while the contrary applies to Cheviots. As to the finer kinds of wool, little has to be said, as they generally come up creditably prepared for the market. And another matter to be considered by the stockmaster is the quality and quantity of salve used as a winter protection.

It is now well known to staplers (to their cost) that a large quantity of inferior ingredients are used in smearing, which it is not my duty to enumerate, but which tend largely to deteriorate the value of the wool. The sheep should be lightly smeared, and the best materials (only) used, namely, American tar and butter, and when well treated with this application, although the wool is discoloured, its utility is not in any way impaired, on the contrary, it is enhanced. Last year, as well as this season, I had several clips treated with American tar and Siberian grease, which I found not at all inferior to what I have recommended, and in some cases superior; and, as I am informed, butter now being scarce and dear, I do not see why this valuable substitute, if to be procured moderately, should not be more largely used, throwing inferior greases aside.

I have the same remarks to apply to what are now called white wools, where a great deal too much inferior grease is used in connection with the dip, making the wool nearly as heavy as smeared, which the prices current for some time back will prove.

There are now so many appliances in vogue for dipping, every large number of which are unsuitable. Arsenic and other mineral poisons dry up and shrink the wool, and when such is used it should be amalgamated with some emollient in the shape of grease or oil of a good nature, and were the growers to adopt my suggestions, wool buyers would have more pleasure and less trouble in selecting their parcels, while they would not hesitate in giving an advance in price for wools so treated.

Eat Celery.

We notice with satisfaction that celery is becoming more common and cheaper in our markets; its cultivation cannot be too strongly recommended to farmers, as by its production they not only grow a profitable plant, but confer a benefit on the community, as the habitual daily use of this vegetable is much more beneficial to man than most people are aware of.

A writer who is familiar with its virtues, says: "I have known many men, and women too, who from various causes had become so much affected by nervousness that when they stretched out their hands they shook like aspen leaves on a windy day, and by a moderate daily use of the blanched footstalks of celery as a salad, they became as strong and steady as other people. I have known others so nervous that the least annoyance put them in a state of agitation, and they were in constant perplexity and fear, who were also effectually cured by a moderate daily use of blanched celery as a salad at meal time. I have known others to be cured of palpitation of the heart. Everybody engaged in labour weakening to the nerves should use celery daily in the season, and onions in its stead when not in season."

To this we may add that a prominent New York druggist draws in winter from his soda fountain a hot extract of celery, mixed with Liebig's meat extract, under the name of Ox-celery. It is a nourishing drink at lunch time, far better than coffee or tea, and is doing a great deal in this neighborhood to promote temperance. Distilled drinks are no better for a man than a whip is for a horse to make him work; oats are better than the whip, nobody will deny that, and to keep up the strength of a human being, ox-celery or beef-tea is better than whiskey, but this fact many do not appear to know or realize.

But to return to celery: we give it almost daily to our canary birds, and it cures them of fits; they are little animals, with very delicate nerves, easily frightened, and therefore they need such a remedy very much, and the relish with which they take it is a proof that their instinct guides them to eat what is good for them.

A manufacturer of perfumery of our acquaintance some years ago commenced to prepare an extract of celery-seed, put up in medicine bottles, and intended to give strength to old or exhausted persons, who, by over-indulgences, have reached such a state as to require restoratives.—*Builder.*

Cattle of the Himalayas.

Constance F. Gordon Cumming, in her book "From the Hebrides to the Himalayas" writes:—The little ox of Thibet is a very precious possession in such a country as this. He is short and thick-set, like our Highland cattle, and covered all over from his nostril to his tail with long shaggy hair—perhaps I should rather call it wool—which all but touches the ground, and which, when cleaned, is soft and silky, and spins remarkably well. The hair becomes thicker and longer, and the creature larger—that is, as tall as fourteen hands—on the high table-lands of Thibet. Its natural home being in a climate so severe, and where pasture is so scanty, it seems to be altogether indifferent to both, and is therefore an invaluable beast of burden, as it will carry the heaviest loads across the most inaccessible passes, quite regardless of paths, content to pick up the scantiest and foulest fare. Nevertheless the little yak cows yield an abundant supply of the very richest milk, thick and creamy, and producing just twice as much butter as the common cow of our dairies, also excellent cheese. The butter is rather hard, but if the milk of the yak is mixed with that of the common cow, in equal parts, the result is highly satisfactory. Various experiments of this sort have been tried at the dairy farms in the Vosges, where the little yak has been successfully acclimatized. In India it does not seem to thrive at a lower level than 9,000 feet. Here, as in the plains, the cowherds declare that the cows will not yield their milk unless the calf be present. So that if the calf be dead, they either give the mother its little foot to lick, or else have its skin stuffed with straw; in short, it is precisely the 'Tulchan' in which our Scotch dairymaids used to place such implicit faith. The yak is of divers colours, but generally black-and-white; the length of its wool increases so much on the higher levels as sometimes to trail on the ground.

Easily Cleaned Floors.

A lady writer, in one of her letters to the *Christian Weekly*, tells how, with the aid of the minister, she succeeded in obviating almost entirely the drudgery of scrubbing. She says: This is the way I did it, or courtesy should lead me to say, he did it, as we intended to do the work ourselves, and so save the expense of hiring a man to do it. The minister bravely declared his readiness to do his part, and his perfect confidence in his own ability to do it, as well as the most practised hand. So he procured from a druggist three quarts of boiled linseed oil, and the same amount of shellack varnish. Also a paint brush. This quantity of material will cover as much floor as forty yards of carpet, and costs only \$3.50.

The floors were cleaned as thoroughly as possible, and all spots that will not wash off ought to be planed off. This was to have been part of the programme. But here truth compels me to make a confession. The minister, who was to have been chief operator, but who really found many urgent reasons for being absent a great deal about that time, insisted that all these spots and blemishes as seen on the bare original floor would be glorified into ornaments on the same floor when the beautifying process had passed over it. He said, impressively, that far more value was attached to black walnut that was full of knots and gnarls than to the plain smooth wood, because what seemed to be blemishes, when polished under a wise hand became beauties instead. "From which we learn," he said bringing down the paint brush with a force that scattered the oil all around him, "that the most unpromising characters, when subjected to the proper influences, often become valuable ornaments to society and the world." Consequently, from purely moral reasons, he declined to indulge in the use of the plane. For myself, I was silenced, but not convinced; and the event justifies my fears.

We put on the first coat of the oil in the evening, and the next morning it was dry. The following evening we put on a coat of the shellac varnish, which was dry by morning. Then, after two or three days, we put on the final coat of oil, but, as the wood will absorb very little oil this time, we put it on with a flannel, and rubbed it in as thoroughly as possible. It was soon dry and ready for use. Now we have beautiful floors, easily kept clean by wiping off the dust with cold water. Once in three or six months we can go over them with a little of the boiled oil, and have them look as well as ever again. In the winter, if we choose, we can lay down rugs to take away the "cold" look that some object to.

Such floors would rob "cleaning time" of half its terrors, and add largely to the purity of the atmosphere of our houses, already poisoned by air-tight stoves and furnaces. It is a cheap reform and easily tried.

The Centennial Exhibition.

The following stated displays, under their respective dates, will be held during the International Exhibition. Applications for entry may now be made, on forms which will be supplied by the Chief of Bureau.

AGRICULTURAL PRODUCTS.—Pomological products and vegetables, May 16th to 25th. Strawberries, June 7th to 15th. Early grass butter and cheese, June 13th to 17th.

Early summer vegetables, June 20th to 24th. Honey, June 20th to 24th. Raspberries and blackberries, July 3d to 8th. Southern pomological products, July 18th to 22d. Melons, August 22nd to 26th. Peaches, September 4th to 9th. Northern pomological products, September 11th to 16th. Autumn vegetables, September 19th to 23rd. Cereals, September 25th to 30th. Potatoes and feeding roots, October 2nd to 7th. Autumn butter and cheese, October 17th to 21st. Nuts, October 23rd to November 1st. Autumn honey and wax, October 23rd to November 1st.

FIELD TRIALS.—Mowing machines, tedders, and hay rakes, June 15th to 30th. Reaping machines, July 5th to 15th.

LIVE STOCK.—Horses, September 1st to 14th. Dogs, September 1st to 8th. Neat cattle, September 21st to October 14th. Sheep, October 10th to 18th. Swine, October 10th to 18th. Poultry, October 27th to November 6th. The above dates may be favorable for the assembling in Philadelphia of societies and associations interested in the specialities above enumerated.

Forcing Growth by Steam Pipes Under Ground.

The use of steam pipes in forcing plants has been in practice many years. The New York Sun tells of an agriculturalist of New Jersey who is secretly experimenting in the matter at present, and who has succeeded in producing potato plants fifteen inches high in a fortnight. The tubers were, however, small in proportion to the plants, and he proposes new attempts with the view of establishing a proper equilibrium. The same paper also says: The first known trials in this country upon the growth of vegetation by electricity were made in March, 1811, by Mr. L. Peel, a wealthy land proprietor on the Hudson river, near Hyde Park, whose Newtown pippins have long been noted in the New York market. His orchards now comprehend 20,000 apple trees, all of the above description. He was also the first in this country to raise fish from the egg. Prof. Morse gave him instructions regarding the application of electricity to his purposes, and he departed for Hyde Park. Mr. Pell first gave attention to growth in sand, which he placed, to the depth of a foot, in a box three feet square. He planted in a row a potato, some wheat, rye, oats, and barley kernels, and a Madeira vine, and suspended over them, to the height of an inch, a copper wire an inch thick. This wire was soldered at one end to a piece of copper plate an inch square and an eighth of an inch thick, and at the other to a similarly sized piece of zinc. These formed the positive and negative batteries, but neither quite touched the soil. The weather being cold, the box was placed in a covered hot-bed, and the batteries were constantly stimulated by an electric machine. The sand under the wire was in a highly electrified state, and within a fortnight the plants pushing from the seed reached a height of fifteen inches.

Another process was by placing sand in pots of one, two, or three quarts, with a copper plate at the top and a zinc plate at the bottom. A hole was made in the former to allow the egress of the plant, and one in the latter to permit the escape of the water with which the sand was occasionally moistened. A wire was carried outside of the pots from the copper to a hole in the side, an inch from the bottom, where it communicated with the zinc inside. The object of not allowing the wire to extend to the bottom of the pot was to prevent its coming in contact with the water. No necessity existed for a wire within the pot. The sand completed the electric circuit begun by the wire outside, and, without the use of a machine, the grain grew with a rapidity equal to that in the box.

Another experiment was without the use of electric batteries. A number of wheat kernels were placed on a sheet of window-glass, fourteen inches square. A thin layer of straw was placed on them, and on this transversely other layers, to the height of three inches. Over these and the glass cords were wound to keep them in place. The apparatus was set on the soil of a covered hot-bed, and the straw was kept constantly moist. Decomposition set in within a day or two, and the seeds began to germinate. In five days from the covering, young plants began to show themselves above the straw, and in three weeks more a height of fourteen inches was reached. The roots spread wide on the glass, and rose into the straw, and by turning the glass over their complex windings and interlacings could be seen. The seeds found in the straw the chemical properties which they themselves contained and required for development.

In the following June Mr. Pell placed in the open air a row of young tomato plants. At one end was a sheet of copper an eighth of an inch thick, fourteen inches wide, and four feet long. It was embedded two feet in the ground in an erect position, leaving two feet in the air. A zinc plate of the same size was similarly treated at the other end. A wire was laid from the top of one, forty feet, to the top of the other, being raised sufficiently by poles to enable horses to plough under it. No wire was laid under the ground, as the earth completed the circuit. An abundance of manure was applied, and the plants matured and bore small ripe tomatoes, an inch in diameter, in a week. These were followed by three other weekly crops of the same sized fruit within a month. It was not necessary to limit the width of the tract to forty feet. The copper and zinc sheets could as well have been placed a mile apart. The earth would equally well have formed a circuit.

Shorthorn Sales.

The sale of Mrs. E. Bryan's herd, Abingdon, Illinois, came off on the 11th ult. The attendance was quite large and the bidding spirited. The following were amongst the highest prices:

Vinnie 2d	750
Michigan Casket (Imp.)	695
1st Mazurka of Hickory Grove	600
2d Mazurka of Hickory Grove	1,100
3d Mazurka of Hickory Grove	600
Rosa Duchess of Sutherland	450
Rosa Duchess of Sutherland 2d	600
Duchess 5th, and c. c.	410
Oakhurst Lady 2d	450
1st Duchess of Hickory Grove	600
Ella 2d	400
Ella 3d	480
Pillgree's Ella	610
Ella 6th	575
Ella 7th	430
Ella 8th	500
Belle of Hickory Grove	510
Belle of Hickory Grove 3d	400
Oxford Belle 11th	400
Oxford Belle 2d	470
Mattie 4th	530
Nora 4th	500
Bull Poppy's Duke of Airdrie	1,020
Total amount of sale.....	\$21,245
Average, about	330

A. J. Dunlap's Herd.

The total amount netted at this sale (Galesburg, Ill.) was \$19,200; average for cows and heifers, \$382. Few bulls were sold. The leading prices were:

Fanny Hunt 5th	1,300
Lady Gray	700
Sonsie Lass 2d	1,050
Sonsie Lass 3d	500
Fanny Hunt's Duchess	800
DeLuce	1,010
Sonsie Lass	455
Florizel 2d	510
Martha Washington	400
Lilla Lewis	535
Lady Caroline 6th	400
Alice Airdrie 2d	435
Alida	450
Fannie Leslie 4th	505
Rosa Lee	400
Lena	500
Lena 2d	450
Lady Gray's c. c., by Geneva Duke	540

D. Lowman's Herd, Toulon, Illinois.

Here the average for cows and heifers was \$364, and for bulls \$215. Total sales, \$20,824. The highest bids were:

Miss Wiley of Green Lawn	\$1,100
Red Lady 3d (Imp.)	1,200
Larua	755
Cypress Gem	625
Lovely 18th (Imp.)	1,010
Louan of Green Lawn	530
2d Louan of Green Lawn	500
Butterfly 4th (Imp.)	550
Domestic Blue Bomber	705
Imperial Geraldine 7th	530
Mattie 35th (Imp.)	615
Frairie 11th	400
Lady Gardner	550
Bull - Sam Wiley	1,005

E. Topping's Herd.

At this sale, conducted by Mr. Thornton on Mr. Topping's estate, Musgrove Hall, Penrith, the following were the leading figures:

Familiar 11th	125
Wild Eyes Gwynne 3d	100
Iron Duke (Bull)	115
British Knight	300

S. W. Jacob's Herd.

The leading sales here were:

Peri 2d of Lyndale	\$7,050
Lady Barnpton of Wapsie	1,500
2d Lady Barnpton of Wapsie	800
3d Lady Barnpton of Wapsie	1,450
Nelly 1st 7th	1,975
Imp. Golden Drop 2d	1,640
Golden Drop 3d	1,475
Imp. Golden Drop 4th	850
Imp. Sybil	1,050
Kate Penryn	805
Grace	2,800
Emma Downe	1,050
Rosa Princess	3,900
Red Princess	1,200
Highland Maid 4th	1,700
Highland Maid 6th	1,000
Highland Maid 7th	1,200
Lady Sale 36th	1,100
Lucy Napier	2,475
1st Louan of Millington	1,165
Louan's Minna	2,550
Forest Mayflower	1,125

The Aurora Sale.

At the joint sale of Campbell and Strawn on the 14th ult.

Bright Eyes brought	\$410
Duchess of Oakdale	700
Airy Queen	800
Fairy Queen	895
Bravo Lady	800
Fair Lady	860
2nd Duke of Springwood (bull)	610

Spears and Sons' Herd.

Miss Minnie, of Forest Hill, one year	\$ 150
Lady Illustrious, eight months	460
Illustrious second, eight years	350
Endors third, and calf, four years	250
Col. Roid, two years	300
Capt. Grant, yearling	155
Lydia's Cherub, yearling	145

Edward Hes' Herd.

The following were the leading prices at this sale (Springfield, Ill.), on the 4th inst.:

Airdrie Bloom, six months	\$1,000
Prairie Blossom, seven years	1,025
Lady Laura 5th, three years	625
Imported Second Lady, six years	600
Mazurka, of Linwood, three years	505
Gertrude 4th, three years	505
Fourth Long Point, three years	750
Louan 7th, of Elm Grove, two years	325
Louan 6th, of Elm Grove, two years	270
Louan of Long Point, three months old	140
Fleta, six years	400
Lady Booth 3d, and calf, three years	225
Lady, yearling	1 0
Rosa Morton	220
Hilgrec, second	420
Sir William, imported yearling	515
Noble Breast-plate, yearling	225
Cherub, third, two years	225

Geo. Hudspeth's Herd.

Indian Lady 3rd, eight months	\$ 105
Indian Lady 2nd, yearling	30
Lurline, seven years, imported	235
Indian Lady and calf, three years	320
Indian Princess fourteenth, five years	225
Yell et Rose and calf, three years	190
Melissa Bonum and calf, six years	160
Valentine, yearling	140
Grancee, three years	115

E. F. Hes' Herd

Elegant, yearling	160
Young Prince, yearling	180
Onion, yearling	145
William Wallace, seven years	120
Airdrie Gem, four years	400
Orn, one year	150

J. Charn's Herd.

Lazy, five years	205
Dora, four years	510
Lady Franklin, yearling	510
Luna 2d and calf, nine years	130
Lena 4th	200
Lena 6th, six months	120
Almira and calf, nine years	90
Leopardless, nine years	60
Annie Moore, six months	40
Almira 4th, yearling	95
Louan, Dike 4th, two years	200

Kissinger and Pickrel's Herd.

The sale of Messrs. Kissinger & Pickrel, Springfield, Illinois, took place on the 4th instant. \$36,000 in all were realized, the average price for cows and heifers being \$1,020, and for bulls \$1,516. The following were among the leading prices:

Louan Duchess of Bedford	\$2,700
Imp. Countess of Cornwall	2,050
Avalon Duchess	450
Royal Duchess	535
Countess of Oxford 4th	1,500
Imp. Miss Ada 6th	1,500
Caroline Cochran	2,100
Caroline Pickrel	1,600
Caroline 3rd	450
Pretty Gemma	900
Mattie Richardson	1,805
Minnie Richardson	550
Knightley Belle	2,275
Carnation	1,000
Autumn Queen	675
2d Louan of Linwood	1,850
Louan 6th of Poplar farm	1,050
Cassa 20th	515
Cassa 19th	445
Anne Holeyu	485
Duke of Richmond	2,250
Grand Duke of Kirklevington 2d	1,550
Second Marquis of Worcester	3,000
Baron French 6th	800
Jay	500

H. Lavimore's Herd, Fulton, Mo.

At this sale on the 2nd inst., the cows averaged \$875 each:

Lake Bride	\$1,000
Red Mary 2nd	1,000
Bell Oxford and calf	600
Valley Queen	475
Red Mary 3rd	625

I. Pierce's Herd, Assumption, Ill.

On the same day (May 2nd) twenty animals were sold out of this herd at an aggregate price of \$6,600.

C. M. Nichol's Herd, McLean Co.

On the 5th inst., 57 head of the above herd were sold at Springfield, realizing an aggregate of over \$20,000. The highest figures were:—

Mazurk of Elkhill	\$2,000
Susan 17th	900

Stock Notes.

We (Mich. Farmer) learn that E. J. Smith has recently brought from Canada a valuable thoroughbred English draught stallion, and keeps him at his farm near Chelsea. This horse is named "Cantander," and is described in a letter of our correspondent, as a beautiful bay, nine years old, and weighing 2,150 pounds, on short legs, with great breadth of hips and shoulders, and standing seventeen hands high. Cantander was brought from England in 1871 by Mr. George S. Shaw, of Bowmanville, Ontario.

Mr. R. Cheyne, of Toronto, last month sold his very fine imported bay Clydesdale stallion "Prince of Wales," four years old, to F. Wolf, Putnam County, Illinois, for \$3,500 cash. He was one of the finest stallions in Canada.

THE ELMHURST HERD.—Mr. Fox has sold several Rosa Knightloys and a Gwynns hoifer at high prices to the Hon. George Brown, Bow Park, Ontario, Canada.—*North British Agriculturist.*

The *Telegraph*, London, (Eng.) says that the Duke of Devonshire has sold from the Holker Short-horn herd Grand Duchess of Oxford 29th, to the Hon. George Brown, of Canada, for 2,500 guineas, the highest price ever yet paid for a female Short-horn in England.

BATES' SHORTHORNS FOR CANADA.—Grand Duke of Thorndale 2nd (31298), with four females—two of the Acomb tribe, and two Barringtons—from Mr. Slye's fashionable herd at Beaumont Grange, England, have been bought for exportation to the Bow Park Herd, belonging to the Hon. George Brown, of Toronto. The bull cost 1500 guineas, and the five averaged £672 a head.—*North British Agriculturist.*

Great Shorthorn Sales.

Three great sales of thorough-bred Shorthorns are to take place on the Provincial Fair Grounds in this city on the 14th, 15th, and 16th of next month, which cannot but excite very great interest among farmers and breeders in all parts of the continent. A large number of first-class animals will be dispersed, and exercise a highly beneficial influence on the farm stock of our country. Mr. Cochrane, Mr. Beattie and Mr. Hope offer a lot of sixty excellent animals, among which are two *Duchess of Airbriess*, a branch of the highest family of Shorthorns in the world. Mr. Brown offers choice selections of fifty head from the Bow Park Herd, which, for their high pedigrees, as well as their individual qualities, will attract attention. John Snell's Sons and W. T. Benson will offer sixty-six head, among which will be found some very fine animals. The concurrence of these three great sales in one week will bring a large gathering of the leading agriculturists of Canada and the States to our city, and it is to be hoped that our Canadian farmers will not permit the best of the stock to be carried off by our enterprising neighbors.

Forthcoming Shorthorn Sales.

The following sales are announced to come off at the times and places mentioned:

- May 22d—"Excelsior" herd, Freeport, Ill., about seventy five head, J. R. Sholly.
- May 23d—"Fine Stock Farm," Lee Co., Ill.; Dysart & Lalm in.
- May 24th—Hon. William Stewart, Franklin Grove, Ill., Shorthorns.
- May 24th—Franklin Grove, Ill.; W. Stewart
- May 25th—Robert Holloway, Deater Park, Chicago, entire Durham Lawn Herd of Shorthorns.
- May 26th—Dexter Park Stock Yard, Chicago, sixty head, Dodge, Smith & Jones.
- May 31st—"Oakland Farm," Cambridge City, Indiana; S. Meredith & Son and R. C. Dun.
- June 1st—Indianapolis Grounds; Williamson, Forsyth.
- June 6th—Shipman, Ill.; W. W. Reynolds's Herd.
- June 7th—"Grove Park," Berlin, Ill., fifty head, Brown & Sons and General Curtis.
- June 8th—"Durham Farm" Herd, Jacksonville, Ill., S. Dunlap.
- June 14th—Hon. M. H. Cochrane, Simon Beattie, and John Hope, Provincial Show Grounds, Toronto, Canada; fifty head of first-class Shorthorns.
- June 15th—Hon. George Brown, fifty head—choice selections from the Bow Park Herd, at Toronto, Canada.
- June 16th—John Snell's Sons, and W. T. Benson, Edmonton, Canada, Shorthorns. Sale at Toronto.
- June 27th—Dr. A. S. Talbert, Lexington, Ky.; Trotters and Shorthorns.
- Aug. 9—T. J. Megibbon, Cynthia, Ky.; one half of Fairview Herd.
- Aug. 10—G. M. Bedford, Paris, Ky.; entire Stoner Herd.
- Aug. 11—B. J. Clay & Sons, B. F. Bedford, and Hall & Taylor, Paris (Ky.) Fair Grounds; about one half of their respective herds.
- Aug. 12—J. W. Burgess, Wm. Warfield, and L. Cums, Jr., Lexington, Ky.; one half of their respective herds.
- Oct. 16—Jas. C. and George Hamilton, Winchester, Ky., Shorthorns.
- Oct. 17—H. P. Thomson, Moundalo Herd, Thomson's Station, Clark Co., Ky.
- Oct. 13—John V. Grigsby, Crethmore Herd, Winchester, Clark Co., Kentucky.
- Oct. 14—John W. Bean and Robinson Brothers, Winchester, Clark Co., Ky.; Shorthorns.
- Oct. 17—W. H. Fisher; entire herd of Shorthorns.
- Oct. 15—Thos. Corwin & Son, Boyd's Station, Ky.; Shorthorns.
- Oct. 18—H. Clay Hutchcraft, Paris, Ky.; Shorthorns.
- Oct. 19—Ayers & McClintock, Millersburg, Ky., Shorthorns.
- Oct. 20—Joseph Scott, Paris, Shorthorns.

Correspondence.

UNDERDRAINER, Ottawa.—After your drains have been completed, plough the land across them, and leave the dead furrows open to conduct water to them.

SMUT PREVENTIVE.—Farmer, Wellington.—We answer your query in the words of Mr. Mechi, who says: I think the steeping process should be generally adopted. We use one pound sulphate of copper to ten quarts of water. The seed is steeped in this for about ten minutes, and well stirred, or is put on a floor and there thoroughly saturated with the solution. Whenever we have omitted the steeping, our crops have proved more or less blighted and smutty.

PANSIES FOR STOCK.—Reader, Uxbridge.—Certainly you can scarcely use a better article of food for producing either butter or beef.

HOW DRILLS SHOULD RUN.—Acme, Glengarry.—If you keep shading alone in view, we would say let them run east and west to gain the fullest measure of sunlight, and vice versa.

OIL CAKE.—Reader, St. Mary's.—One pound per day is ample for a horse. Oil cake is not essentially fattening of itself; it serves rather as an aid to assimilation, and therefore to digestion.

PROFIT OF FEEDING POTATOES.—Juvenile, Maryboro.—We think it decidedly more profitable to feed potatoes and convert them into beef, butter, and cheese, than sell them at twenty cents per bushel.

TESTING THE PLOUGHSHARE.—Subscriber, Sarnia.—The article to which you refer appears in the CANADA FARMER for 1873, page 135. The test can be effected by three methods, colour, touch, and sound.

LEACHED ASHES.—Subscriber, Dunkeld.—It is impossible to answer your query definitely without a knowledge of your soil. Try the experiment on an acre or two, at the rate of from 80 to 100 bushels per acre.

WHIPPING HORSES.—A. B., Montrose.—It is, no doubt, necessary to use the whip sometimes, but it should always be applied judiciously, and great care should be taken not to arouse the passions, or excite the will to obstinacy.

LICE ON HENS.—Poultryman, Toronto.—Several remedies for lice have appeared at different times in the CANADA FARMER, one of the most effective of which, we think, is sulphur. Carbolic acid, dusted or sprinkled over the fowls, is also said to be a sure cure.

ELDERBERRIES.—Alpha, Sarnia.—Yes, they are most useful and wholesome, made into wine, pies or jellies. The trees should be kept as much as possible in one place, for they sucker badly, and are very troublesome when in too close proximity to other crops.

HUCKLEBERRIES.—Janus, Waterloo.—No, you cannot raise huckleberries successfully in your garden. The experiment has been tried repeatedly, but with one result, viz.: that the vines merely lived and that was all, each one producing about a dozen berries.

THE MAGIE HOG.—Subscriber, London.—The Magie hog, so named after an Ohio breeder, is understood to be a cross of the large China, the Byfield and Berkshire. The hog is large, and usually spotted black and white. It goes generally under the name "Poland-China."

PLASTERING CONCRETE WALLS. X. Y.—To obviate all risk of dampness, set up 1 or 1½ inch planks on the inside of your walls, and lath and plaster them. This will make sure work and the cost will not much exceed that of smoothing and finishing the already rough surface. Had you left air-chambers in the walls, all would have been well.

CATCHING THE SHEEP.—Reader, Paris.—Yes. In many instances the skin has been known to separate from the body and inflammation to have set in, when the animal was caught by the wool. Catch around the neck, smartly, with both hands. Then pass one arm gently around the body, grasp the brisket, and raise the animal completely off the ground.

EGYPTIAN SPRING WHEAT.—H. H., KINGSTON, N.Y.—This new variety has been tested but in one instance as yet in Ontario. The results were excellent; much better than with any other sample. It would, however, be premature to express any decided opinion as to its merits without further experience. By the fall we will be able to judge it definitely, as a great many farmers are trying it throughout the Province. There is no seed to be had here.

ANALYSING SOIL.—W. K., Peterboro'.—The actual analysis of your soil would prove a difficult and, very possibly, unsatisfactory undertaking. A simpler method, if you desire to test the fertilizing theory, is to dress one strip with a potassic fertilizer, another with a nitrogenous fertilizer, a third with a phosphatic fertilizer, a fourth with a mixture of all three, and if even a fifth be preserved for the same crop and tillage, but with no manure, you can scarcely fail to gain some useful hints as to the needs of the field. The results will show the relative value of fertilizers in the ratio of the crops produced, as well as demonstrate the adaptation of land to given crops.

MIXED GRAIN.—Reader, St. Mary's.—Oats and barley, for the purpose mentioned, should answer well together. In Sweden and Denmark the practice of mixing and sowing them together is common, and in cases of insufficient natural meadows, the product is reckoned an excellent substitute for hay. Of course it is cut when the grain is in milk.

Patrons of Husbandry.

The following new Granges have been organized since our last issue:

- 459. VILLA NORA.—Wm. Ewin, Master, Villa Nora; Ira Stafford, Secretary, Villa Nora.
- 466. TAYLOR.—Thos. Taylor, Master, Inistigo; C. Treadgold, Secretary, Flesherton.
- 461. OAKLAND.—Henry Key, Master, Oakland; Thos. Mills, Secretary, Oakland.
- 462. CLARKMONT.—Wm. Miller, Jr., Master, Claremont; E. M. Pugh, Secretary, Claremont.
- 463. UTICA.—John Orchard, Master, Utica; Hugh Munro, Secretary, Epsom.
- 464. PURPLEVILLE.—D. McMurray, Master, Purpleville; A. Malloy, Secretary, Purpleville.
- 465. OSPREY.—P. Wismer, Master, Foversham; Josiah Gamey, Secretary, Maxwell.
- 466. PROSPECT.—William Ireland, Master, Strathroy; Orin Demery, Secretary, Strathroy.
- 467. QUEEN HILL.—W. J. Taylor, Master, Stayner; J. C. Horner, Secretary, Stayner.
- 468. SUNNIDALE.—George Hawkin, Master, Stayner, Charles Hislop, Secretary, Stayner.
- 469. ABWALA.—Joseph Wright, Master, Koenansville; Matthew Ronan, Secretary, Athlone.
- 470. ROYAL OAK.—Thos. Gillis, Master, Richmond Hill; Henry Newbury, Secretary, Richmond Hill.
- 471. ACTON WEST.—W. Gordon, Master, Acton West; R. B. Campbell, Secretary, Acton West.
- 472. LOVELLY.—Lauchlin Curry, Master, Hartley; Thos. Broomfield, Secretary, Elenam.
- 473. EAST OXFORD.—B. A. Mallins, Master, Burgessville; J. D. Chambers, Secretary, Holbrook.
- 474. CARNEGIE.—A. Catto, Master, Carnegie; John Heniet, Secretary, Carnegie.
- 475. MELROSE.—David Hill, Master, Maxwell; Wm. Hicks, Secretary, Maxwell.
- 476. VICTORIA CORNERS.—James McMurray, Master, Victoria Corners; David Irvine, Secretary, Victoria Corners.
- 477. UXBIDGE.—E. H. Hillborn, Master, Uxbridge; G. B. Miller, Secretary, Uxbridge.
- 478. SMITHFIELD.—Richard Penhall, Master, Smithfield; Jos. Moffatt, Secretary, Smithfield.
- 479. LAKE ROAD.—Wm. Wood, Master, Forest; David Brand, Secretary, Forest.
- 480. YOUNG CANADIAN.—Joseph Irwin, Master, Lynden; Joseph Vansickle, Secretary, Harrisburg.
- 481. DUMFRIES.—John Anderson, Master, Dumfries, N.B.; Henry T. Strange, Secretary, Poquock, N.B.
- 482. FENELLA.—Joseph Jewell, Master, Fenella; Robert Knox, Secretary, Fenella.
- 483. WOODVILLE.—Ira Argue, Master, Woodville; Amos Hawkins, Secretary, Woodville.
- 484. MYRTLE.—M. McTaggart, Master, Myrtle; D. L. Williams, Secretary, Myrtle.
- 485. NEWTONVILLE.—J. R. Reid, Master, Clarke; R. C. Clarke, Secretary, Clarke.
- 486. VALE.—Henry Belford, Master, Codrington; Herman Clarke, Secretary, Codrington.
- 487. EXCELSIOR.—R. Walt, Master, Colborne; M. Dudley, Secretary, Colborne.
- 488. AIRLIE.—John Green, Master, Airlie; Michael Irwin, Secretary, Airlie.
- 489. PONSONBY.—J. Cowie, Master, Ponsonby; J. D. Wallace, Secretary, Ponsonby.
- 490. IVY.—E. A. Morse, Master, Smithville; Isaac A. Meritt, Secretary, Smithville.
- 491. SHANTY BAY.—Alex. Hume, Master, Shanty Bay; A. M. McLane, Secretary, Shanty Bay.
- 492. BROOKLIN.—John Burns, Master, Brooklin; James Burns, Secretary, Brooklin.
- 493. MOUNT HURST.—George Jones, Master, Castleberg; Daniel Maby, Secretary, Castleberg.
- 494. WATER LILY.—Alex. Young, Master, Wellandport; Gavin E. Robertson, Secretary, Wellandport.
- 495. WEST ESSA.—Robert Turnbull, Master, West Essa; J. T. Coburn, Secretary, West Essa.
- 496. COTSWOLD.—John Darroch, Master, Cotswold; Edward Darroch, Secretary, Cotswold.
- 497. COBQUID.—Robt. Putnam, Master, Fort Belcher, N.S.; N. M. King, Secretary, Central Onslow.
- 498. ST. LAWRENCE.—J. Smithson, Master, Graystock; M. Graystock, Secretary, Graystock.
- 499. MATHLANA.—J. Duncan, Master, Porter's Hill; J. Shaw, Secretary, Goderich.

Miscellaneous.

THE EXECUTIVE COMMITTEE of the Dominion Grange will meet in Toronto June 6th, instead of Napance June 13th, as before reported. Parties having business, or matter of any kind to lay before the committee will correspond with the secretary before that time.

W. P. PAGE,
Secretary Dominion Grange.

GRANGE ACCOMMODATION AT THE CENTENNIAL.—The Centennial Encampment Association have fitted up at Philadelphia an immense hotel of 1,200 rooms, capable of accommodating about 4,000 persons. Adjacent to it is an hospital for sick visitors, also under the same management. The cost of board and lodging is to be 50 cents per meal, and \$1 per day for each double bed.

THE HAMILTON *Spectator* says:—It is the opinion of old fishermen that as the city grows larger the number of fish in the bay grows less. They believe that the numerous drains entering into the bay poison, color, and thicken the water to the end that delicate fish cannot remain in it. Twenty years ago the bay swarmed with pickerel, and now not one can be had, and as for bass, they are becoming gradually and beautifully less.

THE ARKONA Union Exhibition Society will hold their Fall Show on Friday, Oct. 6th.

A PARTY of Toronto nimmers is expected to visit the Ashfield pigeon rookery shortly for a few days' sport. It is said a great number of dead pigeons are left to decay in the woods there, and the slaughtering is shameful to see. Ducks are flying in considerable number, but are very shy. —Brussels Post.

THE most magnificent oak ever known to have grown in England was that dug out of Hatfield bog; it was 120 feet in length, 12 feet in diameter at the base, 10 in the middle, and 6 at the smaller end, where broken off; so that the butt for 60 feet squared 7 feet of timber, and 4 for its entire length. £20 were offered for this tree.

ONE little "garden patch" of ours has been very profitable this season. The snails ate up the cucumbers—the chickens ate up the snails—the neighbor's cats ate up the chickens, and we are now in search of something that will eat up the cats! Can any of our agricultural friends aid us.—Ala. Planter. We would suggest a slant-eyed "Heathen Chinee." The article is low at present in the California market.

BEST ANIMAL FOOD.—In a recent work on different foods physiologically considered, the author argues that the best animal food is the flesh of the sheep, and the best vegetable food that of or from wheat. The variety and proportion of the ingredients in a pound of wheaten flour furnish fair evidence of the value of this grain as a general aliment; water, 2 ounces, 106 grains; gluten, 2 ounces, 21 grains; albumen, 126 grains; starch, 8 ounces, 242 grains; sugar, 385 grains; gum, 119 grains; ashes (salts), 112 grains. Ingredients such as these, in the proportions peculiar to wheat, are admirably adapted to maintain the human body in health and vigor.

FATTENING GESE IN STRASBURG.—The celebrated fatterer pies of Strasburgh are made of the livers of geese fattened with great attention. The creature is shut up in a cage but little larger than its body, and is taken out but twice a day, when it is fed with about a quart of crude peas. They are introduced by the finger into the pharynx of the animal, which is thus made to swallow this enormous quantity of food, and then immediately shut up in its cage again. The immediate effect is a remarkable obesity, and an enormous development of the liver which, without any notable change of structure, acquires a triple or quadruple enlargement of volume. These livers weigh from eight to ten ounces, and sell for about four franks each.

A WORD OF CAUTION.—In an article on the question of plant food and the use of special "formula fertilizers" which has taken up considerable space in the agricultural journals of late, the Scientific Farmer gives a little plain advice which all would do well to heed. It says: "We would caution farmers not to rush heedlessly and enthusiastically into large expenditure in this direction, but rather to feel their way by the trial of a few acres only, this year, conforming their practice to rules laid down for their guidance, looking forward to greater profits another year, with larger area of crops, should the present year's experience be satisfying."

IN THE northern part of Russia there is a large district called Archangel, also a port of the same name situated on an inlet of the White Sea, in the district of Archangel. From this place it is supposed the Archangel pigeon originated; it is still common here, but in America it is like an honest politician, rather scarce at present. It is about the size of a common pigeon, but very unlike any other variety of fancy pigeon in color. The head, neck, and the fore part of the back and body are a beautiful copper color, in some specimens almost yellow. The tail, wings, and the hinder part of the body are a bluish black; the change between the two colors does not terminate abruptly, but is gradual. The Archangel has a crest at the back part of the head. It is in reality but a point, as it turns up but slightly. The eye is orange-red, feet unfeathered, and bright red.

BOILED LINSEED OIL FOR PAINTING.—When boiling linseed oil, pieces of toasted bread should be occasionally floated on top of the boiling oil to remove the moisture. Lumps of charcoal will answer the same purpose, and would do for fuel afterward. A furnace should be situated in the open air so as to allow the disagreeable vapor to escape, and should be built in such a way that no smoke or blaze can get to the oil, for if your oil gets smoked it will spoil it in a measure for light colored work. If the blaze can reach the oil, you will run the risk of a fire, as oil at a high temperature will evolve an inflammable gas. With oil prepared in this way, you can do a better and more lasting job, and will find it to wipe out easier and not show so many brush marks. The paint made with it will not crawl if your undercoatings are dry. Your wearing varnish will not strike in any more in one part than another. Do not buy any oil which has been treated with litharge, burnt umber, red oxide of lead or virriol (blue or white), or sugar of lead, or manganese, or any other siccativ. Oil should be boiled in a kettle set in masonry, if practicable. While it is boiling, the oil should be thoroughly stirred to prevent burning. One must exercise much care when the oil first begins to boil that it does not swell and foam over the brim of the kettle. It should not be allowed to wallow. As soon as there are indications of wallowing, remove the kettle from the fire. Oil should boil gently three or four hours.—Practical Farmer.

WOLVES IN FRANCE.—The Journal d'Agriculture says that the annual damage to cattle alone in France from the depredations of wolves reaches a sum of 2,000,000 francs, to say nothing of the loss of sheep from the same cause. It is estimated that there are about 1000 breeding wolves, and that about 2,500 whelps are born in May and June of each year. So that, notwithstanding the fact that about 1,800 wolves are killed annually, there must be at least 2,000 depredate by April of each year. The Journal suggests that the representatives from the ravaged districts pay a little more attention to the interests of those who have elected them, and commends the action of the United States in offering a bounty of \$10 for the scalp of every wildcat killed. Doubtless such a bounty would soon exterminate the wolves, and would also be a national economy, since, according to the foregoing estimates, each wolf in France costs the nation 1,000 francs at least.

REASONING ANIMALS.—No matter how intangible is the proof that dumb animals have reasoning powers, yet no one will deny but that they, and more especially dogs, are possessed of delicate sensibilities and strong feelings of affection. This was strikingly exemplified this morning on Craig St. Our readers no doubt remember the description lately given of two dogs named "Tom" and "Jerry," which, owned by no particular person, wandered about the street together, mutual friends. Poor "Jerry" was poisoned, probably last night, by some unknown person, and laid himself down this morning to die upon the steps of No. 615 Craig street, seeming to suffer great agony. "Tom" appeared to understand that "Jerry" was ill, and whining most piteously, remained watching his mate till he died. When "Tom" saw that his companion no longer moved, he left him, only to return with a bone, which he offered him. It was a sad sight indeed. "Tom" kept running back and forth and by rubbing himself against the legs of the passers-by and looking up into their faces, tried every way in his power to draw their attention to his departed mate. Many persons were much moved by this remarkable exhibition of affection in a dumb brute. Poor lonely "Tom" will probably have the sympathy of our readers.—Montreal Witness.

Late Rev. Dr. Clarke wrote Mr. Fellows.

While I was under the process of Erysipelas the Hon. Dr. called upon me; I told him how much of the Hypo. I had used. He said "Fellows' Hypophosphites is a good medicine, an excellent tonic, and no doubt had drawn the acidity that was in my blood to the surface, and thus prevented it from attacking some important organ of my system."

I have conversed with many who have used it, and all say they were benefitted by it.

For myself, I have much pleasure in saying it improved my general health amazingly. It gives a clear skin and healthy countenance, but to know its virtues it must be used, and were it within the reach of all classes, I believe it would be used universally, yes, by the well, to renew their age, and by the sick to make them well.

It makes an old person look ten years younger. "This witness is true." Would that I could more widely make it known for its many virtues. Long may its inventor live to see the happy fruits of his invention.

ALEXANDER CLARKE, D. D., Amherst, N. S.

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