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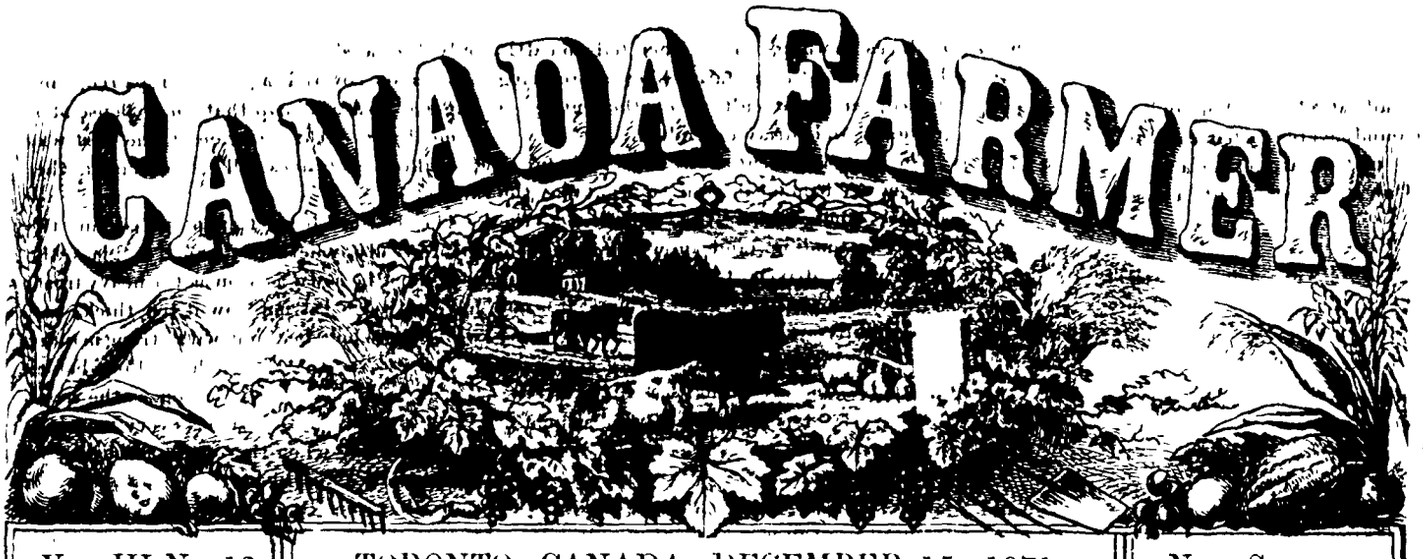
THE

CANADA FARMER



VOL. III. No. 12. | TORONTO, CANADA, DECEMBER 15 1871. | NEW SERIES.

The Field.

Fences.

If we should attempt to gather together, and condense in an editorial article, an account of all the various plans and fashions upon which Canadian fences have been made, we should leave little space for other matter. We, however, would call the attention of our readers, at this appropriate season, to the immense advantage of having secure and lasting fences; and we write this article more with a wish to call forth the opinions of the farming community upon various fences that may have come under their observation, than with the hope of advancing anything new in this line.

Rail timber and lumber are becoming scarce, and it has long been hinted that we must turn to some other material

We have no practical experience of wire ourselves; we wish some one would kindly give us their experience in this material for fencing purposes.

Live fences are a puzzle to Canadian horticulturists. Our climate seems to taboo, from one reason or another, the use of nearly all hedges. We have had the benefit of many practical and excellent letters upon this point; but the subject seems to have made little impression upon the agricultural public, and, we hardly think that this style of fencing will be generally enquired into until the supply of wood be very much more exhausted.

Rail Fences.—The old-fashioned snake fence, with slanting stakes and riders, is, we think, pretty generally disused in the more civilized sections. Its great fault is waste of land; next to it comes the straight-rail fence held by upright stakes driven in the ground, and drawn together by a wire at the top—a good fence, but easily moved by the wind, as any force exerted horizontally on the upper part of a panel has an immense leverage upon the stakes, which are in consequence very apt to break off a few inches from the ground.

We would suggest an improvement; we do not know that it is patented; at any rate we have used it without the payment for a right.

Pass short slanting stakes across one another under the second rail, and resting upon the third, and sink them in the ground. These prevent the plough passing quite as close to the fence as it otherwise would, but they are beneficial in two ways; they brace the fence against lateral pressure, such as exerted by the wind, and they relieve the wires of some of the weight of the riders.

At this moment we observe a horse with his head through a fence endeavouring to reach our cabbages. Our boy throws a stone, the head is withdrawn rapidly, and only the providential fact that the rail was smooth prevented a large piece of skin being knocked off the animal's head. This is one of the great troubles in rail fences, making the gaps at the top so small that animals cannot insert their heads.

It is said that if a man can insert his head his whole body may be squeezed through any aperture, and upon the strength of this statement (a statement we don't undertake to prove) may be founded another; that if an animal, from a pig to a bull, can put his head between the rails of a fence, he will find means to get the remainder of his body through.

There are other rail fences, mostly patented, but we do not think much of them generally. A friend of ours, residing at Ancaster, has one round his whole farm, which we were at first inclined to think ill of, but which has now stood the test of wind and weather securely for eight years, and appears to have an equal number of years before it. It is patented by one Jas Fleming, of Toronto It is a straight railed fence, with upright stakes. These stakes are rounded at the bottom, and each is let into an auger hole in a block of cedar about six inches thick and two feet long, which is let a few inches into the ground transversely of the fence; the stakes are held together by a bolt passing through both at the top and through two 2 x 4 scantlings, which overlapping one another at the ends, and thus being secured by this bolt, form each the rider of a panel.

We have seen several panels of this fence blown down, but it was by the same wind that scattered many miles of ordinary fencing in the same section, and it was placed upon its feet (we use the word advisedly) bodily, being unbroken

It is pig-proof but it has one fault, the rails are apt to settle and leave great gaps between the upper rail and the scantling; but this gap is not so objectionable as in other fences, because, supposing an animal to put his head through, he cannot throw off the rider, as it is securely bolted to the stakes. We think it an expensive rail fence, but it is very lasting, and no frost can influence it

We are at the end of our review of rail fences, and shall take up in our next—board, picket, and the various ways of fencing with lumber, with or without posts set in the ground.

In the meantime, we earnestly solicit opinions upon the various forms of fencing by practical farmers, as now is a time a portion of which can be devoted with advantage to fencing purposes.

No. II.

We now come to a consideration of all sorts of fencing made of lumber, and we would here state generally that when rails or lumber have to be respectively bought, we consider that almost any kind of lumber fence, taking into consideration durability and neatness, is far cheaper than any rail fence, and we know of none so expensive now-a-days as the old snake rail fence.

We would here compare the cost of these various fences:

If we take a fence made of eight rails twelve feet long, with a snake of four feet, it will take a rail to a foot of length of fence,

and will cover a breadth of five feet more ground than a straight fence.

12 rails at $25 per thousand.....	30 cents.
Ground covered by fence and stakes, 60 feet, at $59 per acre.....	68 "
2 Oak stakes at 2 cents a piece.....	4 "
	$1 02

Making this fence worth $1 02 per 12 feet.

Now a straight rail fence. Twelve feet will take:

8 Rails at $25 per thousand.	20 cents.
2 Oak stakes.....	4 "
Wire	4 "
	28 cents.

Making this fence worth 28 cents per 12 feet.

Next let us estimate the cost of a board fence, four feet six in height, with cedar posts six feet apart, and with four boards respectively six inches, six inches, nine inches, and twelve inches wide; also, a copeing board and vertical boards covering the joints of those nailed horizontally.

Two posts at 5 cents apiece.....	10 cents.
54 feet of inch lumber, at $10 per 1,000	54 "
Nails	10 "
	74 cents.

Making this fence worth 74 cents per 12 feet.

We take it that the work put upon the board fence is no more expensive than that upon the rails, for although it is greater in the erection, yet it has not to be renewed like that put upon a rail fence.

Lastly, for the cost of a picket fence four feet six inches in height, with two scantlings two by three, pickets three inches wide, and spaces four inches wide, cedar posts six feet apart, and a bottom board a foot wide.

2 Posts	10 cents.
20 Pickets (3 feet 6 in. by 3 in.) make 17 feet of lumber at $12 per 1,000	20 "
2 Scantling (2 in. x 3 in. x 12 feet), 12 feet of lumber at $10 per 1,000 ...	12 "
Inch bottom board (12 x 1 feet).	10 "
Nails and spikes.....	12 "
	64 cents.

Making this fence worth 64 cents per 12 feet.

We shall have something to say in another article on some patent fences that have come under our notice.

Turnip Culture—Transplanting.

The importance which the question of turnip culture yearly assumes, cannot be over-estimated, and we cannot urge it too strongly or too often on our readers. So long as persons believed that the profits of turnip growing were to be found in the second o third crop from the time of their being planted, the expense formed an excuse, and such people supposed they could not afford to wait for a return so long; but now that it is seen that the turnip crop, where well grown, is the crop of the year, and that it produces more per acre when fed to cattle than the wheat crop, farmers' eyes are being opened, and the culture of the turnip is gradually and surely extending.

The best argument, however, in favour of this most beneficial crop is, that in the centres from which the culture of the root is extending (and in which the farmers were driven to the growth of it by sheer necessity), the farmers are not only rapidly growing rich, but at the same time their farms are wonderfully improved in fertility, and are losing that dirty, weedy, and poverty-stricken appearance, which is too often so disgraceful a feature of ordinary Canadian farming.

The great objection that used to be raised against this crop was the cost of cultivation. Farmers insisted not only that they themselves had no time to devote to it, but that from the high price of labour hired help could not be profitably applied. All this is now cast to the winds. Our friends in the Wellington district have shown that, with the help of fall manuring, the roller, drill and horse-hoe, turnip culture can be most profitably carried on, and that at not a greater cost per acre than other crops yielding as good a return, especially when the lasting benefits to the land are considered.

Even our Guelph friends, however, the writer is well assured, have not yet attained full excellence in the growth of this most useful crop, and they will not do so until a considerable portion of it is raised from transplanted plants. In urging this, the writer is not speaking theoretically, but from the result of actual practice with his own hands; and were the writer again to farm practically, at least one-third of his turnip crop would be raised in this manner. The success of the operation entirely depends on the method adopted. The plants must be raised in a bed of the lightest sand, with good rotten dung worked well through it, until about one-fourth of the mass is composed of light rotten vegetable matter. This must not be merely *dug under*, but the whole mass of the bed must be turned backwards and forwards until the mixture is complete and absolute, and the soil so made, if it is not fine enough otherwise, must be sifted. Once made, and made right, and it will last for ever, with only a slight renewal yearly of fresh sand and old rotted manure. This bed ought to be on the south side of some building, where it can have the full benefit of the sun, from its rising until late in the afternoon. The ground on which it is made ought to be raised at least one foot, so as to ensure dryness, and the bed of sand must be kept in its place by two-inch planks, made into a frame, and surrounding the whole. For those who can afford it, glass sashes ought to be had to cover the frame (like a hot-bed) at night, and in frosty days. Those who cannot afford glass can make sash-lights covered with oiled paper, and they will do just as well, although, of course, they will only last a short time; but the frames can always be covered again or repaired, and paper is now so cheap that the expense of it is no object. A description of the best way to make these frames will be found in another article.

The seed-bed being thus prepared, and the sashes ready, whether of paper or glass, the seed must be sown as soon as the heavy frosts have passed. Do not sow it too thick, and water the whole bed first with strong manure water. Give it a thorough soaking before the seeds are planted. As soon as the seeds come up, take off the sashes every morning, and every day when there is no frost, and in all sunshiny days, even though frosty, raise the sashes so as to give thorough ventilation. If the plants come up too thick, thin them out while in the seed leaf without mercy or hesitation. The thinner they stand in the bed the finer they will be; but at the same time you must take care to have enough. As the seed-bed is of such a porous nature, the plants must be watered every second day at furthest.

Keep the frames so ventilated, and the plants so exposed to the air, that they will be stocky, strong, and hardy, so that they will not go back on removal and transplantation. While these plants are growing, the early turnip ground is in preparation; it must have been thoroughly well ploughed and manured in the fall of the season previous, and in the spring it should be ploughed again, but not ridged. In light, friable land, a good deep scuffling with the grubber or gang plough will be sufficient. Leave the surface, however, as rough as possible, until planting time comes.

When the plants are large enough to set out, and they may be quite large, the land must again be gone over with the gang plough or scarifier, and well harrowed down to a fine and level surface; then take a marker and go over the land, marking it into rows of the width at which you want your turnips; but bear in mind that each day's planting must have the ground moved for it that day; so do not go further each day than you can plant.

The work of transplantation must proceed thus: Water the seed bed well the first thing, and let the moisture penetrate for half an hour; then take up the plants, taking especial care not to break off any of the fibres or main roots; put the plants in baskets, the roots all one way, so that they can be readily taken out by the hand and dropped. The planting goes on thus: If children are to be had, they can drop the plants as well as any one. The transplanter has a proper setting stick; the handle of an old spade is best, but a crutch-headed stick will do well; he makes the hole, takes the plant dropped for him; buries the root carefully, making sure that the tap root shall go the full depth of its length; then he puts the earth well about the plant with the stick, pressing it well together round the root; then

measure off the length of his stick in the row, (the stick should be the right length for the distance of the turnips in the row), and after the first row he should also take care that his plants are in row the other way; because if this is well done, the crop can be entirely horse-hoed, and will never require an hour's work with the hand-hoe. The true sign that a transplanted plant is well set is when on being pulled with the finger and thumb by the top of a leaf, a small piece of the leaf will break away rather than pull up the plant.

In this way, when the people get expert, a very large extent of ground may be got over in one day, and it certainly costs no more in labour to transplant than our hand-hoeing and singling does.

In this way your crop is earlier, safer, and more economically raised, than in the ordinary manner. You never need dread the fly, for the turnips are safe from it before they go out. If the fly attacks them in the seed-bed, they are within your control to destroy the invaders with a sprinkling of soot, ashes, or a fine dusting of lime, or in any other of the many ways that are effectual. Every one knows how to destroy the fly; but the expense of dressing the rows of plants in the field is so serious an objection that it often has to be abandoned. If you fear the black grub in the field, put your plants so thick in the row that you can afford to lose some. But this is a bad plan, as it necessitates the taking out with hoe or hand these surplus plants. Where summer feed, however, is very scarce, these extra plants might be allowed to grow to a good size, and then removed, and thus form a valuable assistance to the more delicate of the stock.

The opinions as to the best distance for the turnips in the row are various, but the distance between the rows must be such that the horse-hoe and cultivator can be freely used. Any man with a tolerably correct eye can, when setting the plants, keep them so regularly in row the other way that a horse-hoe is available both ways, and when this is properly done, the expense of after hand work is so greatly reduced as to render it a matter of small moment. The writer has seen a field of six acres of cabbage so planted as to be in row every way

The writer has not only worked out this kind of transplanting most extensively with his own hands, but he has lived for many years amongst the great market gardens of England, where the raising of cabbages, cauliflower, broccoli, and other transplanted crops, are the great staples, and where planting of this kind is carried to the utmost with speed and perfectness, and he does not hesitate to say that Swedish turnips can be raised in this way as cheaply, if not cheaper, than in the ordinary manner, and the crop, when grown, will be far more perfectly grown, and afford a much greater weight per acre.

Now, look at the advantages. Your crop is from two to three months earlier; you are safe from the fly; you save singling and hand-hoeing; if required, you raise by the intermediate plants a large amount of green stuff for your summer feed (only in this case you lose the benefit of horse-hoeing across), and you are safe from drought; for let the weather be as dry as it may, it will not hurt a Swede turnip when once it has a good hold on the ground; and finally, at the end of the season, you have a far heavier crop than you can in any other way expect.

It may be said that transplanting cannot be so good as sowing, or it would be more practised. In reply, on reference to "Arthur Young's Farmers' Calendar," it will be seen that in those days (1814) the farm cabbage crop was entirely raised by sowing the seed in drills and hoeing out the surplus plants, thus cultivating the field cabbage as we now cultivate the Swedish turnip; but that plan has been entirely exploded, and transplantation substituted; and to those who have seen the thousands of acres of cabbages grown in Great Britain, both for market garden and field culture, the matter will not be in doubt for one moment. On one piece of land in England, where the old original Swede turnip was transplanted, and where the writer helped to do all the work, the turnips at the time of harvesting averaged such a monstrous size that the size alone was made an objection to them. Certainly, the crop "per acre" was double in quantity of any other seed not transplanted he has ever seen.

To those who value the crop, who want a portion of it earlier than usual, and whose minds are sufficiently enquiring and ingenious to be above prejudice, we say—"try it."

VECTIS

Talk with Farmers.

PARSLEY FOR SHEEP.

Some time since I met with an old friend from Whitchurch; he was an Englishman, one of that numerous class who came into this country labourers, and now form a large portion of our most independent and estimable farmers—men who are not above their business, who don't trouble themselves overmuch with politics, and whom the remembrance of adversity and privation formerly endured, keeps frugal and industrious. He had a large parcel of very strong-smelling seed with him, some eight or ten pounds This excited my curiosity, and the following dialogue occurred:

"What seed have you there? I should think it was parsley or celery seed from the smell, only I never saw so much in any one man's hands, unless he was a seedsman"

"You are right," he said, "it is parsley."

"Will you allow me to ask what you are going to do with it?"

"Yes, by all means. I always raise a great deal of parsley seed every year, usually about a quarter of an acre; and this year my cattle and sheep broke into the patch and destroyed the whole of it, and this is to replace it."

"But what do you do with the parsley? You are too far from Toronto market to sell it, and I am quite sure you could find no sale for it where you live."

"I never sell it," he replied. "I sow parsley all through my grass land, and never lay down any land to clover in the spring, but I sow parsley with it. It is the best food for sheep there is, keeps them healthy, and fattens them with wonderful rapidity. Of course I don't sow enough to smother the grass; but I take care there is some all through it, and the sheep will find it out, and never leave a bit if they can help it The cows and cattle are also very fond of it, but it is the fittest for sheep, as it does them the most good."

"Don't you find it very expensive to purchase the seed?"

"I should," he said, "if I purchased it; but I always make it a point to raise my own, and it bears a great deal of seed for the ground sown"

"How long does the parsley last in the ground?"

"If it was not fed off so closely," he replied, "it would only last the second year; but as the sheep and cattle never give it a chance to seed at all, I find that it lasts three years, or as long as I ever leave clover down without ploughing"

"Does feeding parsley to sheep and cattle produce no ill effects? I think I have heard that it hooves them easily"

"Yes, it does, where they can get too much of it at once, and that is the reason I am so careful to scatter it widely over the land. The sheep are so fond of it that they would eat till they burst if they were in a pasture of it; and when the stock broke into my seed patch I thought I should have lost several, but I get them over it with a good deal of trouble. The only thing to be guarded against is to keep the breeding ewes from getting too much. They fatten so fast that it stops their breeding, which is of course a loss. But I am careful to keep the breeding ewes off it as much as I can. It does well for lambs, however, and for wethers and fattening ewes nothing is equal to it. I find that it does better than grain It also produces heavy fleeces of wool; but of course what produces fat produces wool." and then my friend walked off with his parsley seed.

Now, I give the foregoing as it passed. never saw sheep or cattle fed with parsley, and I had not the least idea that it had any special virtue for them, but my friend was enthusiastic on it, and I have no doubt that he spoke according to his actual experience. I know that he made money rapidly off his farm.

I have never seen this plant recommended in any work on farming as a pasturage plant, but on land that it likes it bears a considerable amount per acre, and stands the winter well. I should rather think, however, that it must be looked on as more of "a condiment" than as an article of food proper; at all events, a trial can do no harm.

Another plant now much neglected for pasture is the chicory. This is constantly spoken of and recommended in "Arthur Young's Husbandry," as a forage plant to be sown amongst grass, and we all know it is most greedily eaten by cattle and hogs; the root, too, being a very deep feeder, brings up the elements of fertility from the subsoil, and being of a very succulent and sweet nature, must form a most valuable manure when ploughed into the soil on breaking up the pasture on which it had been sown. In this respect also parsley must be excellent; it is a tap-rooted plant, and sticks deep into the subsoil. Arthur Young does not say what kind of chicory he sows, and no doubt the plant in his day was not so far improved in the size of its roots as it now is, when the quantity of it used is so enormous, and is at all events equal to one-third, if not half of all the coffee consumed by the public. For many years the struggle of the chicory grower has been to produce large and long roots, yielding the greatest amount possible per acre. These, when dug, cut and dried on a kiln, are worth £20 (or $80) per ton, and find a ready sale at that price

VECTIS.

Burnt Land.

To the Editor.

SIR,—Having lately noticed some articles in the FARMER respecting burnt land, I offer what little experience I have had for the benefit of those who, like myself, have had their standing timber destroyed by those destructive fires which sometimes occur in our Canadian forests. The recommendation to sow barley for a first crop I have no doubt is good, when any black soil is left; but when nothing remains but the hard clay loam, I should be unwilling to try it, as such soils retain the water too long in the spring, and when the hot weather sets in the soil becomes baked hard, and cracked in every direction, and unless the barley had time to cover the ground well, the crop would hardly be worth harvesting.

The first piece of such land I cleared was ploughed in the fall and sown the next year with spring wheat, but although the spring was favourable, the crop was not worth much. The stubble was ploughed in the fall, and sown the next spring with peas at the rate of three bushels to the acre. The summer proved showery, and the pea stalks grew to a length of eight or nine feet, and were heavily podded; the weeds were completely smothered, and the soil mellowed, so that it was much easier to plough. The next piece I sowed with fall wheat, ploughing the ground as soon as I could get it cleared, and sowed early red clover, very early in the spring. The clover took well, and it would have been better to have ploughed it in last year, but, as is frequently the case on bush farms, I had not sufficient meadow, so I cut it for hay, and in September tried to plough in the after-grass, then over a foot high, but the ground was so hard I had to desist, and cut the after-grass for fodder. In November, when the ground was soft enough to admit of being ploughed about four inches deep, the clover was about six inches high, and I found the clover roots had penetrated the hard pan about 6 or 8 inches. This year I sowed peas, but owing to the extraordinary drought the straw was very short but well podded, and the pods well filled. In 1869 I had a ten acre field cleared and sown with the Treadwell fall wheat, and in the following spring I sowed early red clover at the rate of 12 lbs. to the acre. In some places two ploughings could not go more than two inches deep, and in those places the wheat was winter killed, but the greater part came on well, and I had a fair crop. The clover took well except on the hard places, and these I harrowed after harvest, and sowed clover again, and this year, in spite of the drought, I had a fair crop of clover hay. Last fall I cleared another field, and sowed the Treadwell wheat at the rate of two bushels to the acre. Scarcely any was killed, and though the crop is of course not so good as on unburnt land, yet the grain is an excellent sample, and weighs much heavier than last year; but as the clover sown last spring failed, I have ploughed in the stubble for peas next year, and in future shall sow such ground first with fall wheat and clover, then peas, followed by fall wheat, with clover again.

SARAWAK.

Dissolving Bones.

To the Editor.

SIR,—I beg to submit to you a few hints on the decomposing of bones, for the guidance of those of your readers who may be unacquainted with the process.

In the old country, where bone manure is extensively used, various plans have been adopted to secure their ready decomposition. But to chemistry the practical farmer is chiefly indebted for that method of effecting their decomposition which has of late years been adopted, with the most signal success. To Baron Liebig the agriculturist owes a deep debt of gratitude for the service he has done the agricultural world in pointing out the benefits which science is capable of rendering to the farmer. He says, in his report on the Chemistry of Agriculture: "The most easy and practical method of effecting the division of bones is to pour over them half their weight of sulphuric acid, diluted with three or four parts of water, and after they have been digested for some time, to add about one hundred parts of water, and to sprinkle the mixture before the plough. In a few seconds the free acids unite with the gases contained in the earth, and a neutral salt is formed in a state of very fine division."

But the difficulty of applying liquid manure suggested other methods, which are now generally adopted. It is found that by mixing the liquid with dry saw-dust, or even dry earth, it is converted into a form more conveniently used by farmers.

The following method for the preparation of bones can be recommended:

The bones to be used should be broken as small as possible; they cannot be too small as the smaller the pieces the greater the surface presented to the action of the acid, and consequently the more rapid and perfect will be the solution. Having broken the bones into pieces from one to two inches in length, place them in a large cask or sugar hogshead, add a quantity of water sufficient to moisten the bones, and allow them to soak in it for three or four hours before adding the acid; if the water be boiling, so much the better; then add the acid, and stir it well with the bones. Sulphuric acid is the acid most commonly used; its specific gravity from the manufactory ought to be 1.845; it should be kept in closed vessels, as it attracts moisture rapidly from the atmosphere, and becomes weaker. When strong acid is added to water, a considerable amount of heat is produced. If we mix vitriol and water in the proportion of 5 lbs. of acid to 2 lbs. water, the temperature will rise to 266 degrees.

The proportion of acid to be used in making vitriolized bone manure is *one hundred* weight of acid for every *two hundred* weight of bones, and the proportion of water should be fully three times that of the acid. The water must be applied first to the bones, afterwards the acid. The reason of this is, that when undiluted sulphuric acid is poured upon the bones, violent action ensues, but continues only for a short time, as a coating of gypsum, which is the first new compound formed, covers the surface of the crushed bones with a crust, which prevents the acid from coming in contact with the unaltered portions, and consequently preventing a perfect solution. But by applying the water first, and afterwards adding the acid, the action is complete.

A. GORDON.

Fitzroy, Co. Carleton, Nov. 11.

Wild Oats.

At this season nothing is more advisable about a barn than to carefully guard against the distribution of wild oats. They are propagated and distributed in every possible and conceivable manner. A horse or an ox may eat them, and they will grow afterwards nevertheless. These pests never die of themselves. They will bear an excellent crop of seed when only four inches high above the ground; that is, after being cut at harvest. The young plants throwing off shoots and sprouts again the same fall, they will even then mature good seed. Wild oats will remain ungerminated underground upwards of ten years without decaying in the least; and a certain meadow on our farm, if ploughed up now, would bear as good a crop as it ever did. It has lain eleven years in grass, and not one oat has been seen for more than eight years, except where a heap of rails or haystack bottom happens to be built; then, next year, "presto," up comes the wild oats again, as thick as ever, directly the sod is killed from any cause. The most fruitful sources of distribution are the thrashing machines. The beards of the oats are furnished with hooks and hairs, so arranged by nature that the grain, many people absolutely declare, will travel forward itself, and adhere to everything it touches; certainly it will do so if moved a little from any cause; so there cannot be two opinions about wild oats, and unceasing efforts should certainly be made to collect every grain and burn them. Do not even grind them. Boiling will do for them, I believe, provided they are absolutely boiled for some time; but it often happens they are only subjected to steeping in water, not boiling, and under this treatment they thrive all the better. It looks like extravagance to burn 10 or 20 bushels of oats, and I have often seen as many obtained from one fall's thrashing, where the land has been badly infested, but it is the best and cheapest policy to do so at once and effectually.

There are many ways said to lessen their production, and some to kill them, but it is very difficult to do so under any circumstances; still, it can be done, and effectually also, as shall proceed to show in a future paper on the subject. At present we have more particularly to do with prevention than cure, this being the season best adapted for that precaution.

C.

Stock Department.

Summer Feed and Winter Fodder for Cattle.

The experience of the past season ought to have shown our farmers that some extra exertion is necessary to provide both summer green food and winter fodder for their cattle. The sufferings of the cattle during the last drought have been very great, and the loss to the farmer in an equal ratio; and for future seasons this should be guarded against. In this respect Australia is a most useful example, for although they have not to endure the severities of our winter, they have a season in which dried food must be provided. The climate admits of but very little grass being cut for hay, and as a substitute they use most extensively green oats, mown just as they are coming into flower, and then cured as hay. This yields on all good land a very heavy crop, as much or more weight per acre than can be obtained here from our best grass fields. It is excellent, hearty food, and nothing better can be had either for horses or other stock. The Australian riding horses are perhaps worked as hard as any saddle horses in the world, and the dried oat hay is found excellent for them, and not at all injurious to speed or wind.

In Canada we have not been in the habit of using such a substitute, but have been content to cut one ton or even half a ton an acre from our dried-up meadows, and make the necessities of our cattle correspond with the amount of feed we may have for them. Oats cut and cured in the Australian method, as they will not have formed their seeds, are a crop very little exhaustive of land, and from being cut before the weed seeds have time to ripen, would be an excellent clearing crop, and, if sown early, could be followed by fall wheat, for which the stubble and weeds ploughed in would form an excellent preparation. But the generality of our Canadian farmers would not have "pluck" enough, if they saw the probability of a good crop of oats, to cut them green for hay, even if they could by so doing secure clean land and a good preparation for fall wheat. As a body, our farmers never can be persuaded to look two years ahead.

What is a far better crop than oats both for soiling during the summer and fodder for the winter, is "Indian corn" sown broadcast, or in drills, to be cut for feed as soon as high enough, and the remainder to be cured for winter. It is true that it is a very troublesome crop to cure, but it stands out of doors for a long time, and endures exposure to bad weather without injury; and if required to be moved from the ground where it was grown, cures well when the tops are twisted together, and stood out wide at the bottom in the form of shooks, or what is still better, stood up against fences, where it would not be exposed to the attacks of cattle. It would pay well to prepare a place on purpose for it, by putting a single rail, about three or four feet high, with supports let into the ground so as to keep all firm, and then standing up the curing stalks on both sides of it, twisting the tops together here and there to prevent its being blown down. An acre or two of land thus prepared would form an excellent curing ground, and would save the produce of ten or fifteen acres of land in the manner spoken of. Corn stalks and leaves thus treated would, before winter, get dry enough to store away in stacks; or, if there was any doubt on the subject, the stack, if built with the stalks crossed, and quite open, would, if precautions were taken with the foundation, form excellent ventilation, and thus prevent heating or moulding.

There is no better preparation for a subsequent crop than corn grown in this way. The crop is a smothering one, and keeps down all weeds. It is not at all exhaustive to the land. The stumps and roots, when ploughed under, form an excellent dressing. Wherever Indian corn has been grown and the roots ploughed under, they soon decay, and form the cheapest manure that can be had, and whilst it is cheap it is also excellent.

What a different position a farmer would hold with his cattle in the spring if he had ten acres of such fodder as this dried corn would be, rather than have them starving over the small modicum of hay which can be spared from the horses, and the straw which must also be served out to them with a most niggard hand.

In the central portion of Canada, where the rock approaches so near the surface of the soil as to cause the meadows and pastures to dry up more than they do with those in the West, large quantities of corn are grown in this way, and with most excellent effect. Indeed, absolute necessity has driven the people to this course, and now they find their account in it. The green food is found to be most excellent for cheese factory cows, and the dried feed is the very best and most hearty winter fodder possible.

In our Western cheese dairies about the township of Windham, Burford, Norwich, and Townsend, large quantities are sown for summer feed, and it is found most effective and excellent, but we have not yet heard of its being extensively used as winter fodder there. They must come to it, however. They now find that their cows must be kept over the winter, and that when they get a good class of animals, it is better to be at the expense of wintering them than to sell in the fall and buy in the spring, as they used to do. The condition of the cows must be also carefully attended to, and kept up if success is to be secured, for the following season; and nothing is better for all these purposes than Indian corn cured stalks in the manner proposed.

In speaking of the fall care of stock, the *Maryland Farmer* justly remarks: "Cows, and especially young stock, if well wintered, may be considered half summered; and it is equally true that if, at the close of the growing season, they go into winter quarters in good condition, they may be called half wintered." The farmers know that late fall grass, however abundant it may be, contains a small modicum of nutriment compared with that of summer and spring. Hence, not much confidence must be placed in it as a sustainer of cattle.

Chloralum for the Farmer.

The *Irish Farmers' Gazette* thus discourses on the application of chloralum in the stables.

The new disinfecting agent introduced by Prof. Gamgee has been lately tried with great success at the Royal Zoological Gardens, Phœnix Park, Dublin. The visitors to those interesting gardens, whilst much interested, amused and instructed by what they see, are by no means gratified by what they smell. The grotesque movements of the simian items of the Zoological Society's collection afford intense amusement to the juvenile visitors to the gardens; but the "villainous smells" which pervade the atmosphere of the "monkey houses," both "new and old," are eminently calculated to facilitate the visitor's departure from the abodes of the monkey and the baboon. The dens of the foxes, too, are just as bad as the cages of the monkeys, and indeed all the places where the carnivores are confined are more or less offensive to the olfactory nerves.

The authorities of the Zoological Gardens have tried all sorts of disinfecting agents that would not be likely to act injuriously upon the health of the animals; but they have not proved successful. Carbolic acid certainly appears to have mastered the disagreeable odour, but its own odour was almost as objectionable. We now learn that a solution of chlolarum has been used to keep the air of the foxes' dens sweet, and the result has been in every respect most satisfactory. We have no doubt chlolarum would prove a most effectual preservative of sewage and other manure, fixing their ammonia and preventing gaseous exhalations. A panful of it placed in every dairy would keep the air of it perfectly sweet. It is well known that the slightest taint in the atmosphere of the dairy is most injurious; and a gust of foul air from a drain has often spoiled the product of a whole churning.

We would also recommend the free use of chloralum in the stables and feeding houses. The close air of these places often acts most injuriously upon the health of the animals of the farm. Very little attention is usually given to the preservation of the health of the lower animals. They are permitted to drink the most polluted kinds of water and to breathe the most vitiated air. A little attention bestowed upon the hygiene of the farm animals would be amply repaid by their greater freedom from disease and their greater readiness to fatten. As a sanitary agent on the farm it possesses great advantage over other disinfecting and preservative agents. It is perfectly odourless, possesses only a slight alum-like flavour, and is as harmless as common salt to the higher animals. There is little doubt as to the probability of this valuable disinfecting agent coming into general use in these countries.

Effects of Exposure and Stint on Stock.

The most mistaken thing in the management of stock on any farm is to allow horses or colts to be exposed to autumn or winter storms, especially if fed only on what they can catch about the farm. Such treatment takes more out of a horse, and depreciates him faster, than the hardest work accompanied by good food and warm shelter.

Wild horses will certainly bear a great deal of exposure, and are often cited as an instance of hardihood and power of endurance under such severe trials. But it would be just as wise to quote the hardihood of wild buffalo cows in contrast with that of our dairy stock, as to make the same comparison between wild and domestic horses. Both are too absurd to be admitted as any arguments in favour of the neglect and exposure of domestic stock. There are a thousand reasons why wild animals are able to bear exposure and hardship without depreciation, and not one that will apply to any of our farm stock, so as to show that any benefit could result from such treatment. If you want to break a horse's wind, or give him the heaves, expose him in a strongly fenced, poor pasture field, to a three days pitiless November rain storm, and the probability is the animal will never again be what he was before it. Two or three moderate exposures to autumn rain and snow storms, will probably sometimes be borne by strong animals without much apparent injury; but the seeds of disease are sown, and will be certain to appear when aggravated by other casualties, or a renewal of the same cause.

These observations apply (although in a less degree) to colts. It is true, they naturally have been somewhat more exposed than working teams, and habit from the first becomes second nature; and then they have youth on their side, and have never done any work; but even with them such treatment soon shows its ill effects: they soon appear with staring hair, hide-bound, drum belly (arising from weakened digestion caused by exposure), cold, cough, strangles, or something very like, and more dangerous, and other injuries not noticed at the time so much, but which tell in later life, and render the colt what is called "soft"—a condition which is, in nineteen times out of twenty, some phase of ill health.

To have horses generally in good condition, under severe labour, they must have been accustomed to have been always fat and healthy—in fact, so kept that to be in good hard healthy condition is their normal state. If, on the contrary, it has previously been their natural condition to be the very opposite to what is wanted in a good working horse, how can we expect them to become what we most require all at once, when we have done our best hitherto to produce the very opposite results? It would be just as absurd to expect a horse with such previous treatment, to keep fat under hard labour, (even if afterwards accompanied by plenty of food and care), as to expect a Blackamoor to grow white. We have done our best to make such a change the unnatural condition instead of the natural one. A growing hog shows an instance of this inclination to keep in the state under which nature was warped by commencement of bad treatment, more than any other animal.

If you want to dwarf an oak tree, you expose it to want and hardship, and in the process just feed the roots enough to sustain life, and after a few years you have so perfectly succeeded that you have an oak tree perfect in all respects, only probably not more than a foot high. The Chinese understand this process so well, that many gardens and places of pleasure are ornamented with plantations of such dwarf beauties, which, under more favourable auspices, would have grown in the same time thirty feet high; many of these dwarfed nurseries being fifty to one hundred years old; and moreover, after some generations of seed borne under such treatment, the dwarf habit becomes permanent. The same principle applies as correctly with a kitten, a puppy, or bantam fowl. Only follow the same rule, and the result is the same. Of course, necessity for the opposite mode of treatment applies more forcibly to the horse, as we expect him to work, whereas the others are only wanted to exist.

C.

Shepherd Dogs.

We were asked, not long since, by a beginner in sheep husbandry, how many dogs a man would need to properly herd a thousand sheep, and noted his astonishment when we answered, None! This was afterward qualified by explaining that so far as the good of the sheep was concerned, they, as a rule, needed no dog; and that even a fairly trained dog, in the hands of any other than a man who thoroughly understands the business, is, nineteen times in twenty, a source of absolute injury.

There are numerous occasions, when in the handling of a flock of sheep the services of a well-trained dog are valuable; but such occasions occur more rarely upon the range than on the farm or the highway. Where the flock is folded at night, as is mostly always necessary, they will, after a few days, pass in and out of the fold, night and morning, without any other urging than the call of the shepherd, and without the injury that almost invariably results from the crowding and trampling of the lambs and weaker animals when hurried in by a dog.

And as sheep are rarely disposed to leave a range to which they are accustomed, nothing more than the quiet walk of the shepherd, beyond the outer edge of the flock while feeding, will be needed to keep them within bounds, and turn their heads toward home at sunset. Only upon the approach of another flock, when rapid wheeling or turning is necessary to avoid some more serious occurrence, should the dog be sent around the flock at a faster pace than the shepherd could make.

If we had a shepherd who knew how and when a dog should be used, and one we could trust to only use it at such times, we would let him take a well trained dog to the range, but if the man was ignorant or lazy, we should expect him to yield to the temptation to use the dog's legs instead of his own, and would keep our dog at home.—*A. M. Garland, in Western Rural.*

The greatest favourites of the bees, in early spring, appear to be the catkin-bearing shrubs and trees, the willow, hazel, osie, &c., from the male flowers of which they obtain the pollen, and from the female the honey.

HAVE YOU ENOUGH FODDER?—Cattle, horses and sheep will eat per day three pounds of hay, or its equivalent, per one hundred pounds live weight. Half pound of hay, two pounds of good straw, and three-fourths of a pound of grain, are usually equivalent to three pounds of hay. A little more grain will put on fat. On this basis fair estimates can be made.

At a recent sale of Shropshire sheep by Mr. G. Preece, at Shrewsbury, England, Mr. Byrd's Royal first prize ram was let for the unprecedented price of £163 16s.

The *Mark Lane Express* gives the particulars of the sale of Mr. Sheldon's short-horns at Brailes. The highest price was 415 guineas for a cow. The average price of the cows was £112 9s 5d; that of the bulls £44 4s 2d.

There was an extensive sale of Mr. McCombie's polled stock at Tillifour recently, which attracted a large company, and excited considerable interest. Prices, in comparison with those of Shorthorns, were not high, 60 guineas being the highest price given for any one animal. 32 females of all ages, and 14 males, were disposed of; the total sale realizing the sum of £1,405 19s.

FINE WOOL SHEEP.—A Vermont journal, giving the history of fine wool, says that fifty years ago not a pound of fine wool was grown in the United States, in Great Britain, or in any other country except Spain. In 1784 a small flock was sent to the Elector of Saxony as a great present from the King of Spain, whence came the entire product of Saxony wool, now of such immense value. In 1809, during the invasion of Spain by the French, some of the valuable crown flock were sold to raise money. The American consul, Jarvis, at Lisbon, purchased 1,400 head and sent them to this country. A portion of this pure and unmixed Merino flock is still to be found in Vermont at this time. Such was the origin of the immense flock of fine wool sheep in the United States at the present time.

Veterinary Department.

Care of Horses' Feet and Shoeing.

NO. II.

Besides the erroneous practices referred to in the previous article, there is another cause very destructive to the horse's foot. I have often seen horses come to be shod whose feet had never been cleaned or washed since it was done by the farrier. In such cases the shoe acts as a ledge to hold on the dirt, which, when not cleaned out, rots the frog, and gives rise to thrush, &c. In this way it makes certain the contraction of the foot; for the one grand error of our shoeing is, it throws the horse off his natural footing without supplying a due equivalent.

Rasping down the feet nicely, as they call it, is quite a passion with some people. I have often rasped the hoof, and the owner of the horse standing by to tell when it would suit him. This rasping on a hoof that happens to be a little ill-shaped, until it will spring under your finger, is far too dangerous a plan for making things look well. I have often commenced on hoofs that had a beautiful gloss all over, and given them a thorough rasping; not that I could make them any better, for that was beyond the power of human hands, but they had to be rasped merely because the owner's mind was a slave to fashion or fancy. This rasping takes the strong surface off the hoof; and nature, trying all she can to make up for the evil done by injudicious hands, forms a hard glassy surface to protect the foot. This glassy surface takes the place of the previous tough horn, and at the next shoeing the hoof will probably split a little at the nails, and not unfrequently the nail punches a piece out before it.

Horses' feet, when not properly taken care of in the stable, will sometimes gather a kind of soft, raggy substance round the coronet. This, if not removed, will spread, and destroy the tough fibres of the horn; just as that sort of mossy scurf, which sometimes gathers on the bark of fruit trees, if allowed to remain will destroy the bark, and ultimately kill the tree. But if the horse is properly attended in the stable, nothing of this kind will be seen. Even when it does appear, it should be carefully removed.

Greasing the hoofs, above all other things in the management of horses, is the most deceiving. One would imagine that it should soften the horn; but the very opposite is the result. I had often noticed that it was very difficult to keep shoes fast on feet that were greased. The grease appears to shrink the hoof, and destroy the elasticity of the horn. I afterwards had an excellent opportunity of observing the effect of greasing the feet whilst working in a shop where horses were shod for a large undertaker's establishment. The treatment of the horses by the horse-shoer was the same as that of hundreds of other horses shed at the same shop; but the feet of the funeral horses were greased every time they went out, to make them nice and black; and as the fruits of this practice the hoofs almost ceased growing. They were exceedingly dry and brittle. The sole was not hard and glassy, as feet are after paring, but of a dry nature, and could in many cases be easily crumbled down by the fingers.

This kind of polishing is all very well on a hoof for a snuff-box, an inkstand, or some other useful ornament, after the ravens have picked the horse's bones; but on live horses that are meant to work, *never* allow it to begin, or you will very likely experience the truth of that old adage, which I have chosen for my motto, "no foot, no horse."

NO. III.

The next shop that I worked in we had a different course to pursue. Rasping and paring were things strictly forbidden, further than reducing the foot to its proper size, except in cases where the owner of the horse would have it done at all hazards; then, as public servants, we did the work according to the orders of the customer, he of course taking the responsibility. It was said by some who advocated rasping and paring, that the rules of this shop were just a plan to make money. There never could have been a greater mistake. It was the constant aim of the master to do good work and keep sound horses. He knew well that it was what gave the customers most satisfaction always paid him the best. I remember his once telling me, when shoeing a young horse that seemed rather keen for jumping round on the floor, which was of stone, to "be careful and not throw him down; mind, he is worth £100." The man who shoes horses, and looks to it merely as a means of getting so many dollars and cents, is unworthy to be trusted with the valuable animal.

Shoeing is not merely mechanical; there is something nicely scientific in it; and in place of one feeling that it is the lowest branch belonging to blacksmithing, as is sometimes the case, he should look at it in its proper light, and he will come to the conclusion that it is one of the highest. Even in the mere mechanical part, we sometimes find room for improvement. In the simple matter of clinching, which it is thought anyone can do, we often find apprentices set to it who have never had the first lesson how it should be done. And many older hands have a custom of checking the nail with the rasp, while professedly and intentionally cleaning the hoof from under the clinch. Such a clinch will not draw down tight on the hoof, it will turn over where checked, and in a few days rise above the hoof, and the shoe comes loose.

During the time of the Paris International Exhibition, a friend of the master's brought with him, on his return from Paris, two shoes by way of a specimen of the then new system just introduced into that city. [We presume the writer refers to the Chalier horse shoes.] This shoe is let down in the foot. The sole is left full, and allowed to touch the ground along with the shoe. The shoe is not more than half an inch in breadth on the ground surface, narrowing gradually until the side next the foot is under three-eighths. It is about half an inch in depth. The holes are stamped in it, as they are in those of the military horses; and this is, in fact, the way they should be in every shoe that is meant for work. The silly arguments in favour of swedged shoes are only excuses, to disguise a method whereby the shoe may wear out sooner, though some, through long custom or professional tradition, have come to believe that it is the better plan. Using stamped holes and countersink nails, is decidedly the most solid and durable method of putting on a shoe.

Not quite satisfied with a mere look at this new Paris shoe, I set to work in my dinner hour and made one as near it as I could, and then showed it to the master, asking him if that was like the original. "Yes, very like it; show it to my father, and see what he thinks of it." His father, a hale old man, who had practically followed the trade for upwards of sixty years, in a few moments was in the shop. He told me to make another and put them on some horse, adding: "I have always held that there should only be one way of shoeing horses for all kinds of work." Seeing the plan so well approved of, I made a mate for the shoe, and having in my mind's eye a horse that I knew they would suit, I put them on his fore feet the next time he came to the shop, and a pair of the ordinary kind on his hind feet. The horse belonged to a butcher, and got many a good drive both in the city and country. His shoes bore testimony to the fact, for he usually returned in ten or twelve days with one or more of them worn through the middle. When he came to the shop again, his hind shoes were worn as thin as usual; but, greatly to our astonishment, the front ones were not nearly so thin as the much heavier ones used to be. The senior master took one of the shoes, after it had completed its contract with the horse, and preserved it as an instalment for his museum of curiosities, and I was careful to keep the other as the first for my own.

How the horse went with the shoes may be inferred from the fact that neither the man who drove him, nor any one else outside of the shop, knew what kind of shoes were on him. We put a pair of the same kind on again, and three days after asked a man who drove another horse for the same butcher how the horse went with the new shoes. This was the first he, or any of them, knew anything of the change. As might be expected, they all very soon knew it after this. Next morning, the man who drove the

horse made his appearance with him at the shop. "The horse canna gaung with they shun; they hae no heels on." To tell an Edinburgh cabman, or such a one as our present customer, that his horse can go without heels, would only raise contention, which serves no purpose, for he would just as soon believe that he would work and grow fat without feed. The shoes, of course, had to be taken off, and thus the matter ended. It is strange how inconsistent people are in regard to this practice of heeling shoes. While they profess to believe it absolutely necessary, their horses never wear a set of shoes (but half the time they are without heels." For instance, the first week the heels and toes are worn off, leaving the shoe half an inch thick all round. This is thought too good a shoe to take off, and the horse goes a week more, but without heels. The driver will say the horse can never go without them, while he actually drives him half the time in that condition. It would be much better never to have heels, for it at first holds the horse depending on them, and after being used to go with them, he is compelled to do without them. What is argued as a necessity in the one case, is dispensed with altogether in the other, merely for saving money. It will be much better to adopt something which will give the horse a surer footing, and always the same, than submitting to a continual change.

The man who brought the shoe from Paris could only give a faint idea of the knife used for letting the shoe down in the foot. He had paper patterns, very much resembling the old butteris, with the addition of a guard on the back, and from the way it was required to be held must have been very awkward for cutting round the toe. I afterwards made a knife which answers the purpose very well. It is forged out of a piece of three-quarter inch steel, and a guard left on the back. The guard is about an eighth of an inch in thickness at the blade, and tapering thinner towards its termination. It is about the size of a man's thumb nail, placed crosswise on the blade, the flat surface running along the outside of the hoof, the taper of the guard being all on the back. It is put in a handle, and used the same as the ordinary draw-knife. The point is turned up three-eighths of an inch from the guard. The turned part is deeper and straighter up than the ordinary draw knife, so that it may cut its way clear and straight. With such a knife as this, the foot is easily and quickly prepared for the shoe.

ROBERT SABISTON.

Caledonia.

Threadworms in Cattle and Sheep.

Parasites seem of late years to have become very common among the domestic animals. In part this may be accounted for by their ways and doings being better understood, and their presence being more readily detected. Their development, however, has certainly been increased by heavy stocking and artificial treatment, which lower the general health of stock.

Threadworms infesting the air passages and digestive tract are this autumn common amongst young cattle and sheep in many localities, particularly in the midland and southern counties of England, and hundreds of lambs have already sunk under the irritating cough and exhausting diarrhœa. The damp, wet summer has doubtless favoured the generation and preservation of these threadworms; whilst the abundance of rough herbage common throughout most of the English grass counties affords convenient shelter for the parasites during their embryonic stages. All of them have wonderful powers of reproduction; their eggs are laid in millions, and are hatched even in the decomposing dead body of the female; their lower forms of development are extremely tenacious of life—may be dried for days, and when moistened regain their vigour; in favourable conditions the germs rapidly grow to maturity, and do not require any alternate generation in food or water or in the body of other animals before re-entering the sheep; thirty days after the oviduct of Strongulus filaria, taken from a sheep, was swallowed by a lamb, embryo worms were abundant in its lungs. In small numbers, and amongst strong adult sheep or cattle, these threadworms, whether in the lungs or bowels, appear to do little harm; indeed, in many of the midland counties of England they are noticed in the lungs, especially of sheep, which have never shown any untoward symptoms, which have become fat, and of which the mutton, on the best authority, is perfectly wholesome. In young, delicate, or indifferently-cared-for sheep or cattle, the threadworms cause, however, much disturbance of health, induce the symptoms familiar to most stockowners, render the animals liable to attacks of tape and other worms, make sheep particularly obnoxious to maggots, and further, cause increased susceptibility to various ailments.

On the subject of these threadworms, Mr Jas. Law, M.R.C.V.S., of New York, communicates to the New York State Agricultural Society an admirable paper, which is printed in the Society's July and August "Transactions." Mr. Law states that these threadworms appear to be of comparatively recent introduction into America, that they have not been described as affecting calves previous to 1869; that hitherto American sheep seem to be exempted, but that such exemption will probably not be long continued, inasmuch as the English sheep, of which so many are imported, may unsuspected be the bearers of the undeveloped germs or earlier embryonic forms of the threadworm. Judging from Mr. Law's interesting report, the attacks in New York State are even more severe than in this country. Of nineteen calves attacked in Alleghany county, N.Y., eleven had died in from nine to fifteen days, "whilst all the cows on the farm coughed and looked badly." In another outbreak two calves died in from six to ten days after seizure. Chickens, turkeys, and squirrels are described to have died from gapes in great numbers during the summer.

So clear and sensible is Mr. Law's report on the development of these threadworms, the symptoms they induce, and the best modes of removing them, that we shall again refer to his account at greater length.—*Veterinarian.*

Derangement of the Digestive Organs of the Ox and Sheep.

WORMS IN THE STOMACH AND INTESTINES.

Parasites in the digestive canal do not necessarily occasion any serious disturbance, although there is a very general prejudice against them, and a disposition to ascribe every co-existent disease to their influence. Loss of condition, diarrhœa, chronic cough, irritation of skin, emaciation, and debility, are among the phenomena which are held to be sufficiently accounted for by the presence of worms in the stomach or intestines.

In many instances it can be proved to demonstration that parasites do cause much derangement of the digestive functions; and there are some worms which are known to cause death, as a consequence of the exhaustion which follows from their ravages; but the instances of animals being infested with worms without suffering from, or in any way indicating, their presence during life, are far more numerous. *Post mortem* examinations of animals which have died from actute disease, or which have been slaughtered for food, constantly disclose the presence of round worms and tape worms in immense numbers; and yet the previous history of the animal does not furnish any evidence of inconvenience having arisen, nor in the course of dissection can any change of structure be detected which can reasonably be referred to the direct action of the parasites upon the tissues or secretion.

Tapeworms are often present in the intestines of the sheep to such an extent as to nearly block up the tube, and in such cases it is not remarkable that the irritation which is caused results in an excess of secretion and diarrhœa; but even then the amount of harm done is by no means proportioned to the number of the parasites, and as the animal advances in age the injury which is caused by entozoa is scarcely apparent.

Dogs frequently give no indication of the presence of tapeworms beyond voiding the mature segments. Cats suffer more decidedly than most other animals from entozoa, and fatal sickness in kittens is often the consequence of the entrance of the Ascaris mistax into the stomach.

Oxen very rarely show signs of suffering from intestinal looseness, although the largest species of tapeworm, the Tænia expansa, commonly infests the intestines. In the stomachs of this animal parasites are hardly ever found, and in no case have they been reckoned among the causes of stomach disease. Sheep, of all animals in the farm, are most susceptible to the influence of various kinds of parasites in different organs; excepting tapeworms, which have been previously referred to as the least injurious of internal worms of the sheep, nearly every entozoon which occurs in the organism does harm in a different way. Strongyles infest the bronchial tubes of lambs, and kill them

by hundreds every season; flukes inhabit the liver, and gradually produce fatal debility through the medium of general derangement of the nutritive functions; hydatids occupy the substance of the brain, and slowly increase in size until they press with deadly effect upon the origin of the cerebral nerves; but the most destructive of all the parasites which attack the sheep is the strongylus hæmata, which occurs in the fourth stomach, attaches itself to the mucous membrane, and lives upon the blood which circulates through that tissue.

The effects produced by this worm are exceedingly remarkable, and it is more than probable that for many years the symptoms, which are uniformly present, have been ascribed to any cause but the right one. It has long been known that sheep apparently affected with liver rot in its worst form have, after death, been found to have no flukes or disease of the liver, while all the morbid appearances, and all the symptoms during life, have corresponded exactly with those of rot; and it was only by accident that a complete dissection of one of these animals, a few years ago, revealed the cause of death. The fourth stomach, on being cut open, was found to be filled with round worms about three inches in length, clinging to the internal lining membrane. The parasites were red in colour on account of the blood in their alimentary canal, and they were found to be provided with four sharp hooks, which encircled their necks a short distance from the mouth, and which could be retracted at pleasure to allow of the penetration of the mucous membrane, and then again projected so as to secure the creature's hold while it hung from the point of attachment. In this position the worm remained, gradually draining the blood from the system, until the infested animal died from anæmia.

The symptoms which resulted from the presence of a large number of these parasites were usually, as before stated, referred to the disease rot; the sheep became low in condition, in spite of a liberal supply of food; then the mucous membrane of the eye was seen to be pallid; next the peculiar pendulous swelling under the jaw appeared, and the sheep was said to be "jagged;" lastly, the emaciation became extreme, the appetite was lost, and the animal died from inanition. Morbid appearances similar to those of rot, without exception, were always detected; there was the same flabby and watery condition of the tissues. Frequently the entire organism was bloodless; the muscles were always pallid in hue, there was absence of internal fat; the liver, in common with other parts, was soft and pale in colour, but no trace of flukes was ever found.

Treatment was seldom successful; all the ordinary remedies for rot failed. Even a change of pasture, which is often so effectual in that disease, was generally useless; and if the sheep were removed from a rich to a poor pasture, the effects were most disastrous. Salt is the most active agent in destroying the parasites, but it is difficult to give it in doses sufficiently large without doing injury to the sheep; nevertheless, this medicine is the only one which is worth a trial.

While the appetite remains the diet should be liberal, as everything depends upon keeping up the condition.—*The Field.*

"Cutting out the Feeders" in Ringbone.

To the Editor.

SIR,—Some time ago I read in your columns an enquiry as to the probable effectiveness of an operation defined as that of "cutting out the gland or feeder of the ringbone." I had just had the operation performed upon four colts, and resolved to give your enquirer the benefit of my experience when time would justify me in doing so. I cannot say that the operator inspired much confidence in explaining his theory of the anatomy and cure of ring-bone; but his assertion of having had thirty-three years experience without failure, induced me to try the operation. Of the effect, I may say that one animal, a blood-colt, crippled in all four feet, and who suffered so much that I was frequently tempted to knock him on the head, is now in good condition, and free from lameness. Of the others, I cannot speak so positively as to their cure; they having never exhibited other than a very slight stiffness in their gait, and this, I think, has quite relaxed. The temperature of the diseased part is also reduced to a natural condition.

These are the facts, notwithstanding the assertion of some of my veterinary friends, who affirm that the operation is a hoax, and excludes even the possibility of accidental cure.

Would you be so good as to state at your earliest convenience if this be the pronounced opinion of the veterinary profession upon the above mode of treatment; also, if they hold that the disease is hereditary or otherwise?

A FARMER.

Hullett.

On several former occasions we have alluded to the treatment of ringbone in horses, and also expressed our opinion as to the operation spoken of by "Farmer." We have again to state that any party who pretends to cure ringbone by what is very plausibly termed cutting out the feeder, is either an imposter or is totally ignorant as to the nature of the disease which he undertakes to treat. Ringbone, as its name indicates, is a disease of the osseous tissues, and, when once established, is an incurable affection, so far as restoring the parts to their natural condition is meant by cure. Remedies may be used that will relieve the pain and lameness, but the bony enlargement can never be completely reduced.

There are many empirical remedies that are said to cure ringbone; but this needless and useless operation of cutting out the gland—the supposed seat of the disease—is a perfect delusion.

If any operation is resorted to that sets up a counter irritation, it may be attended with some good, and possibly some cases may be benefited by the irritation produced in this operation of cutting into the bursæ under the fetlock joint. We have known colts very materially injured by such operations, even when no ringbone existed, the natural prominences of the pastern joint being mistaken for a diseased condition by some ignorant charlatan.

In many animals there exists a predisposing tendency to disease of the osseous system; and hereditary tendency, therefore, we consider one great cause of ringbone in Canada; but it is also very often the result of some other cause, as sprains or concussion to the bones from galloping upon hard ground.

DISEASE OF THE BRAIN IS A PIG.—Pike Creek.—Your very explicit account of the symptoms indicates disease of the brain; in the first stage, a somewhat comatose condition, which in the second state is followed by a more excitable state. Disease of the brain may proceed from overfeeding, causing derangement of the digestive system and extending to the nervous system. If the peculiar and alarming symptoms continue to increase, the most merciful course to pursue is to destroy the poor sufferer.

SPRAINS.—"Forrester's Falls."—Sprains of the tendons and sinews are best treated by giving complete rest, and bathing the injured parts twice a day with tepid water, which should be continued for eight or ten days, then cut the hair off, and apply a cantharidine blister, in the proportion of one part of powdered cantharides to five parts of lard, and about one ounce of the ointment to be used at an application. Two days after applying the blister, dress the parts over with sweet oil, and on the fourth day after wash off with soap and water, and still continue the oil daily. If no relief is afforded in the course of two or three weeks apply a second blister.

INCONTINENCE OF URINE.—J. C., Osprey.—The symptoms mentioned in your letter may result from inversion of the bladder, from injury to the neck of the bladder, or from paralysis of the viscus, all of which might result from prolonged and difficult foaling. When the bladder is inverted, the symptoms are well marked, and this condition can therefore be readily detected. Judging from the symptoms described, it is likely that incontinence of urine proceeds from injury to the neck, or from paralysis of the muscular fibre. We cannot recommend any particular course of treatment, but would advise you to have your mare examined by a competent veterinary surgeon.

WHY DO ANIMALS NEED SALT?—Prof. Johnson, of Scotland, says more than half the saline matter of the blood (50 per cent.) consists of common salt, and as this is partly dissolved every day through the skin and kidneys, the necessity of continued supplies of it to the healthy body is sufficiently obvious. The bile also contains soda (one of the ingredients of salt) as a special and indispensable constituent, and so do all the cartilages of the body. Stint the supply of salt, and neither will the bile be able properly to assist digestion, nor the cartilages be built up again as fast as they naturally waste.

The Dairy.

Atmospheric Churns.

Nothing has enlisted the attention of inventors in this country to a greater extent than churns. Over a thousand patents have been issued by the U. S. Government for devices for churning alone. Of the time spent in bringing them out and putting them before an appreciative public, and of the amount of money spent in purchasing state, county, township and individual rights, we can form no estimate. The following sketch of the early history of atmospheric churns was written by Charles J. Page, and was first published in his report to the Commissioner of Patents in the year 1849:—

"I have had, during the year, forty-nine applications transferred to my desk, and among them twenty-one applications for churns. Most of these were styled atmospheric churns, and since I have been in the Patent Office I have never witnessed such a mania upon any one invention. It may be well to repeat that the introduction of air plays no chemical part in the production of butter; its separation from cream being merely a mechanical process. And although the atmospheric churns operate to considerable advantage, yet it is by means of more thorough agitation, which is increased greatly by the diffusion of the air throughout the cream. As each portion of air rises through the cream it forms a bubble upon the surface before it escapes, and in some of the atmospheric churns, where the dasher is constantly submerged, the whole mass of cream is converted into a complete mass of foam. From the success of such a churn as that above named in producing butter in a shorter time than other churns, a most enthusiastic speculation was at once commenced upon atmospheric churns, and inventive powers were racked to modify, mystify, and contort a simple principle, with a view of producing novelties rather than improvements. For one invention applications for patents were received from no fewer than seven persons—each a *bona fide* inventor—all claiming the same thing, and about the same time, and all from distant portions of the country. This improvement consists simply in boring a hole through the entire length of a common upright churn-dasher, and placing a valve either at the bottom or top of the dasher. This valve opens downwards, and when the dasher is raised with such rapidity that the cream cannot follow up, the air rushes down through the valve under the dasher, and upon the downward stroke the air is pressed out laterally and escapes by the side of the dasher and up through the mass of cream. It requires not a very quick motion and but little force to effect this, and the agitation is most complete. A full-sized model was exhibited in the office, showing the operation with clear water only. Upon agitating the dasher, the water appeared as if in intense ebullition. Another peculiarity belongs to this churn worthy of note. In the common churn, the dasher has to be raised out of the cream at each stroke, and plunged down with some force, and as this scatters the cream it is necessary to cover the churn tightly, and allow the dasher to play through a small hole in the centre of the cover; but in this atmospheric churn the dasher is kept always under the surface of the liquid, and consequently there is no splashing of the cream, and the cover may be left off with safety, and enable you to watch the operation. A strong recommendation is its simplicity, and one of the inventors stated he could alter any common churn-dasher to this principle for twenty-five cents. Prior to this simple device for introducing air, several complicated inventions had been patented, and many more made and presented to the office, to effect the same purpose.

"A modification of the last named churn has been patented, in which the hole in the dasher at the lower part was large enough to contain a solid plunger, fitting loosely within the dasher, which acts the part of a second valve. There have been, also, several patents granted for ingenious forms of rotary atmospheric churns. These inventors crowded upon the office so numerously that they were examined with the most rigid scrutiny, and on several occasions actual demonstration by experiment of making butter was required of the applicants, to satisfy the office that the inventions claimed justified their pretensions to be real improvements. In most of these cases the results were unfavourable to the inventor, but in some patents were ordered to issue. On one occasion an experiment was performed (humorously characterized by a bystander as a 'churn race') between a patented and a new churn, in which bhey both came out alike, making butter from tew milk in two minutes and a half. Such a rapid separation of the butter, however, is by no means desirable, although this is the general aim of these improvements. We have it upon the highest chemical authority that butter made so rapidly is not likely to be so good as that which is made slowly."

American Cheese in England.

The London *Milk Journal*, for September, has the following report on the cheese market there, dated August 23rd:

English Cheese—In consequence of the excessive heat of the past month, has been in small supply, the risk of carriage being too great to induce factors and dealers to handle the article. Farmers are anxious sellers, but still hold on to the idea of getting prices which there is no chance of their obtaining; this they will find out to their cost, for Americans are steadily absorbing all the demand, not only for common grades, but also for the finest. There are still a few old cheddar and double on hand, which sell very slowly at bad prices.

American—Are in very large supply. The total clearances to Great Britain from New York for the past four weeks have been respectively 66,000, 66,700, 70,500, 60,400, making a total of 263,600 boxes, which is equal to something over five thousand tons. Arrivals have met a ready sale at steadily declining prices; 54s. to 56s. is now the market quotation for fine cheese, which will compare favourably in quality, flavour and condition, with any home-made at 10s. to 15s. more money; whilst some good, clean, meaty cheese can be bought at 42s. to 50s. These prices being much lower than for many years past, and the June make being very good, has encouraged a large consumption.

Dutch Cheese—Still continue dear, and stocks are accumulating. The article, like English, is being driven out of consumption by the American.

The editor of the *Journal*, in another article, calls special attention to these statements, and adds:—"The success of America is to be attributed to the extensive organization of her cheese factories, whereby division of labour is effected, a large working capital used in the manufacture of cheese, and a uniform good make produced, by converting milk into cheese on a large scale; and by the employment of skilled labour, under the superintendence of scientific, enterprising commercial men. The system which has done so much for America can undoubtedly do a great deal for us, and enable us to maintain our ground against all comers. We therefore watch, with a daily increased interest, the success of cheese factories in our own country."

The Milk Mirror.

In a recent visit to parts of Germany in which milch cows are harnessed to waggons, and required to work like oxen, I was curious to see what was the effect of such habits of labor upon the lacteal system, and its outward manifestation. Continued from generation to generation, such treatment would naturally show its results in a modification of the organizations for giving milk, and the visible marks of the same. This I found actually to be the case in all of this class of animals which came under my observation. None of them had well developed udders, or large milk veins, and in no single case did I find a good milk mirror, or escutcheon. On the contrary, the mirrors were invariably imperfect, exceedingly defective ones. This great beauty in a milch cow, and sure sign of the possession of great dairy qualities was well nigh bred out of these animals, and in the place of it they had acquired a good degree of the physical strength and beefy look of steers.

I put this fact on record as one tending to corroborate the doctrine of Guenon respecting the mirror, or escutcheon, as a visible sign of dairy capacity. I believe his views in the main to be correct, and to be of great importance to all persons interested in breeding the improved races of cattle.

I have in my herd of Jerseys a family of females numbering nine, and embracing three generations of cattle, each one of the animals having been sired by a different bull, with a single exception, and each one of which possesses a perfect milk mirror. It is a family of superior milkers and butter-makers; and their full mirror seems to be so well established that no change of bulls can breed it out of them.—*Cor. Country Gentleman.*

English Dairy Show.

A great show and fair of dairy products was held at Frome, England, during the last week in September, at which there were ninety-four entries in the cheese department, and fifty-six in the butter department. There was a very large attendance, and much interest was manifested.

The last number of the *Mark Lane Express*, in commenting on the exhibition, says: To an observant visitor to the show of Wednesday last it was interesting to note that in the case of the prize cheese, symmetry of shape and maturity of external appearance were almost unerring guides to excellence of internal quality. The matter is thus explained by Dr. Voelcker :—"When the whey has been ill-separated from the curd, in the process of cheese-making, no amount of after-pressure will squeeze out the excess of whey, which then causes the cheese to heave and blister, and imparts to it a somewhat sweet and at the same time strong taste. This taste is always found in an ill-shaped cheese, which bulges out at the sides, the interior being found to be full of cavities and far from uniform in texture. Many American cheeses are evidently spoiled in this way, for they are often full of holes, have a strong smell, and contain too much moisture sure indications that the whey was not properly separated. This sweet taste is given to the cheese by part of the sugar of milk, of which a good deal is found in whey; another portion of it, on entering into fermentation, forms, amongst other products, carbonic acid gas, which, in its endeavour to escape, heaves up the semi-solid curd, and causes it to blister, producing the numerous apertures of considerable size which are found in badly made cheese. If the cheese be coloured with annato, the excess of whey at the same time causes a partial separation of the colouring matter, so that more colour collects in some parts than in others, and the cheese assumes that unequal condition in which it is called tallowy. A uniform colour and perfect shape are therefore to a certain extent indications of superior quality, whilst mottled ill-shaped cheese almost invariably proves tallowy in appearance, and anything but agreeable to the palate."

Milking in Silence.

At a Farmers' Club in West Cornwall, Connecticut (U.S) a farmer said that no talking should be allowed while milking was going on. He said he discharged one of his servants who persisted in talking during milking time, and that in three days the increase of milk was equal to the man's weekly wages. We fear an increase to such an extent must have been due to other causes besides the one assigned. If the enlarged yield followed solely from the dismissal of the man, we suspect his presence affected the supply of milk in some way apart from his loquacity. We have frequently found a change of servants prove beneficial. It may be that talking prevents hens from laying also. We know we have often experienced a vast increase in the number of eggs brought into the house after the removal of a too officious individual from our employ. Besides, our cows have sometimes improved in produce by the same means, but we generally attributed it to cleaner milking by fresh and more industrious hands. It is, however, well known that cows are peculiarly sensitive to sights and sounds during the time they are milked. Unless they are at perfect ease, they will not give their milk freely. They should be daily milked under the same conditions. Cows that are fed at milking time require their usual meal, or they become restless and dissatisfied, and put a stop to their bounty. Many of them will only allow some special favourite to milk them. In those parts of the country where women are solely employed to milk, we frequently find one or two tuneful lasses singing at their work, and many cows become so pleased with the rustic harmony as to show evident signs of their approval of the loud sweet voice, by giving their milk only by being sung to. Everything that distracts the attention of the cow and ruffles her placidity, should be avoided when she is called upon to yield her milk. Her nervous system should not be excited by strange noises, unwelcome objects or rough treatment, or the effect will be apparent in a diminished supply in the milk pail. It would no doubt be good advice, on the whole, to tell those who milk that they should hold their tongues and keep their tempers. The Connecticut farmer appears to have sufficient reason indeed to say, that speech is silver, but silence is golden.—*London Milk Journal.*

Cost of a Small Cheese Factory.

As many farmers are making inquiries about butter and cheese factories, they will be interested in reading the following estimate of the cost of a small cheese factory, which we clip from the *Manufacturer and Builder*:—"For 100 cows, a building sixty by twenty-six feet, with sixteen foot posts, making it two stories, would be required. Take twenty-four feet from the lower story for a 'make-room,' leaving the remainder and the upper story for 'curing-rooms.' The upper story should be partitioned the same as the lower. The twenty-four foot room over the 'make-room' should be plastered and furnished with stoves suitable for curing early and late cheese. The cost depends on the price of lumber and labour, which differs in localities. A rough, substantial building, which will answer in every respect in most localities, would cost $1,000. If finished with paint, &c., $1,300. It could be furnished with vat, tank, presses, hoops, scales, &c., for $300, making in all $1,300 for rough building, and $1,600 for the finished one. For 200 cows the same sized building would answer. For vat and fixtures, $500, making in all, $1,500 for rough, and $1,800 for finished building. Stock companies are formed by those interested taking one or more shares, which may be $50 or $100 each. A committee is chosen by the shareholders, who superintend the building of the factory, hiring help, &c. A dairy of 100 cows can be managed by a man of experience with additional help, which could be hired at from two to three dollars per day and board. For two hundred cows he would want an additional hand, which might be a woman and inexperienced. The question is often asked: How many cows must a factory number to pay? For an individual to build a factory to work up milk for others at two dollars per hundred, which is the common price of making and furnishing the cheese, all boxed and ready for market, he would want three hundred cows or more to make it a paying business."

Poultry Yard.

Poultry as Profitable Farm Stock.

A great amount of paper and print has been expended on the question as to the profitable or unprofitable character of poultry as farming stock. On the one hand it is maintained that fowls do not pay the farmer under any circumstances, and on the other that they yield a very handsome profit. Mr. Mech, one of their latest advocates, states that they cost no more to produce than a corresponding weight of beef or mutton, and that they sell for double the price per stone. As usual in similar cases, I believe the truth lies between the two extremes. Poultry certainly can be made to pay, and yield the farmer a very satisfactory return. On the other hand, they cannot be reared in very large numbers, and certainly cost more per stone to produce than butcher's meat. The profitable production of poultry may be best considered under four distinct heads, namely, fowls, ducks, geese, and turkeys, as the conditions under which these may be most advantageously kept vary considerably, and those birds which are most profitable in one locality may be the least so in another.

FOWLS.

In the following remarks I shall not enter into the consideration of fancy stock, but regard the birds solely as meat-producers. For market purposes a large-sized, hardy breed is required — one that will yield, without trouble or coddling, a good supply of large early chickens. If, on the other hand, eggs are more remunerative than chickens, the size of the fowl is not so great an object. For market-fowls, the breed most available in this country is the grey or coloured Dorking; the chickens, however, have the disadvantage of being delicate, and consequently difficult to rear. The large Asiatic breeds, on the contrary, are very hardy; but they are not good as market-fowls, as the skin and fat are apt to be yellow, and the breast not well covered with flesh. By crossing these races, a large, useful hardy fowl may be produced. I do not maintain that half-bred Brahma and Dorking chickens will be equal as first-class market-fowls to pure-bred Sussex or Dorking; but from the larger number that can be reared on an ordinary farm-yard, where no very especial care is given to them, they will be found much more profitable. Nothing is easier than to establish such a breed: half-a-dozen Brahma hens, either of the dark or light variety, large and short-legged, may be run with a good short-legged Dorking cock: the chickens will be found exceedingly hardy, and if well fed will grow rapidly. In supplying the market, all the cocks should be killed off, and of the pullets, those kept for stock should be such as have short white legs and plump bodies. These the next season should run with a

fresh Dorking cock, not even related to the first, or if a further cross is thought desirable, with a good Houdan cock. If eggs and chickens are desired for market purposes, the Houdan breed will be found very valuable. The chickens are not so large as those of the cross just recommended, but they are good in quality, mature early, and fatten rapidly, and the hens are very free layers; but as they rarely sit, a few Brahma hens may be kept to hatch their eggs. It will be found more advantageous to use Brahma or Cochin hens for this purpose, inasmuch as their buff-coloured eggs are easily distinguished from those of the Houdans. The great drawback against most of the farm-yard poultry is the want of size. This may be remedied by keeping better breeds, provided the chickens are well fed from the very first. It cannot be too strongly impressed upon the rearers of market-poultry that large-framed birds cannot be hoped for if the chickens are not well fed from the very first day they leave the nest. It is not enough to put the hen and newly-hatched brood under a coop, and throw them some tail-wheat two or three times a day; such treatment will never make large birds. During the hatching the hen should be left undisturbed; the young chickens should not be removed from under her as they are hatched—but when all are out and quite dry and strong, the hen may be cooped in a dry sunny spot, and a good feed of corn and soft food given to her. The chickens want no food for many hours after they are hatched, as they are then digesting the yolk of the egg, which constitutes their first food, and acquiring strength to run about. When they begin to peck, they should be fed with soft food and very small grain. Unquestionably, the best soft food is an egg beaten up with a tablespoonful of milk and heated in the oven, or by the side of the fire, until it sets into a soft custard. Chickens fed on this or partially fed make wonderful progress. Another point often overlooked is the time at which the young chicks are fed. If they are to make large fowls, they must be fed soon after daylight, if, as is too often the case, they are left hungry for three hours early in the morning they are always stunted in their growth. They must be fed the first thing, and whilst they are young, every two or three hours during the day. A large lump of soft food; such as oat or barley-meal, mixed with milk or water, is often put into the hen's coop, and it is thought that it will suffice for the day; in a short time it becomes trodden on and defiled, and it is then no longer wholesome food. The right plan is to give no more soft food than the chickens can eat at once. Overnight, a supply of grits, ground oats, or small wheat, may be put down to serve for the first meal in the morning. Many poultry-keepers are partial to keeping the hens with chickens under coop for some weeks. I am decidedly opposed to the plan. By so doing, the natural insect food that the hen acquires by scratching—the worms, grubs, small seeds, and flies, &c.—are denied to the chicken, and no artificial diet will compensate for the loss. Nor can the hen dust to free herself from vermin, that feed sumptuously on the young chicks at night. It is said that the hen, if not cooped, will draggle the chickens through the wet grass, and tire them out. A half-starved hen may possibly do so; but if she is well fed with corn, there is no danger of her so doing. If preferred, she can be shut up until the dew is off the grass; but the finest and heaviest chickens I have ever bred have been those that have been with hens that were never shut up in houses or coops, but being under open sheds, could go out at all hours. If the hens are allowed to scratch for the chickens, the chopped meat and meat-broth which are requisite for them when closely confined, is altogether unnecessary. It is the custom of some game-rearers to hang up in the woods any dead waste animal, to supply maggots for the young pheasants. This is not desirable near a homestead; but any refuse animal remains may be utilized without offence, by allowing them to become thoroughly fly-blown, and then burying them in the fowl run; the maggots attain their full size under ground, and previous to turning into flies work their way instinctively to the surface, furnishing an abundant supply to the young chickens.

There are a few other points in the management of fowls about which it may be desirable to say a few words. In the first place, let me caution all agriculturists against attempting to employ any artificial incubators: despite of all the care and attention that has been devoted to their construction, not one has been found a success in actual practice, nor do I know of any person who continues to employ them except experimentally. There is no great difficulty in hatching a certain number of the eggs in incubators, but rearing the chickens in any number without hens is hopeless. Whatever may be the case in the warmer climate of Egypt, in the colder latitude of England artificial incubation is a delusion. The keeping of fowls in very large numbers by the establishment of what have been called poultry-farms, has attracted considerable attention of late. It has been argued that if a moderate number of fowls around a homestead can be made, as they unquestionably can, to yield a fair profit, it is only necessary to multiply the number by ten, twenty, or a hundred, to secure a proportionate return. No argument can be more fallacious. Whenever a very large number of fowls is collected together in one place, the ground becomes tainted, and disease invariably breaks out amongst them. Poultry-farms have been tried under almost every possible condition, and have invariably proved failures. If a very large space of rough useless ground can be devoted to them, a considerable number may be kept; but such ground is rare. The reason of the greater number of fowls being reared in France (from whence before the war we were in the habit of importing considerably more than one million of eggs per day) is that, in the place of large farms, the country is divided into very numerous small holdings, and that at each of these a good stock of fowls is maintained. The profit to be made by poultry depends so much on the management and on the demand for fowls in the locality that it cannot be accurately stated. That poultry, properly tended, will yield a good profit, I am fully aware; but that fowls can be reared at the same cost as beef and mutton I must have some very definite accounts to prove.

TURKEYS.

In many parts of the kingdom the rearing of turkeys is followed with great advantage, whereas in other localities a turkey in a farmyard is a rarity. There is no doubt that turkeys, properly managed, are amongst the most profitable of live stock, and it is difficult to account for their absence from many places where they could be advantageously reared. Turkeys consume a much larger proportion of green food than fowls, and grow into size almost without cost; when fattened, they realize a high price in the market; and, as they are chiefly in demand in cold weather, can be sent to distant places without risk of loss. Many farmers and farmers' wives, however, dread engaging in the rearing of turkeys, believing them to be exceedingly delicate when young. I believe properly managed turkeys are not more difficult to rear than common fowls, and I am quite certain they can be raised to much greater profit. My own method of procedure is to follow nature as far as possible. I make my turkey nests on the ground; or if in a paved house, in large shallow boxes half filled with mould that can be damped at intervals. The hens, unless they come off regularly, are lifted off to feed, and then supplied with grain with a liberal hand. When the young ones are hatched they are left undisturbed under the hen until the next day. No attempt is made to cram them—an absurd practice, which interferes most injuriously with the due digestion of the yolk that is absorbed into the intestines at birth, and constitutes all the food required for twenty or thirty hours after hatching. The first food given them is egg beaten up with an equal bulk of milk, and baked into a soft custard; this is alternated with crumbled bread mixed with milk, to which oatmeal is added in a gradually increasing proportion. Ants' eggs are given if I can get them; but if not, the custard is continued for a fortnight or three weeks. Quite as important as any other part of the dietary of young turkeys is the supply of green food, and many persons chop up nettles, onions, &c., with the meal; but if young turkeys are watched when grazing, it will be observed that they prefer eating bitter herbs belonging to the natural family *compositæ*, or compound flowered plants, such as the dandelion, &c. The common lettuce belongs to the same tribe, and I have this year fed largely on it. The greediness with which young turkeys devour this plant is remarkable. At three weeks old a dozen turkey chicks will eat four or five large lettuces a day, and they even seem to prefer them when running to seed, at which time there is abundance of bitter milky juice in the plants. At the age of a month they will begin to peck a few grains of wheat or barley: but bread and milk and meal should form the staple of their food for the first two or three months of their lives. Most persons say that young turkeys are particularly delicate

when they are "shooting the red." This is not to be wondered at, when it is remembered that they are generally put on whole grain, without milk, long before they arrive at that age, and suffer accordingly. Another point of the highest importance in feeding turkeys, or young birds of any kind, is the hour at which they get their first repast. In summer it is daylight at four o'clock in the morning. If the birds have their first meal deferred until six or seven o'clock, they have been hungry for two or three hours, and suffer very much. To be successful in rearing these, and any other young birds, they must either be supplied over-night with their first meal, or the poultry-maid must be up with the lark. There is no better plan than putting the hen and chicks, for the first month or two, in a closely-wired aviary at night, which is open to the early sun; and lettuce and a good supply of soft food can be put under a coop, so that the hen cannot eat it, and there will be but little left an hour after daybreak.

DUCKS.

Ducks are, under certain conditions, amongst the most profitable of farm stock Aylesbury and its immediate neighbourhood is said to receive upwards of £20,000 yearly for ducklings sent to the London market The usual mode of managing ducks in country districts is as erroneous as it is possible to conceive. The breed of ducks is usually small, and the broods are not killed until they are six or seven months old. For market purposes there is no breed so profitable as the large white Aylesbury variety. These, if well fed, begin to lay about Christmas, and the eggs should at once be placed under hens; for this purpose Cochins or Brahmas answer admirably. It need not be insisted on that abundance of food must be supplied to produce eggs in winter. The only mode of feeding ducks satisfactorily is to put the corn in water: a shallow feeding-trough or other vessel should be provided, and the oats be placed in sufficient water to cover them. This mode of feeding avoids all waste, as every grain is taken out of the water by the birds, and none is trampled under foot. As ducks usually lay at night, the brood stock should be shut up till morning, and the eggs at once removed, and as soon as practicable placed under hens. The young hatch on the 28th day, when they should, if the weather is at all cold, be placed in a warm shed with the hen; or if several broods are hatched at the same time, and the shed be a warm one, they may all be given to one hen. At first they should be fed on oatmeal and milk; afterwards oats may be given them in water; but if required to fatten and mature rapidly, the Aylesbury rearers feed them almost entirely on meal, boiled with a small proportion of greaves; but the flavour is not as delicate as that of corn-fed birds. If duly cared for, young ducklings should be perfectly feathered, fat, and quite fit for the market in less than two months, and the spring birds often produce six or seven shillings each in the London markets. The ducklings so forced are never allowed access to water, but are kept eating and growing during the whole of their short lives. After ten or twelve weeks a duckling is only kept to waste, as it then begins to moult its first feathers, becomes poor, and does not gain in weight. Of course the profit on ducks is to be made only by sending them to market at the proper time—namely, when 8 to 10 weeks old. If they are kept till they are 7 or 8 months old, they are inferior for table purposes, cost more to produce, and yield less to the producer. It is no wonder that, under these circumstances, people say "ducks don't pay."

GEESE.

Geese can only be profitably kept where there is abundance of grazing ground, as they derive the greater part of their nourishment from grass. Under suitable conditions no birds can be more profitable, but under other circumstances they cannot be recommended. Of the three varieties, namely, the pure white or Embden, they grey or Toulouse, and the common saddle-back, the former are to be preferred, as the birds pluck much better and clearer than the common parti-coloured breed. The management of these birds in suitable localities is attended with very little trouble. In the early part of the year the old geese should be well fed with oats thrown into water, so as to stimulate them to early laying in February, if possible. When she has laid from eight to fifteen eggs, the goose remains on the nest, and her eggs may then be given to her. When hatched, the goslings require grass, meal slaked with water, or porridge made with oatmeal. After a few days, oats, in water, may be given, and with the food they find by grazing the young will do well until fattening time, when they should be fed on oats, in water. In many parts the geese are partially plucked two or three times a year for the sake of the feathers. Nothing can be more injurious than the practice; the small sum obtained for the plumage is much less than the deterioration in the value of the bird. In concluding these remarks upon poultry as profitable farm stock, I would impress on the agriculturist the necessity of commencing with really good stock. On many a farm where nothing is to be seen but the most improved varieties of cattle, sheep, and pigs, there may be observed a number of the most wretched fowls and small worthless ducks and geese, that are hardly worth the food they have consumed. Nothing can be done in the way of profit with such stock. Really good large breeds must be procured, but it must also be remembered that this alone will not do; they must be well fed and well housed, and even these two conditions will be of no avail unless the birds are well tended, and the young stock more especially never allowed to be checked in their growth by hunger. Good breed, good feeding, and good attendance, are the three golden requisities to profitable poultry-keeping.—W. B. TEGETMEIER, in *Mark Lane Express*.

Moulting Fowls.

The moulting season is the most critical period of the year for old fowls; and yet in ninety-nine cases out of a hundred there is less care taken then than in the spring, when everything is in their favour. The idea seems to be, that now the young stock is out of harm's way, they can all shift for themselves; and until cold weather sets in, they are left to *get fat* (?) on what they can find *lying around loose*.

Some have much more difficulty in moulting than others. Spanish are a long time naked. All the non-setters feather more slowly than the others. It may be because they lay a greater number of eggs, and that the production of them causes more exhaustion of the system, than the twenty-one days of the setters. Certain it is, however, that moulting is an effort, and taxes the bird so much, that at such a time any old weakness, or partially cured disease, is sure to show itself again. Thus when roup has existed in a poultry yard, it always re-appears at moulting time.

Perhaps many readers have never considered the great drain upon the system of the fowl during this change of covering. Not only do the regular flesh-forming, life-giving processes of nature have to be fulfilled, but an entire new coat of feathers has also to be manufactured. These feathers consist not of flesh and blood alone, but of component parts of animal and mineral substances. These substances are assimilated from the food, and unless birds can obtain such food as contain the necessary qualities, the work drags, is prolonged, and the poor fowl droops and grows thinner in the vain endeavour to fulfil nature's requirements, without the proper means to work with. I doubt if one person in ten—yes, twenty—has ever given this a thought, and yet it is of the utmost importance to thorough and complete success in raising first-class stock.

Birds that have their full liberty and are well fed, always moult well; but when they are kept in confinement, care and precaution are generally necessary. The effects of food may be proved by a fact. Quails are exceedingly fond of hemp seed. This is of a very heating nature, and if they are allowed to eat too much of it, their plumage becomes nearly black. If they are fed entirely on it, their bodies are so heated that everything is dried up, and no nourishment is possible. The feathers, like plants, die for the lack of moisture. If proper food has this effect, then judicious feeding ought to assist; when birds are moulting, they must have plenty of cooling food, and there is none so good as lettuce; if it has gone to seed and stalking, so much the better. Sods of growing grass, and plenty of fresh earth with them, are also excellent.

A little treatment of this kind not only benefits the health of the fowl, but shortens the period of moulting one-third. In addition to that, the growth of feathers is stronger and heavier, and the fowls are thus better able to stand the cold winter. The appearance of the fowl is also vastly better, the feathers are lustrous, and appear as if oiled; the bird takes on fat at once, and meets the cold weather with a vigorous health and strength which otherwise it might not have.

Sometimes a fowl will be seen while moulting to be continually pecking or scratching at one spot of its body. On examination it will be found that one or more feathers have failed in passing through the opening in the skin that is provided for the purpose. They keep on growing, but they grow beneath it. This causes much pain. It is common in the top-knots of Polands, but the remedy is a very easy one; take a stout needle and pass it under the quill end of the covered feather, then draw the feather from under the skin.

Not only is an abundance of warming, nutritious food needed at this time, but a tonic of some kind may also be given. Stale bread, sopped in old ale, given two or three times a week, is said to be beneficial; but perhaps one of the best things to use is one-half pound sulphate of iron (green vitriol), one ounce sulphuric acid, two gallons of water Put a teaspoonful of this mixture to each pint of water in the drinking fountain, and keep it by them during the whole time of moulting.

One thing requires to be watched; they will sometimes, in a dissatisfied habit of body, begin to peck and eat each others feathers. If a fowl does this, it should at once be removed, as it will teach others the same habit.—*Cor. Amer. Stock Journal.*

Care of Poultry in Winter.

The Farmers' Club of the American Institute appointed a committee to visit Warren Leland's farm, and examine his mode of keeping poultry in winter. The following is the committee's report, made in February, 1871:—

We spent a day at the farm of Warren Leland, twenty-five miles north of New York city, at Rye Station, and have derived, from a careful survey of his yards, ideas which we consider important. We find him carrying one hundred and fifty turkeys, about three hundred hens, a large drove of ducks, and several dozen of geese, through the winter, without the loss of any of his poultry by disease of any sort, and without the freezing of their feet or of their eggs. We learn that he never has maladies among his poultry; that he will allow the greater part of his hens to sit in the spring, and each of them will yield an average brood of ten chicks, so that he will raise about three thousand chickens from his present flock, and his losses be very few. How does he do it? His hens, ducks and geese have the best winter quarters we have ever seen provided for any of the feathered tribes. Their main barrack, or hennery, is a stone house, seventy-five feet long, and twenty feet wide, and faces south. The openings on the north side are small, and filled with window glass, and in some cases with double sash. Those on the south side are much larger, consisting of double doors, which are opened on sunny days. In the middle of the north side is a wide, old-fashioned fire-place, with crane and a big camp kettle. Nearly every day in winter a fire is lit, and fed with chunks, knots and old logs, that would otherwise be knocked about the wood-yard, and left to rot in fence corners. The walls are of stone, and the floor of rock or earth, so the fire can be left without the least danger.

On cold days, and especially in cold rains, the hens gather before this fire and warm themselves, and trim their feathers. The chimney can easily be closed, or the logs rolled out into the middle of the building, and feathers or sulphur used to make a fumigation. This is done whenever hen lice appear, and the openings of the house can be closed, so as to hold the fumigation till it penetrates to every crack Smoke he finds better than carbolic acid or kerosene, or whitewash, to drive vermin. The roots are oak slats, an inch thick by two and a half inches wide, fastened to the rafters near the ridge. They are nailed at different heights, and at proper intervals. About two feet below the perches is a scaffold of boards, that fit quite closely. This is from time to time covered with plaster and ashes. About once a month the accumulations are shoveled down, and piled up for the corn-field. He calculates that fifty hens yield, in the course of a year, as much compost as would be worth fifty dollars in bone meal; that is to say, if he threw away his hen droppings and had to buy the same amount of fertilizing salts in bone-dust, it would cost him fifty dollars to replace fifty hens as producers of manure. He has paid especial attention to the comfort of his hens on the perch. They sit on a slats two and a half inches wide Their breast feathers come down and cover their feet, and protect them from freezing in the coldest nights. Of course, there is no lack of dry ashes in their house, and he finds that after the fire goes out the hens use the hearth as a place to nestle, and shake ashes through their feathers. They enjoy it, and it keeps them sound and comfortable. The offal of the farm, as entrails, feathers, heads, scraps from lard, and all the odds and ends from the kitchen, are thrown into this house, and the hens pick it over, eating all they want. Then, as soon as spring opens, all this trash is shoveled and scraped out, composted and taken to the corn-field. Besides this refuse, his poultry eat about a bushel of corn a day in winter, and half a bushel in summer. He raises large crops of corn, because he has strong manure to feed his crops with, his calculation being that about four acres of corn go to feed and fatten his poultry.

After a hen has hatched, her nest is taken out, the straw burned, and the box whitewashed inside and out, then filled with fresh straw, and put back for another family party. After many trials of breeds, he has settled upon the white Brahmas. They lay more uniformly the year through; make the best mothers, and the chicks grow the fastest. During summer his poultry have a wide range, and scour the fields for half a mile or more, consuming grasshoppers. His turkeys nearly make their weight on grasshoppers and beetles, with a handful of corn night and morning. One man has little to do in spring and summer but to take care of chickens and young turkeys. In winter they require but little attention, and this man then attends to the calves and lambs.

The cost of his poultry meat, and he often kills in a season three hundred turkeys and three thousand chickens, he considers to be about two hundred and fifty bushels of corn, and the wages of his hen-wife for half the time. His gains he cannot give exactly, for the poultry is eaten very freely by a large family, and sent to the Metropolitan when prices are high, or the supply in market defective in quality. He does not keep exact account of his eggs, for as a rule he says the best thing to do with an egg is to let a good motherly hen make a chicken of it.

Your committee conclude their report by an expression of opinion that the common ideas on the subject of poultry raising, on a large scale, are erroneous. It has been said, again and again in this Club, and in farm journals, that there is no use in trying to keep more than about fifty hens. If one goes deeper into the poultry business, there is backset from lice, and roup, and gapes, and cholera, and the sudden death of hens and chicks from causes unknown. This is a fallacy. In the manner above described, by the wise use of smoke and lime, and ashes, and a fire, by cleanliness and a wide range in mild weather, we find Mr. Leland taking about four thousand feathered animals through the season, for year after year, without calamity or loss, and on an expense that is very trifling, and unfelt on a large farm. Your committee will visit other farms, where the special object is eggs, and announce the result of their observations. Dr. Smith, a member of the committee, said that, in conversation, Mr. Leland said that his success depends upon letting his poultry alone He repeated it over and over again, "let them alone; let them alone; give them liberty, and they will take care of themselves." Dr. Trimble, another member, said that Mr. Leland told him that in raising turkeys his plan was to have three or four sitting at the same time. When they had hatched the eggs, he gave all the young turkeys to one hen turkey, and she and her enlarged brood were removed to a distant part of the farm, away from other fowls. There a large coop was built, in which they could be shut up at night. They were not allowed to range in the morning until the dew was off. In the day time the hen was tethered to a stake; and each day her stake was removed to a new place, so that she and her brood had a new range.—*The People's Practical Poultry Book.*

Raising Turkeys.

About two years ago, in the fall, a Toronto sportsman was shooting in the county of Kent, and met with excellent sport. Amongst other birds, he shot at, and broke the wing of, a remarkably fine wild gobbler turkey. He and his friends managed with considerable difficulty to secure it, amputated the broken wing, and brought it home. A farmer in the county of York obtained the bird, and caged it in a rail pen during the winter; it was very wild, and knocked itself about a good deal, so they disturbed it as little as possible, but continued to feed it well. As the spring opened, the bird seemed attracted by the hen turkeys of the farm, and they were introduced to their wild relative. They agreed well, and finally the wild turkey was turned loose on the farm with his domestic mates. The result was that every egg laid by the turkey hens proved fertile, and the farmer raised over one hundred young turkeys. The young were not tender, as the domesticated birds are, but stood all the changes of the weather well. The progeny was very fine, but it has yet to be seen whether these properties are transmitted to the second generation. The farmer in question, however, considers the introduction of wild blood into his flock a great improvement.

It is a fact well known to experienced poultry breeders that if a new gobbler is introduced to the flock of turkeys each year, particularly if he is brought from a great distance, far more fertility is shown than if the old breed is continued. This may have been the cause of the success which attended the introduction of the wild gobbler, and not the wild blood only.

It is still a moot point with many of the best informed people whether the wild turkey can be thoroughly domesticated, or whether the tame turkey ever becomes wild. There are many tame turkeys so nearly like the wild ones that they can hardly be distinguished; the most striking difference is the brassy or metallic sheen on the feathers, which is greater on the wild turkey than on the tame ones. Many breeds of the domesticated turkey have the same red legs that the wild turkey has. The brassy sheen on the feathers of the latter scarcely shows on the birds of the first season.

How to Judge Poultry.

As cold weather is coming on, and the time arriving for purchasing poultry for the table, it may not be out of place to give a few general rules by which the age of fowls of all descriptions can be judged. In following these rules no reason need be assigned by any grocer, much less housekeeper, for purchasing other than good, wholesome and tender fowls.

TO JUDGE THE AGE OF FOWLS.

If a hen's spur is hard, and the scales on the legs rough, she is old whether you see her head or not, but her head will corroborate your observation. If the underbill is so stiff that you cannot bend it down, and the comb thick and rough, leave her, no matter how fat and plump, for some one less particular. A young hen has only the rudiments of spurs; the scales on the legs are smooth, glossy and fresh coloured, whatever the colour may be; the claws tender and short, the nails sharp, the under bill soft and the comb thin and smooth.

TO JUDGE THE AGE OF TURKEYS.

An old hen turkey has rough scales on the legs, callosities on the soles of the feet, and long, strong claws; a young one the reverse of all those marks. The old turkey cock has a long tuft or beard, a young one but a sprouting one; and when they are off, the smooth scales on the leg decide the point, besides the difference in size of the wattles of the neck and in the elastic shoot upon the nose.

TO JUDGE THE AGE OF GEESE.

An old goose, when alive, is known by the rough legs, the strength of the wings, particularly at the pinions, the thickness and strength of the bill, and the fineness of the feathers; and when plucked, is known by the legs, the tenderness of the skin under the wings, by the pinions and the bill, and the coarseness of the skin.

TO JUDGE THE AGE OF DUCKS.

Ducks are distinguished by the same means; but there is this difference, that a duckling's bill is much longer in proportion to the breadth of its head than the old duck's.

TO JUDGE THE AGE OF PIGEONS.

A young pigeon is discovered by its pale colour, smooth scales, tender collapsed feet, and the yellow long down interspersed among its feathers. A pigeon that can fly has always red-coloured legs and no down, and is then too old for use.—*Rural New Yorker.*

Correspondence.

My Farm.

To the Editor.

SIR,—We speak of the busy time of haying and harvest in the superlative degree, but considering the shortness of the days and the rapid approach of our ice-bound winter, I find that in Canada the month of November is one of continued bustle. Every cold lowering cloudy day bids us tremble at the approach of snow, while at the end of each day's work we remember that our time for performing a large amount of fall ploughing is shorter by so many hours. Every root is housed securely, and our aim is now to be in as prepared a state as possible to shorten the work of our next spring season.

In Canada a large breadth of ploughing is of immense service in the spring. Not only can we get more land thoroughly seeded with spring grain, but for barley I consider that land ploughed in the fall and laid to the pulverizing effects of winter frosts and open to the fertilizing influence of the melting snows, is in every way better prepared for the reception of barley than when fresh ploughed in the spring.

Thorough pulverization and a shallow seed bed are the requirements of barley; if to these be added a clean and rich soil, barley will never fail. Moreover, I seed down every crop of barley that I sow, and I find that if the above conditions are complied with, there is no more fear of a poor catch of grass seed, let the season be ever so dry, than a failure of the barley crop.

The question of hurrying up the ploughing brings me to the subject of feeding horses. I see all round me working teams turned out all day and night, and they are expected to feed themselves. This has been a very dry season, and there is little or no length of pasture; but even should there be length, there is never at this late time any succulence in green food. Grasses in their drying up prior to the advent of winter, seem to part with all their saccharine juices and become bitter and unpalatable.

Some of my neighbours, who despise book farming, by which term they allude to any sort of reading on agricultural matters, are amongst the very men who seem to think that as long as their animals are feeding upon something green, they must thrive. These men seem to think that because animals can run out with impunity, in such weather as would freeze human beings, they do not feel these light November frosts. The way in which cattle lie around a straw-stack now at night, and the ravenous manner in which horses will attack good hay when thrown to them even in their pastures, should tell a different tale.

All working horses in Canada should be stabled by the first day of November, and never allowed to run out after that day, except it be during a fine warm Sunday or other holiday.

My neighbour says: "What! feed my horses on hay now, when that is already worth *twenty dollars a ton* in the market?"

I say yes, and I find that my horses individually eat less hay through the whole winter than that same neighbour's horses, and look throughout in better order. His plan is—no hay until the pasture is covered with snow; then fill the racks three times a day as full as they can hold. If the horse wastes his hay, use what he throws out for litter, because when a horse has once *blown upon* his feed he won't eat it again.

My plan is—feed early and feed light all through the season. I never feed a pound of long hay from January to December. This year, with barley at about half a dollar, and foreseeing the probability of oats being worth the same before spring, I am feeding barley in preference to the latter. Whilst my teams are ploughing deeply and daily, I feed cut hay and chopped barley—cutting the hay into a box, wetting it and sprinkling it over with chop.

In this way my horses never waste a pound of food; they eat their food quickly, and at the same time digest it thoroughly. As soon as the heavy work slackens, I shall reduce the amount of hay by one-half, and substitute sweet oat straw, still feeding the grain; and when winter fairly sets in, unless the horses should have steady teaming, I shall reverse the proportion of straw and hay, giving two-thirds of the former—still, however, continuing the grain moderately.

I consider that cheap barley is a far more economical form of food than dear hay. It is better for the horse than stuffing his belly with all the long hay that he can swallow (not digest); there is less waste in the feeding; it saves the provender in that the horse, in order to get all the grain, must eat *all his cut food*, and the manure made is far more valuable.

I consider that a first-class hay and straw cutter is the most valuable implement upon the farm, and that it saves its cost over and over again, by economizing feed, in one winter.

I am ditching this fall, and a splendid season it is for the purpose. It is hard work digging in some places, but by keeping *tools sharp* we have little trouble. All ditches should be covered in Canada; but I am in this case situated as are many others—I want to turn a living creek into a straighter course.

One year I did a little ditching of the same sort, but I was anxious to perform my work quickly, and I made the sides of my ditch nearly vertical. Well, the next spring, by the month of June, there was no ditch to be seen, only the line of it was marked by a long quagmire. The water had come down in a series of freshets, had undermined my banks, and they had fallen into my ditch. The second job of ditching was alone more expensive than had I done it aright in the first place. My ditch is now three feet deep, four feet wide at the top, and one foot wide at the bottom; this gives the side a slope of about 45°, which is the slope at which the pressure of the water laterally and vertically is most evenly divided.

We ought all of us to prepare all our stock for winter. They should have something more than the run of almost bare fields. I am feeding my milch cows a little chopped barley every morning and evening, and their flow of milk is very greatly increased. Moreover, it seems to satisfy them, and instead of roaming about all through these cold nights, they seek the shelter of the straw stack and open shed, and there lie cosily chewing the cud, perchance contentedly dreaming of to-morrow's feed.

All pigs should be in their pens; they can gain nothing in the open air, and in one day will do more damage in a clover field if unring than would pay for a month's feed.

OLD-COUNTRY MAN.

Ancaster, Nov. 9.

Letters on the Weather.

NO IV.

To the Editor.

SIR,—I have much more evidence to bring forward in proof of the existence of a coincidence between the sun-spot period and weather changes, and I will lay it before your readers in future letters, but as a knowledge of the existence of this coincidence will not aid us in foretelling the weather, unless we know when the sun-spots will reach a maximum or minimum, I will devote this letter to this important point.

Since telescopic observations were first made on sun spots, no record of a perfect nature has been kept, until Schwabe commenced his labours; but Prof. Woolf, of Zurich, has collected all the available records, and by uniting and revising the whole, has given us the years of sun-spot maximum and minimum, which has taken place since 1740.

Though this record cannot be regarded as perfect, yet it is not probable that it is very far from correct. Prof. Loomis has given reasons for suspecting that a maximum was overlooked by Woolf in 1794. I think, however, that it will be ultimately found that in this point Woolf was correct:

The following are the years in which the spots have been observed to reach their maxima:—1750, 1761.5, 1769, 1778, 1788, 1804, 1816.5, 1830, 1837, 1848, 1860, 1871.

Now, a glance over these numbers will convince us that the period has been very variable. From 1788 to 1804 gives a period of sixteen years, but from 1830 to the next maxima, 1837, is only seven years. How, then, are we to know whether the period following the present maximum will be 16 years long or only 7? or it may be some intermediate period?

As yet no method has been pointed out which will give us any clue as to when a *long* or *short* period may be expected.

The theory which I advanced in my letters on the "sun-spot period" led me to notice the following facts, and as the *facts* will answer our present purpose, we can get on with them, and keep the theory out of sight.

If we take the present maximum 1871, and deduct from it 33.3, (explained elsewhere) we get 1837.7; from this date substract another 33.3, and we get 1804.4; take 33.3 from this date, and we get 1771.1.

Now, those dates are either the years of past sun spot maxima, or very near them indeed, as the following dates of maxima show:

Calculated dates.	Observed date.
1771	1769 or '70?
1804	1804
1837	1837
1871	1871

So by this method, without further aid, we should have only been astray in a single instance to the amount of one year, and this so far back that it is hard to say which of the two dates is most correct.

We will regard this as *a sun-spot period*, and discard the average period of 10 or 11 years altogether, and by adding 33.3 to the present date, 1871, we shall have a year of sun-spot maximum in 1904.

We look again over those dates on which the sun-spots reached their maxima, and we find that another period of 27.5 years will coincide with several other dates nearly, as below:

Calculated dates.	Observed dates.
17.0	1750
1777	1778
1805	1804
1832	1830
1860	1860.

Both of these periods, then—one of 33.3, the other of 27.5 years' length, expire at, or near the time of the sun-spot maxima; and if we add one other period of 30 years' length, we shall have three periods in which sun-spot maxima have occurred, and those are all which have been observed since 1740.

The last maximum of the 30-year period occurred in 1848, and we give a table of the calculated and observed dates below:

27.5 Year Period.	30 Year Period.	33.3 Year Period.	Observed Date.
1750			1750
	1758		1761
		1771	1769
1777			1778
	1788		1788
1805		1804	1804
	1818		1816
1832			1830
		1837	1837
	1848		1848
		1871	1871

Has by anything we found at the head of the column, by the last date in the column, will be the date of the future maximum, as 20+1848=1878, the date of our next maximum.

By these methods any of your readers can predict a coming sun-spot max with greater certainty and accuracy than any astronomer can do by any other method, and the astronomer with the aid of this theory can predict the very years; and even by the foregoing rule, a glance over the table will show that he cannot be more than a year or two wrong, and in the great majority of cases he will be right.

The importance of this subject must be my excuse for the length of this letter.

NO V.

To the Editor.

SIR,—In my last I pointed out what I believe to be the only method by which anything may be known of the time when the sun-spots will reach their maximum, and as this rule is liable to a possible error of one or two years, it will be needful for me to show how, with our present knowledge, we may know when *our very wet* or *very dry* years can be foreknown.

In order to know the general character of a season in advance, we must remember the following facts, applicable for Ontario:

First. That at sun-spot maximum or minimum a *dry* season may be expected.

Second. That the *wet* season precedes the dry one.

Third. The sum of the quantity of rain which falls at Toronto during the wet year, the dry year, and the year following the dry year, will be near 85 inches; and by adding the rain-fall of the wet year and dry one together, and subtracting their sum from 85, we shall get the rain-fall of the third year—thus: The rain-fall of 1843 was 43 inches; the year following, 1844, was 19 inches; the sum of the two years, 52 inches; which, taken from 85, leave 33 inches for 1845, which was the true amount. This rule is always nearly correct.

Fourth. The intermediate years are never far from an average; they are never extreme years. The foregoing four facts must be borne in mind, and to get at the future weather, proceed thus; The observed rain-fall of 1870 was 33 inches (omitting fractions). Suppose this year (1871) should give us 22 inches, the sum of those years is 55, which we take from 85, and we get 30 inches of rain for 1872. Now, between the year 1872 and the next year previous to the dry year of sun-spot minimum, we shall have no extreme year, and we need not prepare for a very dry year until we find the very wet one on us, which will be the year previous to sun-spot minimum. This can be found nearly by the rule given in my last letter. Our next sun-spot maximum will be one of the 30 year period, and will take place in 1878. The minimum preceding this is found by adding 30 to the minimum preceding the max. of 1848; it took place in 1844, and 30+1844=1874, our next minimum and dry year; so, if there is no disturbance, we shall get another wet year in 1873. But the error to which our calculated date for sun-spot minimum is subject renders the year uncertain to some extent, and so in 1873 proceed thus. It will be either one of the average years or the extremely wet one; we may prepare for wet and risk nothing. Preserve the monthly record of rain in THE GLOBE or CANADA FARMER, and if at the end of October we have much above 30 inches of rain, it will probably be the wet year, and 1874 may then be looked for as a dry year, and prepared for accordingly. The dry year will give about 20 inches of rain, and the wet year previous not less than 35 inches. I think I have made good my promise to show the general character of a coming season, and hope your agricultural readers may profit.

OMICRON.

"Letters on the Weather."—Strictures.

To the Editor.

SIR.—Your correspondent "Omicron," in a series of letters on the weather, calls attention to the presumed influence of the solar spots on the state of the weather, and from his observations draws the conclusion that a *dry* year always accompanies a year of sun spot maximum or minimum with a *wet* year immediately preceding. He instances 1870 and 1871 as a case in point.

Now, no doubt in *Canada*, or at least at Toronto, such *was* the case; but will "Omicron" please inform us how, if his theory be correct, he can account for the fact that the *same years*, which proved so wet and dry respectively in Canada, completely changed places in England—1870 being a *dry*, and 1871 a *wet* year? A similar phenomenon was observable eleven years ago, 1860 being in Canada a fine and *dry*, and in England a remarkably *wet* year. The solar spots must be at their maximum equally in both place, so that some further elucidation of the theory must be sought for?

G. M. SIMMS.

Waldhu Station, Nov. 11.

The Weather.

To the Editor.

SIR,—In the GLOBE of November 24, Mr. Simms offers some strictures on my letters on the above subject. Will you permit me to reply?

First. Mr Simms has mistaken my intention in writing those letters. My object is not to show that weather changes are the result of sun-spots, but to show that our dry years *synchronize*, with the time of a sun spot maximum or minimum. It is the *coincidence and not the cause* which I have pointed out. In doing this I have advanced no theory, but simply stated facts; those are sufficient for my purpose, and though I have a theory as to the cause of both sun-spots and weather changes, I have not advanced it in my letters. I have shown that in six cases we have had a dry season at the years of sun-spot max. and min; my next letter will add one more to this number, and I simply infer that as it has been so in the past, it is probable it will be so in the future.

Long before it was known that the earth was a sphere, and rotated on its axis, causing day, and night, men had learnt by observation that the sun would rise at periods of 24 hours apart; and we who know the cause cannot more certainly foretell the time of sunrise, than they could who were ignorant of the true cause.

I have showed that we have had a dry period at the time of sun-spot maxima and minima. Mr. Simms has stated that in England they had wet weather on two of those years. I will add two more, 1848 and 1856, *dry* years in Canada, were *wet* in England, and I have no reason to doubt that this is a rule—Canada dry at the period of sun-spot max. or min., England wet at the same time; and though we could not tell why, observation shows us that is the fact.

But we have some light on the cause of this difference. Toronto is situated about 43° north latitude, England between 50° and 60°.

Rain clouds and rain stretch in belts around the earth from east to west. A rain belt spans the earth at the equator; another near the latitude 60° north, about the latitude of the northern part of the British isles. (See Loomis' Meteorology.)

Any cause acting on this belt to move it further south would leave England *dry*, and give us in Canada a wet year. This is probably the true explanation of Mr. Simms' difficulty, and it at the same time points to some force, which, on certain years, changes the position of our rain-belts, and as a consequence of our weather.

OMICRON.

DRAIN TILE MACHINE WANTED.—A correspondent, who manufactures drain tiles, complains of the machine he employs getting out of order, and wishes to know if he can procure a better. Manufacturers of any improved machine of the kind will serve themselves, and others situated like our correspondent, by advertising in THE WEEKLY GLOBE.

The Canada Farmer.

TORONTO, CANADA, DEC. 15, 1871.

Close of the Volume.

The present number closes the third volume of the *new series* of the CANADA FARMER, and the eighth from the commencement. We trust we have sufficiently redeemed our engagements with our readers, and have succeeded in so interesting them and enlisting their sympathy with the objects we have in view, that we shall not only retain all our old subscribers, but through their representations add considerably to their numbers. In the forthcoming volume, a prospectus of which is published on the last page, we shall set before us a high standard of efficiency, and will spare no pains to make the CANADA FARMER of 1872 acceptable and valuable to the agricultural community of our rapidly progressing country.

We would request our friends to be prompt in sending in their names and renewing their subscriptions, in order that we may have as early as possible a correct estimate of the number of copies that are likely to be required, and thus be able to furnish all with a complete set, for it should be remembered that the publication is not now stereotyped; so that when the issue for any month has become exhausted, it can no longer be supplied without an entirely new reprint.

The amount of subscription and the reduced rates to Clubs and Agricultural Societies, as will be seen by reference to the prospectus, will remain unchanged.

A Drainage Fund.

We have reason to believe that there are a great number of farmers who would gladly avail themselves of an opportunity of borrowing money at a moderate per centage upon long time, did they know of any fund from which such could be obtained.

Some years must elapse before drainage and similar permanent farm improvements can make a return to the farmer upon his capital invested, and for this reason it is seldom within his power to borrow money at large interest for such a purpose.

The first cost of the thorough drainage of a large area of land is very heavy, and is beyond the means of the greater number of our farmers. Of course no private individual will let out his money upon light interest for drainage purpose, when eight or ten per cent. is obtainable upon the very best of securities.

We cannot but think that some of the surplus funds in the hands of our Government might be appropriated with great justice to the creation of a Loan Fund, from which private individuals could borrow on easy terms, giving as security mortgages upon their real estate.

The interest of Canada as a progressive country is entirely dependent upon her agricultural prosperity, and in no way would a larger average of yield be attained than by the adoption by her farmers of a thorough system of under-drainage, and no greater incentive could possibly be conceived to an improved system of agriculture throughout the length and breadth of the Dominion than the power of borrowing public money for the specific purpose of land improvement by drainage.

The great influence of drainage in an increase of agricultural products cannot be called in question by any who have seen the state to which agriculture has been brought in England within the last half century. The greater proportion of the present success of the farmer in England is due to a thorough system of drainage. Our farms in this climate stand perhaps more in need of underdrains than those of Great Britain, for our rain-fall is very light, and we require every drop of water to percolate our soil, and can afford to lose none of those heavy rain-falls which few and far between rush in torrents over the surface of our land, rather to the detriment than the benefit of the growing crop.

We believe that on the one hand if a fund were appropriated, from which our farmers could borrow, for the especial purpose of draining their several farms, a very large amount would be sought after, and moreover, that such expenditure would benefit the country to a far greater extent than that which is invested in Government securities and Canadian debentures, even if the latter were producing their ten per cent. The whole of the capital sum would be invested

in the country, and for the country's benefit, and the most ignorant farmer knows full well that the effect of thorough drainage is to increase the crop-producing power of his land—in many cases as much as fifty per cent. Thus to the country would be added, without going into minute calculations of interest accruing in collateral ways, by investment in drainage, a return commensurate with this estimate.

It would of course be necessary that the Government should assure themselves of the investment of such a fund for *bona fide* drainage purposes, and for none other. We are not at this moment in possession of a perfect knowledge of the system by which the similar fund is worked in the old country, but we do know that there the Government takes effectual means to assure itself that all such moneys are well and truly applied to the purposes for which they are from time to time borrowed.

We should like our farmers to take up this matter, and to see that their representatives are made fully aware of the importance of the subject, and we cannot but think that the county candidate for election to the House would find a broadly and liberally expressed view upon this point a very safe and solid plank in his political platform.

Market Telegraph.

What is described as a "wonderful project" has just been submitted to the agriculturists of Virginia by Commodore M. F. Maury. The Commodore wishes to establish an international system of meteorological reports and agricultural statistics, which shall place the farmer in the same position as the factor, by enabling him to know the state of the market throughout the world, and to regulate his own prices accordingly. The anomaly now often seen of a seller coming to market and having the price of his goods fixed by the buyer would, it is claimed, be by this means got rid of, and the present scale of prices, based upon information collectedfor, and therefore easily to be imagined in the favour of the buyers, would be set aside by another wherein both parties would meet on equal terms. Commodore Maury contends that by the simple process of overestimating the crops, the markets are kept low, and in support of this he gives statistics which show that in thirty years the farmers have lost the value of one crop and three-fourths of another by the low prices which were obtained in consequence of this overestimate. The cotton planters of the South have, during the last six years, lost $375,000,000 by fluctuations in the market, owing to the absence of any such broad scheme as He hopes to see the present weather probabilities made certainties and of far greater use to the agriculturist, and in addition to the free use of the means already existing for carrying out his scheme, he proposes the appointment of a special crop reporter for every 10,000 square miles. In order to bring his scheme under discussion, Commodore Maury suggests that the Government of the United States should invite other nations to meet in the persons of their leading meteorologists at an early day, in conference similar to that of Brussels in 1853, presided over by himself. If the Commodore can achieve the ends he has in view, the agricultural class any rate, will have "much to be thankful for."

A Day of National Thanksgiving.

Favoured as a people beyond almost every other during the present year with a bountiful harvest, and the innumerable blessings which flow from national prosperity and peace, it well becomes us to unite in acknowledging our obligations to the Almighty for his goodness. No argument is needed to vindicate the propriety of such a proceeding, however little inclined men in general may be to the due performance of so obvious a duty. We refer to the matter now, not with a view of writing a homily on the subject, but to notice the indications of a return to a more natural and healthy public opinion in regard to the question.

In consequence of our lamentable religious animosities and prejudices, and the jealousy with which the very shadow of dictation has been watched for and resented, anything like united action has for many years been abandoned, and though the mercies which it is desired to commemorate have been national, the thanksgiving has been anything but national Each separate religious denomination, in order to vindicate its independence, has chosen to act for itself, and without regard to any other body. Some, if not indeed the larger proportion, have neglected the matter altogether, scarcely any have taken it up heartily, and the religious services in connection with a day of thanksgiving have been few, scattered, and not so well attended as an ordinary weekly prayer meeting.

Surely this is a very unbecoming state of things, and the main cause, as already hinted, to which this general neglect is attributable, is a very petty one. It is not because as a people we are specially irreligious, but rather because we have among us too much of the antagonism of religious opinion, and too little of the attractive power of Christian love. In our laudable appreciation of religious freedom, we are too sensitive, and even fanciful, in regard to any infringement of our rights Our neighbours in the States will surely not be considered behind us in their jealous love of liberty, yet they have found no insuperable bar to united action in the observance of this very simple affair of thanksgiving. The Governor of the State names a certain day, considered most convenient to the majority, and that day is set apart for the purpose without any misgivings on the score of State interference with religious liberty. The day is named by the head of the Government, not as a command, but as a recommendation, and as the most feasible and natural way of reaching the public, and securing the united and national observance of the day, in view of its bearing on common and national blessings.

Report of the U. S. Commissioner of Agriculture.

Close upon the end of 1871 we have received a copy of the Report of the U. S. Commissioner of Agriculture for 1870. Though some of the contents are of permanent value, much of the interest of other parts is considerably abated by the lapse of time, and the information has already been anticipated by other published accounts. Of this class are the statistics of the crops and the weather, which are useful now chiefly as standards of comparison.

Notwithstanding this drawback, the voluminous report, extending over nearly 800 pages, is very acceptable, and contains much valuable matter. A glance at the crop returns should be especially reassuring to the Canadian farmer who is disposed to be dissatisfied with things at home. The average yield of almost every crop that we profess to raise at all in Canada is below our own, either in comparing the same years or estimating the general average. The highest returns come from California, Oregon, Nevada, and the Territories; the lowest from the Southern States—notably, South Carolina, Georgia, Florida, Alabama, and Mississippi. The average yield of wheat is given as 8 bushels to the acre in Georgia, and 19 in California. In the Eastern States it averaged from 12 to 16.

An improvement is noted in the condition and care of stock, and the starvation and neglect to which so many animals have been wont to be exposed during the winter is becoming less prevalent, as wiser and more humane views are extending among the people.

The volume contains a very interesting entomological report of the insects, injurious and beneficial, that have specially come under notice during the year. The chemical report is also of great value. Considerable prominence is given, in a very elaborate paper by André Poey, to the subject of agricultural meteorology. The President of the American Pomological Society, Marshall P. Wilder, contributes a brief account of the history and progress of that valuable institution. Some space is devoted to a popular description of the minor vegetable products and their sources, such as the oils, the gums, spices, beverage plants, &c. The dairy, and its increasingly important interests, receive due attention. The subject of agricultural education, of improved implements, steam culti-

ration, irrigation, modes and results of underdraining, and a variety of other topics, are brought under consideration; and the compilation is altogether more than commonly rich in carefully collated information, which will be found valuable to the agriculturists of Canada as well as of the States. The work is to be procured, we believe, by application to the U. S. Department of Agriculture, which has always shown itself very liberal in disseminating its publications, and we cordially tender our thanks to the Honourable Commissioner for the valuable and interesting report, which according to former custom has been courteously sent to us.

Farmers Must Work.

All must work in this world; such was the fiat that went forth out of the mouth of Omnipotence, when our first father fell and was expelled from the Garden of Eden. The farmer must work as well as the rest of mankind. He must work, but he need not drudge. Indeed, we consider it a very great mistake on the part of a Canadian farmer to take hold of his plough and cradle, and convert himself into a drudge upon his farm and a dog about his own threshold.

The profession of farming, to be carried on with success, probably requires a greater range of intellectual capacity and power of management than any other pursuit after wealth. Education is never thrown away upon a farm. Education brings power of thought, and such power enables the owner to perfect comprehensive plans, and to bring the powers of the mind to bear upon future events, to speculate upon the probable result of the vagaries of nature, and to look for a future reward as the result of present improvements.

Head-work is an element in successful farming that we cannot dispense with, and no amount of hard manual labour will counterbalance the want of a power of forethought applicable to present and speculative management. And it is this work that he who would be a successful farmer is called upon to exercise as much as his contemporary in other professions.

Constant attention, vigilant superintendence, and knowledge of all the minute methods of operation, a disposition sufficiently practical to be applied when peculiar occasions require, and such power of arrangement as will secure the carrying out of all requisite undertakings, thoroughly and with economy, are the forms in which the hard work of a man must be shaped if he would be successful in agricultural matters.

Notes on the Weather.

After an unusually mild and open fall characterized, like the preceding season, by excessive dryness, winter has at length come upon us with a suddenness that has surprised procrastinating farmers in the midst of unfinished work. The first part of the past month was extremely favourable to the harvesting of turnips, and such other fall work as must be completed before winter frots set in; and it was not till very near the end of the month that any severe freezing occurred. Farmers whose roots were not all securely housed or pitted by that time, deserve to lose the crop. So far as we can learn, the yield of this class of farm produce, though considerably affected by the persistent drought of the growing season, has been better than was anticipated. In land well drained, deeply ploughed, and finely cultivated, the return has been very satisfactory, and has amply vindicated the advantage of such liberal culture. A dry season teaches its lesson in regard to the importance of thorough drainage and tillage, quite as much as a wet one.

We give below our usual monthly meteorological report, as furnished by the records of the Toronto Observatory:—

The month of November, 1871, has been marked by fluctuations of the atmosphere of considerable amount, and in general at short intervals of time, accompanied by a mean temperature the coldest for the month ever recorded in Toronto.

The mean temperature was 30°.6, being 6°.1 lower than the average, and about the same amount colder than November, 1870. The highest temperature was 47°.1, on the 1st; the lowest zero, on the 30th; the monthly range was 47°.1; the warmest day was the 14th, with a mean of 41°.8; the coldest, the 28th, with a mean of 8°.9. Although a lower temperature occurred in November, 1857, the low averages of the 28th, 29th and 30th, viz: 8°.9, 9°.3., and 9°.4, stand unequalled in the previous records.

Rain.—The same aridity has continued as in the previous month of this autumn; the amount of rain being 2 655, or 0.33 less than the average; but it must be borne in mind that 2 310 of this quantity fell on the 14th, during that severe storm so generally felt in all parts of the continent.

Snow fell slightly on 11 days, and amounted to 4.5 inches.

The extent of the sky clouded differed little from the average, and may be classed as—clear, 1 day; partially clouded, 12 days, and 17 days totally so.

The prevailing winds may be divided as—N., 5 days; E., 7; S., 1; and W., 17. The velocity being fully one-third greater than the mean; that on the 15th being the greatest day's wind yet recorded, being 772 miles, or over 32 for each hour of the 24.

Horticulture.

EDITOR—D. W. BEADLE,
CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Cultivation of the Pear.

To the Editor.

SIR,—Will you inform me, through the agricultural department of THE GLOBE—1. What kind of soil is peculiarly adapted to the raising of pears? 2. Can the pear be cultivated as easily as the apple? 3. Can the raising of pears be made as profitable as apples? 4 Which are the most profitable kinds for shipping?

A SUBSCRIBER.

Whitby, Nov. 6th.

REPLY.

1. The best soil is a well drained clayey loam. We have seen fine pear trees growing in very stiff clay, with a stiff clay sub-soil. They thrive better in this than they do in very light sandy soil, and the fruit is of better flavour. There are but few varieties of pear that are of good flavour in light sand. Trees growing in sandy soil, with a clay subsoil, yield better flavoured fruit after the roots get well established in the clay.

2. There is no more difficulty in cultivating the pear than the apple. The trees will grow just as readily in the soil and climate adapted to them as the apple tree will, but they will not grow well in as cold a climate as the apple can; at least there are not as many varieties of the pear now in cultivation as there are of apple that can be grown successfully in high latitudes. The pear, too, as a fruit, is more variable in quality than the apple. Some varieties of pear are known to be quite variable in quality. Every wise planter will avoid these, and plant only those which have been proven to be of uniform excellence in his soil and climate. Pear trees are fully as productive as apple; indeed, in favourable soil and climate they will produce more fruit, taking ten years together, than apple trees of the same size. But pear trees are more subject to a mysterious disease known as the Fire-blight, which is more destructive to them than the apple. Although this disease has been observed for something like half a century, vegetable physiologists have not yet discovered its cause or cure.

3. This will depend upon circumstances. Pears are a more delicate fruit to handle than apples, and require to be gathered and put up with more care. Also the market for pears is not quite as unlimited as for apples. Consequently the profitable growing and marketing of this fruit requires more brains. The grower must know when to gather his pears, so that they shall reach the market at the best time and in the best condition for selling. He must know how to sort and grade them to suit the market to which he is send-

ing them. He must know how to pack them, and in what package, to sell to the best advantage. He should know something of the nature of the market where he expects to dispose of his pears, before he plants his trees, so as to grow those that will sell readily at the best prices, not coming in competition with an already sufficient supply of pears, or with other fruit that so fills public attention, and the attention of dealers, that the price of even a fine article is consequently depreciated. Much will also depend upon the facilities for sending the fruit to market, the distance, and whether by land or water; much, too, upon the adaptation of the soil and climate to the production of pears of fine appearance and quality; and very much upon the pains which the producer takes to have the fruit of full size. Pear trees are very apt to set too much fruit; so are apple trees, but it makes more difference in the quality of a pear to be under-sized, and much more in the price it will bring, than it does in the quality and sale of apples. In short, pears are a fancy fruit, apples a staple.

4. This also depends upon contingencies, and cannot be answered with precision. As pears are generally improved by being gathered while they are yet hard, and being made to complete their ripening off from the tree, even summer pears can be shipped considerable distances. If the market at which the crop must be mainly sold is not supplied sufficiently with fruit at any particular time, and there be a pear of good size, good quality, and fine appearance, ripening at that time, which will grow and bear well in your locality, and can be taken to market in good order, so as to help to fill up this deficiency, that pear will be one of the most profitable to plant. But pears that must be marketed in competition with peaches, should be avoided. Indeed, those pay the best, as a general rule, that can be sold before the great bulk of autumn ripening fruit, as peaches, grapes, fall apples, &c., come in; or that can be kept and marketed in prime order after the fall glut is over. Hence those who can grow the Beurre d'Anjou in fine quality, have found it a better paying sort than the Bartlett or Flemish Beauty. The same may be said of the Beurre Clarigeau. Again, the Beurre Bosc is a pear of such excellence in quality and fair appearance, and as yet so scantily brought to market, that it commands good prices, although the grapes and fall apples are yet abundant. Hence it will be seen that in order to decide what varieties to plant it is necessary to know the market where the fruit is to be sold.

Another item which naturally affects the profits of the grower is the securing of an honest salesman who understands his business, to whom the fruit is to be consigned. Many salesmen, through ignorance of the qualities of the kind received, make very disadvantageous sales. Sometimes the fruit is not yet in proper condition for selling, but by keeping it a few days, or a few weeks, it will reach maturity, and put on the appearance and attain the flavour which will secure a ready and satisfactory sale. But the ignorant salesman disposes of it while in its immature state, and obtains half, or even less, of its true value.

Our readers will now understand why we say that the profitable growing and marketing of pears require brains, and that very much more depends upon the sound judgment and business capacity of the man engaged in it than upon anything else. He must first judge of the soil and climate, and whether he in that soil and climate can hope successfully to compete with others having equal or nearly equal facilities for reaching his market, but who have a different soil or climate, or both. He must judge of his market, and of the varieties that will be most likely to sell well in it. He must judge of the business qualifications of his consignee, and select a suitable salesman. He must know when his fruit is in the best state for gathering so as to reach his market. He must know whether it will pay him best to pack in barrels or half barrels or boxes. He must know when the fruit needs thinning out on the trees, and how much. In short, he must be intelligent and wide awake, diligent in his business, giving it the attention it requires, and bringing good common sense into daily exercise. If he can exercise a sound judgment in all these particulars, and after surveying the whole field, decides to go into the business of growing pears for market, he will probably make it much more profitable than most men make the growing of apples

The Grape Region of Canada.

To the Editor.

SIR,—A German friend, from the Lower Rhine country, who cannot write well in the English, asks me to write for him some observations, on a subject in which he takes great interest.

He is engaged on the east coast of Lake Michigan in establishing a vineyard, and feels sure that in a few years the best of the Rhine varieties of wine will be produced there and at other points on these lakes.

After paying more attention to localities, it is Mr. Schaffer's opinion that the best places for grape growing for making wine in all the continent, will be found on the Canadian side of Lake Huron, along from Goderich, up to a point above Southampton Just above that place, the vines would be protected from hurtful early and late winds and frosts, and severe winter cold, (when the winds were blowing from northerly and easterly directions,) by Georgian Bay. All north-west and westerly winds (which prevail most of the year) would be tempered by having to cross the waters of Lakes Superior, Michigan and Huron. In his opinion, the strip of country in Canada alluded to will become the seat of an extensive and important wine and brandy production. All that is wanted is to direct attention to it and the facts alluded to He presumes that the soil is good, having been told that it is so.

The superior profit of wine culture over that of grain growing needs not to be urged, and it calls for less hard work, but more care and nice manipulation, though not more than cheese and butter making.

If not mistaken, Mr. Schaffer thinks that seedling vines from the Middle or Lower Rhine will do well in the region spoken of above, and produce as good wines as in their native country, vastly better than they are found to produce in California, of which country he has a poor opinion as a wine growing country, because of the excessive strength of wines grown there, and want of delicacy of taste and boquet.

Mr. Schaffer recommends the Concord grape, thinks highly of the Ives' Seedling, but thinks we are *yet* to have the best wine grape in this country, and will have good kinds in time, if we keep on trying to improve.

Southerly exposures for vineyards are very important in high northern latitudes—almost indispensable. This must be borne in mind.

Grapes ought to be planted 10 by 12 feet. Vines in this country are generally set too near together; a larger yield will be had from mature vines, if planted as above. As much as 4,000 lbs. per acre, on an average, can be depended on; in some seasons 6,000 lbs. 4,000 lbs at 2 cents, is $80. One man can tend 5 acres, and make the wine from it, say 20,000 lbs. grapes, or 1,800 gallons wine, worth $2,000, free from cost of casks and incidentals, calling the wine $1 25 a gallon. Vines 10 by 12 apart, can be cultivated by two horse teams, without risk of injury to them. The price of grapes and wine is put *very low* in this estimate. The wine, if kept for years, pays interest in age. Wine trellises are better and cheaper than stakes.

If these observations will aid vine culture in Canada, be so good as to publish.

J. KELLAR.

Lancaster, Erie Co., Nov. 26.

Cultivation of the Hollyhock.

This has been an exceptional season, and in many respects an unfavourable one, for some flowers and fruits. It has been a good season for the Hollyhock and some of the spikes which I have seen this year are truly grand. The Hollyhock and the Pansy are amongst the first flowers that I ardently cultivated. They form striking contrasts to each other. The one lowly and modest, carpeting the ground beneath your feet, and studding it with soft velvety and beautiful colours like the "wee, modest, crimson-tipped flower;" the other noble and majestic, forming gorgeous pyramids of many colours, pure white and pale yellow to the deepest orange and buff, soft rose and pink, red, crimson, and deepest maroon.

This fine autumn flower seems to have been brought into very prominent notice for the first time as an exhibition flower in London about the year 1854, as Mr. W. Paul, in his excellent little practical work, "An Hour with the Hollyhock," alludes to a very suc-

cessful exhibition specially got up for this flower in the Surrey Zoological Gardens that year. Previous to this there were many raisers of seedlings both in England and Scotland; there were also two distinct types. The English section had the largest and best formed centres, but in many cases a scarcely-distinguishable guard petal, while the Scotch varieties were conspicuous by their immense guard petals; by crossing the two nationalities flowers with well formed closely-compacted centres were produced, and much better-proportioned guards

Those who intend to begin the culture of Hollyhocks would do well to secure a selection of the very best sorts. Plants that are propagated in the spring generally make the strongest spikes; they should be planted out on the first favourable opportunity after the middle of April. The soil should be deeply trenched and highly manured; if the subsoil will admit of it, the ground should be trenched 3 feet deep The most suitable and effective position for Hollyhocks is to form backgrounds to wide borders; they also form a striking feature where the spikes can be seen at a distance rising above the foliage of evergreens in a dwarf or newly-planted shrubbery. For exhibition, or where the most perfectly-developed spikes or flowers are required, they should be planted by themselves in rows 4 feet apart, allowing 3 feet between the rows. The sticks intended to support the plants should be stout, and stand 6 feet out of the ground; these should be 7½ feet long, and put in before the plants, planting-out the Hollyhocks close to the sticks afterwards. The plants will require but little attention except tying the main shoots to the sticks, pinching out the side shoots, and giving them copious supplies of water at the roots; in hot weather mulching the ground round the roots is very beneficial to them. If required for exhibition, the spikes must be shaded in some way.

When the flowers show signs of decay they must be removed, as if decayed flowers are allowed to remain they will injure the seed pods. It is very important to save seeds of the very best varieties in each colour, as the best and most regular spikes are obtained from plants which have been raised from seed, and the chances are that varieties may be obtained having distinct features, and of better quality than those already in commerce. There is also much interest in watching the development of the flowers, and in comparing them with those from which the seed was obtained.

As soon as the seeds are ripe, or when the flowers have faded, if it is not intended to save seeds, the plants should be cut down, and about the beginning of October, they should be lifted out of the ground and potted, or planted in some light sandy loam and leaf mould in a cold frame. I prefer to pot them, as the plants can be moved into a warmer position if required. If they are wintered in a house where no artificial heat can be applied to them, the pots must be plunged; if otherwise, they may be placed on a shelf or in any position where they can have a free circulation of air around them. The plants must not be huddled together in any out-of-the-way corner during winter and neglected. A number of shoots will be thrown up from the base of the main stem; these must all be taken off early in the season; any time in March will do They will form plants in a short time if grafted on a piece of root in the way whip-grafting is performed; the cutting, with the small piece of root attached, should be potted in a 3-inch pot in some very sandy compost, and the pots plunged in a very gentle bottom heat in an ordinary dung frame; if the bottom heat is at all excessive, every one of the plants will rot off When the young plants show signs of being established, they should be removed to a cold frame, keeping it close for a few days until they are inured to the change. It is also desirable to shift the plants into larger pots before finally planting them out.

I will now make a few remarks about raising seedlings. July is a good time; the seeds can be sown in the open ground, and the plants pricked out and protected during winter in a cold frame, planting them out in April, where it is intended they should bloom

The Hollyhock makes a grand feature at the autumn exhibitions if shown as cut spikes, which is by far the best way to show them. They are also exhibited in stands, similar to Dahlias, as single blooms. To obtain the greatest measure of success, and increase the size of the flowers, the spike should be cut over, allowing only from three to six flowers on a spike; shading them must also be attended to, as sun, rain, and wind soon damage the petals —*Cottage Gardener*.

The Phlox and its Culture.

This is certainly the most beautiful of hardy autumn flowers; it is easily cultivated, and a succession of flowers can be obtained from it in the latter part of summer and throughout the autumn. It is extremely valuable for planting in mixed borders, and for the flower garden; also for growing in pots for the decoration of the greenhouse and conservatory. Although the Phlox is worthy of cultivation in any garden, it is just the flower for the cottager or the owner of a small garden, as it yields its flowers in rich and luxuriant profusion without the aid of glass houses, frames, or coddling of any sort.

There are two sections of the Phlox, divided into early and late-flowering. The early-flowering section (Suffruticosa) contains some very beautiful varieties, but they are wanting in the rich orange-red, crimson, and purple shades of the late varieties. It seems that they require a cool and moist atmosphere. In warm localities it is best to grow the Decussata, or late-flowering section, although it is as well to have a few of the others in order to prolong the season of flowering. They require the same treatment, and both sections will well repay the amount of care required to keep them in good order. The culture is very simple, but their wants must be attended to at the proper time, otherwise success will not be attained.

I shall begin with established plants, such as may be obtained from the nurseries. A plant which has been struck in the spring, and sent out in the autumn, will throw up from the base of the stem a number of shoots. When these have grown three or four inches in length, all except three should be taken off to make cuttings. Some light sandy mould should be prepared, and one cutting inserted in the centre of a 3-inch pot; they strike root freely, especially if the pots can be plunged in a gentle bottom heat in a dung frame. When the cuttings are rooted, the plants should be removed to a cold frame, and gradually inured to the cold; for although the plant is quite hardy, it dislikes sudden changes of temperature. Some of the plants should be reserved for pot-culture, and others for planting out.

The plants intended for pot-culture should, as soon as the pots are well filled with roots, be repotted in 6-inch pots, shifting them afterwards into 8-inch pots, in which they should be allowed to flower. This size I find to be the best for flowering strong, early, spring-struck cuttings, and noble spikes of flowers are obtained in this way, when the plants receive careful attention. If the plants intended to be grown and flowered in pots are from cuttings struck in the previous season, three shoots may be allowed from each plant, and they should be flowered in 10-inch pots The best compost to use is three parts sandy loam, one part leaf mould, and one part rotted manure During the growing period the pots should be plunged and be abundantly supplied with water both at the roots and overhead Occasional waterings with weak manure water will be beneficial. At an early stage of their growth sticks should be put in; these should stand 2 feet out of the ground and be rather stout, as a well-grown spike offers considerable resistance to the wind.

For culture in the open ground, the Phlox should be planted in beds if the finest possible spikes be desired. A few plants in a mixed border are a pleasing feature, and contrast well with Delphiniums and other herbaceous plants, but it is not easy to pay proper attention to them in such a position. Four rows should be planted in each bed, with an alley between wide enough to allow a man to pass along with a watering-pot without damaging the spikes. If one spike only is allowed to each plant, 16 inches apart in the beds will be sufficient; if three spikes, 24 inches should be allowed. Early in March is the best time to plant them, and the ground should be deeply trenched and highly manured. The plants will also require copious supplies of water during the growing season, and the beds should be also mulched with short manure to prevent evaporation.

The Phlox is not so well adapted for exhibition as the Hollyhock and Gladiolus, as the flowers are apt to fade before night, although when due precautions are taken I have seen them stand pretty well. The best way to stage the cut spikes for exhibition is

to fill a small pot with sand, in the centre insert a small tube full of water, in this tube place the cut end of the spike, and surface over neatly with green moss. A pot is required for each spike.

Grown and flowered in pots, Phloxes are a grand feature at the autumn exhibitions. A serious drawback to exhibiting them in this way is the expense attendant on moving them to long distances, so that to give all a chance it would be as well to show them in both ways. I will add a list of the best varieties in each section.

Early-flowering.—Duchess of Sutherland, Elvina, James Mitchell, James Neilson, John Watson, Miss Ainslie, Mrs. Murray, Mrs. Thorn, Mrs. Austin, Mrs. Hunter, Pladda, Robert Hannay, The Queen, William Linton, Waverley, William Blair, The Deacon, and W. W. Platt.

Late-flowering.—A. F. Barron, Amabilis, Aurantiaca superba, Aurore Boréale, Comtesse de Chambord, Liervallii, Madame Barillet, Madame Guillotteaux, Madame La Comtesse de Fernandona, Madame Billy, Madame Domage, Mdlle. Hermine de Turenne, Mdlle. Marguerite de Turenne, Miss Macrae, Mons. Joseph Heim, Mdlle. Muret de Bort, Mons. W. Bull, Mons. Malet, Mons. Veitch, Madame Delamere, Mons. Marin Saison, Mons. Guillotteaux, Mrs. Laing, Princess Louise, Queen Victoria, Souvenir des Fernes, Triomphe du Parc de Neuilly, and Venus.—*Cottage Gardener.*

Too Many Fall Apples.

The Wisconsin *Farmer*, referring to the abundance of fruit in the markets of that State, says that one of the mistakes which has been made in Wisconsin has been the setting of too large a portion of the apple orchards with trees bearing apples whose season is in the early fall. This year apples have been quite plentiful. At times they were something of a drug in the city—growers finding a difficulty of making sales at fifty cents a bushel. Large quantities were made into cider. It is not at all certain, however, that winter apples will be either too plenty or cheap. Those purchasing trees will consider this question, and in addition to hardiness and productiveness of the tree and the quality of the fruit, they should look also to the season of the fruit.

The Murphy Apple.

A dish of this variety was exhibited by Fearing Burr before the Massachusetts Horticultural Society.

The Boston *Cultivator* says that its brilliant appearance attracted attention, the colour being a deep crimson blotch and streaks upon a cherry ground, fading upon the shady side to a bright yellow. The quality of the fruit is very good, tender, juicy, a sprightly sub-acid, not equal to the Northern Spy in character, but much superior to the Baldwin. Mr. Burr stated that he has had the variety in bearing many years, that its habits are all good, and it bears regularly and abundantly. The size is above medium. Its beauties and good qualities combined make it a very desirable variety.

Importance of an Interest in Gardening and Natural History to the Young.

The study of the simple, the natural, the pure, and the beautiful by the young, will be one of the best antidotes against the indulgence in gross and debasing pleasures. Many a lad and many a man seek pleasurable excitement in channels that will ultimately be ruinous, who might never have cared for such indulgences if other sources of excitement of a more mellowing character had been presented to his notice, such as a book to read, a garden to clean, a plant to tend, a bird to feed, a beautiful insect in all its wondrous transformations to study. And, call it contractedness or selfishness if you will, still it is no less a law of our humanity, especially strongly manifested in the young—the law manifested in the fact that to insure anything like enjoyment we must have something to care for, something to pet, something to love, something that in a proprietary sense that must be inherently and peculiarly our own. And thus, on the same principle, if the object petted be a living thing capable of responding in some measure to our cares for it, the more attractive it will be. I can recall to recollection many instances in which the sportive kitten, the cosy tame rabbit, the faithful affectionate puppy, the kiss-and-kiss-me dove and pigeon, the favourite strutting cock of the yard, or the still more aristocratic bantam (but whose love to his owner was even greater than his assumed dignity), the high warbled cheering note of linnet and canary when a certain knock was heard at the door, and more especially when a certain head and shoulders showed within it; the appearance of the window plant after its roots were watered and its leaves were washed, cleaned, and sponged, and when every bit of flower and foliage seemed to look you in the face and say, Oh, how I thank you for your care!—I can recall to memory instances such as these which have exerted a more mellowing kindness-securing and kindness-diffusing power than could be realised by looking on the finest painting or sculpture, or beholding the most magnificent scenery the world can afford; and chiefly because these living things could make a return for the care bestowed, and because, also, the possessor could look on each or either as his or her very own.

Damp not, but encourage all such tastes for pets, be it bird or plant, even in very young people. A place could be set aside for the young folks, and a particular place or position awarded to each, that each might do the best, and carry out a particular hobby without interfering with the peculiar leanings of his neighbour; and all this it is wise in every way to encourage.

I have often found mothers, and fathers too, so objecting to their young folks having any pets of their own, that to carry out the natural craving it had to be indulged-in in a concealed sort of way—a very bad thing, for in every matter it is well that the most perfect confidence should exist between child and parent. "I might as well have a perfect Babel as these screeching and howling sounds. A menagerie with its filth and odours could be no worse than my boys pester me with, with their beasts and birds in every corner they can get hold of," said a mother not long ago. Ah! but mother, if you arrest the gratification of such tastes you might have tastes formed for other things that will give such pulls at your very heart chords, that in comparison the screeching you complain of would be the sweetest music. Direct all such tastes aright, and you may wield a mighty power on your loved young ones for fostering habits of order, of attention, of thoughtfulness, of cleanliness, and kindness.

When plants are grown for their own sake and the pleasure they confer, they will ever exert a power in arresting the indulgence in the low and degrading, and the culture of them, therefore, should be encouraged in every possible way.—*Cottage Gardener.*

Destroying the Mealy Bug.

The most important agent in keeping down mealy bug is thorough cleanliness. Mealy bug is one of those pests which harbour in wood as well as on living plants; indeed, it will exist on everything used in the construction of plant houses, and in the culture of plants. The woodwork should be thoroughly cleaned at least twice a year—October and March, using soft soap not less strong than 3 ozs. to the gallon, keeping it from the glass, and this should be cleaned with clear water. Every wall should be coated with limewash, adding 1 lb. flowers of sulphur and 4 ozs. of soft soap to every gallon, and the woodwork should be well painted every alternate year—better every year. The cleaning must be thorough. Mealy bug cannot endure paint; there is no insect, probably, that spirits of turpentine, especially its vapour, will not kill.

As regards cleaning the plants, I am a firm believer in water being the best thing to use. Mealy bug cannot withstand it, and, though it may shield itself from it in the cracks and crevices, on the plant which can be subjected to the force of water from a syringe its days are few. When a plant is infested (and all plants should be frequently examined to see that they are free of insect pests), I advise that it should be gone over where it stands, if this can be done, and if not, it should be removed with the least disturbance—not that the insects are likely to run, but they fall, and one dropped may soon cause a generation on other plants near which it falls; but if cleaned where it stood, if any drop, the insects will generally return to whence they came. I go over the plant leaf by leaf, scanning well every joint, and wherever a mealy bug is seen, or the cottony substance of the brood, it is taken between the finger and thumb, and this is after all the best cure; it is tedious, but sure. That done, remove the plant, and laying the pot on its side, syringe the plant thoroughly, turning it round so that it may have the

force of the water directed against every part. The water should be heated to a temperature of 160°, and to every three gallons add a wine-glassfull of spirits of turpentine and 12 ozs. of soft soap. The solution should be applied at a temperature of 140°. This will destroy all the mealy bugs escaping the hand-squeezing, but it is not applicable to all kinds of plants Those with smooth hard leaves it will not injure, but those with soft hairy leaves it will destroy. Examples of plants which it will not injure are Gardenias, Ixoras, and Stephanotis, and those which it will injure are exemplified by the Gloxinias. In the case of soft hairy-leaved plants, the best method is to persist in the hand-cleaning, and syringing with water only at a temperature of 120°. Either persisted in will soon clear the plants of those pests not that the insect may not return, which it assuredly will do if of long standing It hides itself in the woodwork, plunging material, &c., and re appears when least expected.

In addition to the guano on the floor, I put in each of the evaporation troughs a handful of guano, and stir well up, repeating the application every fortnight during the growing season, and this keeps off the mealy bug, and is useful against other insects, especially red spider, for which it is a remedy.

The value of ammonia to the cultivator is well known, and the greater benefit of natural watering as compared with artificial watering is in a great measure due to its presence in the one case, and absence in the other. I am persuaded that for sprinkling, for every three gallons used, 1 oz. of guano would be vastly superior, more beneficial than water only, which from its being drawn from a source deprived of its ammonia possesses no stimulating quality. Strained I consider it would be very beneficial for syringing plants. Having tried it but to a limited extent, I cannot say more than that it has a beneficial tendency similar to that of soot water; it is of an equally harmless nature as regards the foliage, and does not discolour paint, &c.—G. ABBEY, in *Cottage Gardener*

Wine Making—"Gallizing."

To the Editor.

SIR,—I have observed that your columns are always open to fair criticism, and as the remarks I am about to make are offered in a friendly spirit, perhaps you may deem them of sufficient importance to a large class of your readers for publication. I wish to draw attention to a passage in the speech of the President of the Fruit Growers' Association, read at the late Provincial Exhibition held at Kingston. Let me premise that vineyardists and producers of wine are much indebted to that gentleman for the enthusiasm with which he enters into and recommends the cultivation of the vine. The passage in question is as follows:—"For the encouragement of grape growers to prosecute this branch of horticulture, I refer them to the statistics of grape growing on the last pages of Husmann on Grapes and Wine." That work of Husmann's has been in my possession since its first publication in 1866, and I am familiar with its contents.

The results referred to are certainly most encouraging, and bid fair to incite the Canadian vineyardists to emulation. But in Husmann's system of wine making there is a method adopted which I hardly think Mr. Burnett intended to recommend. I allude to what Husmann styles "Gallizing"—a term indebted for its existence to Dr. Ludwig Gall—the individual who is asserted to have reduced the process of wine making to a mathematical certainty. But after all that can be said in favour of that process it is certainly a highly remunerative one to the producer—it is, in my humble opinion, only another name for adulteration Husmann honestly tells us that in unfavourable years, when the must did not come up to the normal standard, being deficient in saccharine matter and having acids in excess, he systematically resorted to the process in question. that is to say, from 100 gallons of grape juice deficient in naturally proportioned ingredients, he has the game so thoroughly in his own hands that he is enabled to make the poor must do double duty—in other words, to remedy the defect by adding sugar and water sufficient for the manufacture of 200 gallons of wine. And this he calls "Wine making made easy." Might he not with equal reason, and in further recommendation of the process, have expatiated on the "easiness" of mind, so to speak, the entire freedom from all anxiety in regard to the seasons, which is the happy lot of the vine grower, since in unfavourable years he does indeed reap a harvest—in other words, he doubles his profits: for Mr Hussman plainly gives us to understand that purchasers, with a full knowledge of the fact, with very few exceptions, gave the preference to the article thus manipulated.

There is one unfortunate drawback, however, to this method of wine making, which Mr. Husmann is forced to admit. It is well for him he did, for it is too palpable to escape observation. He confesses that wine so manufactured is sadly deficient in "bouquet." But I suppose it will not be long before American ingenuity will invent a substitute for that most desirable and essential ingredient—etheric oil; and then, rain or shine, hot or cold, ripe or unripe, every grape berry will be literally a little bag of wine!

"O fortunatos nimium, sua si bona nôrint Agricolas!"

But now, with or without Mr. Husmann's leave, I may here repeat the truism that wine, genuine wine, is the fermented juice of the grape; and although a compound like that under consideration may be a very agreeable beverage, and may satisfy the requirements of the coarser palates of the many, it will altogether fail to fascinate a refined taste, which is more enamoured of the bouquet obtainable in perfection only from the pure juice of the grape than of its alcoholic strength. This, the addition of sugar does of course increase, but it can do no more.

The point I have now arrived at, and which I would fain press, is this: Let us not at the outset, in the very infancy of grape growing in Canada, imitate such an example If we cannot grow the luscious Malvoisie of France, the Tokay of Hungary, or the Angelica of California, we can at least produce, without the addition of extraneous matter, the lighter dry wines, closely resembling say the Marsala of Sicily, the Hock of Germany, and other Rhine wines, as well as an exceedingly fine and full-bodied claret. I am persuaded we shall in time do even more than that; in fact, with our dry and hot, though short summers, and fine soil, and pure atmosphere, there is no knowing yet what we shall be able to effect. We are every year acquiring experience in this department of horticulture, or rather of agriculture—for grape growing is no longer confined to our gardens and by hybridization and other means, are producing new and hardy varieties adapted to our soil and climate.

By all means, then, save us from "Gallizing" And as our wine producers are very likely to imitate that portion of Husmann's system which has contributed so largely to swell the mercantile "results" to which he has treated us, and offer so strong an inducement to imitate the example, perhaps Mr Burnett will take an early of opportunity of stating his views thereon. I hope he will withhold from it the sanction of his name.

T. P. HODGE.

York Mills, Oct. 3, 1871.

How Any One Can Grow Grapes Under Glass with Little Trouble or Expense.

PAPER READ BEFORE THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

Many persons would be induced to erect a small vinery for the culture of the finer varieties of foreign grapes, were it not for the great trouble attending their culture under glass in the ordinary manner, in watering, syringing, ventilating, &c., requiring the services of a professional gardener, or occupying more time and attention than the generality of persons can spare.

By adopting the following plan in erecting the vinery they will be relieved of the greater part of this trouble, and have a fine supply of delicious grapes, with no more trouble or attention than is required to grow the natural vine out of doors.

The sashes are made stationary, but so that they can be unscrewed and taken off for repairs at any time. They extend from the front wall to within a foot or ten inches of the back wall at the top, leaving an opening of ten inches wide along the top to be closed by sheet-iron ventilators in winter or when requisite, but which is kept constantly open from the time the vines are uncovered in the spring till they are laid down and covered in the fall.

The principal peculiarity is in the glazing. The glass is laid end to end without lapping or putty, and merely kept in its place by small pieces of tin, and a space of half an inch or an inch is left open between every third or fourth pane, so that all the rain that falls on the house is distributed pretty equally over the entire house, very little running off the roof except in very heavy thunder storms. There is no ventilation whatever below, as a draught I have found injurious to the vines. Any air that comes in is by these openings in the glazing, and the heated air finds vent at the top.

Last year was a very dry one, as well as this, we having no rain here for months; but the vines never suffered from the drought, though they were never watered or syringed from the time they were uncovered in spring, when it was done copiously, till they were again uncovered this spring. Nor were they the least affected either last year or this with mildew or red spider, though previous to adopting this plan I was annually troubled with both, in spite of syringing copiously morning and evening.

My present vinery was not erected for that purpose, but for a small conservatory, and the floor was sunk about 2½ or 3 feet, with a brick wall all round. About 12 years ago I filled it up level with good compost, and planted the vines all inside, there being no opening for their roots to extend to a border outside. It was intended principally for proving seedling vines of the foreign varieties and the newer varieties then out, with a few of the best old varieties, and in a space of 24 by 14 feet contained for several years 36 vines, which were thinned out as they were proven worthless, till it now contains 24; this is still too many, about 16 being all that could be properly grown in that space. Last year it got a liberal supply of liquid manure in spring, this year it got nothing but clear water at first, and rain as it falls, and is doing as well as last year, and vigorous enough for a house containing so many vines.

The ends of my present vinery are not glazed, having only a small window and door on each end. Were I to erect a new one I would have the ends glazed to within three feet of the ground, and would have openings in the front wall to allow the roots of the front row of vines to extend into a prepared border outside.

For those who may wish to try this plan, I would recommend the following varieties as being the most successful with me, and of the finest quality:—

1. Black Hamburg.
2. Muscat Hamburg.
3. Champion Hamburg.
4. Lady Downes.
5. Golden Hamburg.
6. Bowood Muscat.
7. Buckland Sweet Water.
8. General della Marmora.

The first four are black or purple grapes, and the last four white grapes.

No. 1 is by far the most profitable and best of the blacks, and Nos. 6 and 7 of the whites. Nos. 4 and 6 are the better of artificial impregnation, as they do not set the fruit very well.

The principal trouble in following this plan, more than is required in out-door culture of the native, is the necessity of thinning the grapes on the bunches to about one-half when about one-quarter grown, to give room to the rest of the berries to swell.

JAMES DOUGALL.

Windsor, 3rd July, 1871.

The Christmas Rose.

This interesting flower derives its name from the time when it is usually in bloom in England, the Christmas Holydays. It is the Helleborus Niger of botany.

Here it flowers about the last of December, keeping up a succession of blossoms, when the weather is open, all winter long. When covered with snow sufficiently deep to protect it from extreme cold, it puts forth its pretty flowers beneath the snow. The blossoms are single, of a blush-white colour, tinged with green, bearing considerable resemblance to a small single rose. It is perfectly hardy, and may be propagated by dividing the roots in spring.

Care of Young Fruit Trees.

Young fruit trees, for the first two or three years after transplanting, should, before hard winter sets in, be protected against any undue quantity of water, especially in low situations. This can be best done by making a small hillock of dirt around the stems sufficient to throw off the water and not let it settle about the roots. We have known young trees to be killed by constant immersion in water through most of the winter, and have frequently known them to be stunted, from which many of them never entirely recovered. On the other hand, in summer, these trees should have the soil slightly bowled out around them, in order that they may have a more abundant supply of water than they would otherwise obtain. If we expect to be successful in fruit raising, we must adopt all the means attainable to insure it.—*Germantown Telegraph.*

WINTERING ONIONS.—A few years ago we met a western farmer who was growing two or three thousand bushels of onions yearly. They were sent chiefly to the Southern market. He wintered the onions in pits as we do potatoes. A moderate freezing, it is well known, does not injure the onion, provided the frost is drawn gradually, and it is not allowed to freeze and thaw more than once. The best conditions for keeping them are a dry place and temperature just above the freezing point. We have covered with dirt only, using no straw, to the depth of twelve or eighteen inches, according to the exposure of the pit, and the onions came out crisp and sound in the spring. The danger to be avoided is heating. It should be remembered that some frost is safer than too much heat. If too much covering is used, the entire pile will rot.—*Ex.*

Entomology.

Attacus Cecropia.

During the winter months, when the apple trees are leafless, the large cocoons of the *Cecropia* moth may be found here and there, firmly bound to the twigs, and occasionally I have seen them on young trees attached to the stock near the ground. They are about three inches long, pod-shaped, and of a dirty brown colour, and are entirely constructed of silk, the fibres of which are very much stronger than those of the common silk worm, *Bombyx mori.* This silk has been worked to a limited extent, and manufactured into socks and other articles, which have been found very durable; but a drawback to the advancement of this branch of industry lies in the fact that the caterpillars do not bear confinement well, and hence are not easily reared.

The exterior structure of the cocoon is very close and papery-like, but on cutting through this we find the interior—surrounding the dark brown chrysalis—made up of loose fibres of strong yellow silk. This snug enclosure effectually protects the insect in its dormant state from the extremes of weather during the long wintry months. When the time approaches for the escape of the moth, which is about the beginning of June, the internal dark brown chrysalis is ruptured by the struggles of the occupant, and the newly born moth begins to work its way out of the cocoon. As it is possessed of no cutting instrument of any kind, this would indeed be a hopeless task, had not the all-wise Creator made a special provision for this purpose, and to this end a fluid adapted for softening the fibres is furnished just at this juncture, and secreted from about the mouth. On listening to the creature as it works its way through, you hear a scraping, tearing sound, which is made by the insect working with the claws on its fore feet, tearing away the softened fibres and packing them on each side to make a channel for its escape. The place of exit is the smaller end of the cocoon, which is more loosely made than any other part, and through which, after the internal obstacles are overcome, the passage is effected without much further trouble.

I have frequently watched their escape. First through the opening is thrust the anterior pair of bushy-looking legs, the sharp claws of which fasten on the outside structure; then with an effort the head is drawn forward, suddenly displaying the beautiful feather-like antennæ; next, the thorax, on which is borne the other two pair of legs, is liberated, and finally, the escape is completed by the withdrawal of the abdomen, through the breach thus made. Queer looking creatures they are when they first put in an appearance, with their large, fat, juicy bodies, and tiny wings. When the wings are fully

expanded, they measure from five to six inches or more across; but when fresh from the chrysalis, they are but very little larger than the wings of a humble bee. The first necessity now for the welfare of the individual is to find a suitable location where the wings may be held in a good position for expanding, for without such favourable circumstance they would never attain a serviceable size. It is necessary that a position should be secured where the wings may hang down as they are expanding, for which purpose the under side of a twig is often selected; and here securely suspended by the claws, the wings undergo in a short time the most marvellous growth it is possible to imagine. The whole process, from the time of the escape of the moth to its full maturity, seldom occupies more than from half an hour to an hour, and during this time the wings grow from the diminutive size already mentioned to their full measure and capacity.

A wing clipped from the insect immediately after its escape, and examined under the microscope, reveals the fact that the thousands and tens of thousands of scales with which the wings are covered, and which afterwards assume such beautiful feather-like forms, are now nearly all threadlike, not folded up or wrinkled, but undeveloped. Impressed with this thought, the mind is fairly astonished at the almost incredible change wrought in so limited a time, for the growth embraces not only the extension of the surface of the wing, but the enlargement and maturity of every scale or feather on it, the individuals of which are but as dust to the naked eye. What a wonderful and intricate system of circulation and power of nutrition must be possessed to accomplish this marvellous result!

Soon after their exit these moths seek their mates, and after pairing, the female begins to deposit her eggs, a process which occupies some time, for the eggs are not laid in patches or groups, but singly, and are firmly fastened with a glutinous material to the under side of a leaf; and as it is seldom there are more than one or two laid on any single tree or bush, a considerable distance must be traversed by the parent in the transaction of this all-important business.

Until the present season, I never had an opportunity of fairly computing the number of eggs which one of these moths will lay, and had roughly estimated them in my own mind at from 50 to 100. About the first of June, a pair of *cecropias* came into my possession, and afforded a favourable opportunity of throwing light on this point. On the 3rd of June the female began to deposit eggs, which she continued to do at intervals until the 6th, and in a few days afterwards died. On counting the eggs, I found them to number 217. When we consider the relative size—for they are large—it may readily be imagined that the size of the body of the moth was much reduced upon the completion of her task. The egg is about one-tenth of an inch long, nearly round, and of a dull creamy white colour, with a reddish spot or streak near the centre. The exact duration of the egg stage was not noted, but may be set down as probably from a week to ten days.

At the expiration of this period, the larva eats its way out of the egg, the empty shell of which furnishes the young thing with its first meal. At first it is black, with little shining black knobs on its body, from which arise hairs of the same colour. Being furnished with a superior appetite, its growth is very rapid; and from time to time its exterior coat or skin becomes too tight for its comfort, when it is ruptured, and thrown off. At each of these changes or moultings the caterpillar appears in an altered garb, gradually becoming more like the full-grown larva. It is very handsome. Its body is pale green, the large warts or tubercles on the top of the 3rd and 4th segments are coral red, the remainder are yellow excepting those on the second and terminal segments, which, in common with the smaller tubercles along the sides, are blue. During its growth from the diminutive creature as it escapes from the egg, to the monstrous-looking full grown specimen, it consumes an immense amount of vegetable food; and especially as it approaches maturity, is this voracious appetite apparent. Where one or two have been placed on a young apple tree, they will often strip it entirely bare before they have done with it, and thus prevent the proper ripening of the wood, entailing damage to the tree, and sometimes endangering its life; hence, during their season, they should be watched for and destroyed. Now that their period of active labour is over, their cocoons may be looked for, and removed in time to check their further increase. In the caterpillar state they are not of dainty appetite, and, while partial to the apple, will eat other foliage as well; were it not so, we should soon hear more of their destructive effects. We have taken them feeding on cherry, plum, maple, willow, lilac, black and red currant, and hazel, and they are said to attack also the hickory, birch, elm, honey locust, barberry, hawthorn, and elder.

The natural increase of this insect being so great, a wise provision has been made to keep it within bounds. Besides enemies which attack the egg and young larva, there are several parasites, which live within the body of the caterpillar and destroy it before reaching maturity, and in this way their numbers, which would otherwise soon be alarming, are kept within moderate limits.—W. SAUNDERS, in *Canadian Entomologist*.

A Plea for the Bumble Bees.

The *Turf, Field and Farm* puts in the following:

Boys think it glorious fun to fight bumble bees, but they should not be encouraged in the warfare. Bumble bees, like all the hymenoptera, play an important part in the great field of nature. The vein-winged insects which fly from flower to flower do not injure or destroy the flowers, but make them productive by distributing the pollen. They also rid us of innumerable noxious caterpillars and other insects, which they convert into wholesome food for their offspring.

The ordinary honey bee performs its work well in the fertilization of white clover, but its proboscis is not long enough to enable it to reach the nectaries of red clover; for the fertilization of the red clover we must rely to a great extent upon the bumble bee.

Darwin has called attention to the intimate connection between the number of cats in a given district and the yield of red clover seed. The mice destroy bumble bees, and the cats destroy the mice; therefore, the more cats the more bumble bees, and the more bumble bees the greater is the red clover yield. In order to make red clover grow more abundant in New Zealand than it does, some enterprising gentlemen are talking of importing colonies of humble bees from England. Our young friends will thus see how carefully the bumble bee is desired in countries where he works not. Then should we not protect what we have, and which performs such important services in our fragrant meadows? We think so, even if it does interfere with the wild pleasures of careless boyhood.

On the Swarming of Danais Archippus.

On the first day of September, while driving along the Lake Shore Road, on the borders of Lake Erie, a mile or two south of Port Stanley, I was favoured with a sight which will not soon be forgotten. For several days previous, *Archippus* butterflies had been unusually abundant, and, early in the morning of the day in question some groups—numbering probably hundreds of individuals—which had rested during the night on trees adjoining the hotel at Port Stanley, were gyrating in a wild manner at all heights, some so far up that they appeared but as moving specks in the sky, others floating lower, over the tops of trees, in an apparently aimless manner. This was, however, as a mere skirmishing party when compared with the vast hosts seen a little later.

It was about nine o'clock in the morning when, passing a group of trees forming a rude semicircle on the edge of a wood facing the lake, the leaves attracted attention; they seemed possessed of unusual motion, and displayed fitful patches of brilliant red. On alighting, a nearer approach revealed the presence of vast numbers—I might safely say millions—of these butterflies clustering everywhere. I counted a small space, about the size of my two hands, on one of the trees, and there were thirty-two butterflies suspended on it, and the whole group of trees was hung in a similar manner. When disturbed, they flew up in immense numbers, filling the air, and after floating about a short time, gradually settled again. There appeared to be nothing on the trees to attract them, yet when undisturbed they appeared at this time, to prefer resting in quiet, as if enjoying the presence of congenial society. I regretted not having a net with me, as I should like to have captured a number of them to see in what proportion the sexes were represented in the company. Their food plants—the various species of *Asclepias*—did not appear to be unusually common in that section. I apprehended that many of the individuals must have travelled some distance to be present at that gathering. The fact that the larva of the *Archippus* is but seldom affected with parasites may partially account for their occasional abundance; I only know of one small ichneumon infesting them, and have seldom met with this.—W. SAUNDERS, in *Canadian Entomologist*.

A Phenomenon.

The Ashy Blister Beetle, *Lytta cinerea* Fab. (*Macrobasis Fabricii* LeConte) was very destructive to the potato vines in several parts of the Province of Quebec during last July. In some places it was exceedingly abundant, and attacked the Windsor bean as well as the potato. Five years ago it was also very common. Its appearance this year gave occasion to an article in one of the French newspapers published in Three Rivers, which is such a wonderful production that it is well worthy of being placed on record. Entomologists will have a smile at it, and think that a little better acquaintance with insect life would do our farmers and journalists no harm. The following is a free translation of the article :—

"A NEW PLAGUE

"We are threatened, it would seem, by a new plague. A citizen, a good observer, reports to us that he has noticed the following phenomenon in a fine field of potatoes on his grounds in this town. He tells us that he has found on his potatoes a large quantity of blue beasts (winged, and the colour of blue stone), which rapidly devoured all the leaves of the plants, leaving only the bare stems. He gathered more than a quart of these insects. After some time, the insect undergoes a change. It dries in the sun, an opening appears beside the shoulders, near the neck, and a very active fly emerges, at first of a blue colour, which alights on the cabbages, and doubtless continues its ravages there. As it grows older, this fly becomes grass-coloured, probably on account of feeding on the cabbage leaves. This subject is a most important one, and merits the close attention of our agriculturists."

What can the "active fly" be, which makes its appearance in such an extraordinary manner, issuing (as the Abbé Provancher well expresses it), like Minerva from the brain of Jupiter? The mystery will probably remain forever unsolved. The only solution that can be offered is, that as the "good observer" has mixed things so promiscuously, he may have mistaken the larva of *Paris rapæ* for a fly, and fathered (or mothered) it on the unfortunate Blistering Beetle, which has enough to do in attending to the potatoes, without providing for the cabbage also.

This beetle seems to be the most injurious of the insects infesting the potato crop in Lower Canada, and its attacks cease about the beginning of August, when the insect is supposed to enter the earth to deposit its eggs. Cutworms, however, did some harm last spring by nipping off the young shoots; and a larva (perhaps of the same family), destroyed the seed in some places, by eating it in the ground, as I was informed by a farmer in the vicinity of Quebec.—G. J. Bowles, Quebec, in *The Canadian Entomologist*.

We regret to learn that among the disastrous losses occasioned by the Chicago fire, the very valuable entomological collection of the late Dr. Walsh was totally destroyed. It will be remembered that after the death of the eminent entomologist, the collection became by purchase the property of the State. It was not only very extensive, but the specimens were arranged and labelled with great care and accuracy; and it will be many years before another can be collected to replace it.

Apiary.

Queenless Hives.

To the Editor.

Sir,—Will you be kind enough to inform me what is the cause of hives getting queenless? I know that a hive with an old queen will become queenless by the death of the queen; but old hives with young queens getting queenless at this season of the year, seems very strange to me. Is it that the queens make mistakes and enter the wrong hives, and get killed? or what is the cause? I had thirty-seven hives, and four of them were queenless old hives that should have had young ones.

Why do some hives throw out large quantities of young brood? and why did some of my bees kill off their drones the last days of May?

EMERSON.

Woodburn, Sept. 20, 1871.

Reply.—There are several ways by which an old hive may become queenless. Sometimes all the young queens swarm out, and there being no eggs in the hives at such times, the bees are unable to raise another. Again, the young queen may be destroyed when she goes out to meet the drones, or she may on returning go into a strange hive, and be killed by the queen belonging there. If hives are much alike, and are placed near together, she may go into the wrong hive through mistake, or she may be decoyed there by the loud humming of bees about the entrance.

Stocks sometimes throw out large quantities of young brood to get rid of the moth which is at work in the hive. Again, when there is a scarcity of honey, the brood is sometimes destroyed; or when the brood becomes chilled by a sudden change of weather from warm to cold, causing the bees to cluster more closely together, leaving some part of the brood exposed, it is then thrown out.

The cause of bees killing off their drones in May is a scarcity of honey, generally on account of dry weather.

The goodness and flavour of honey depend on the fragrance of the plants from which the bees collect it; and hence it is that the honey of different places is held in different degrees of estimation. That which is made early in the year, is also preferred to what is collected in the latter part of the season. The colour also depends on the colour of the juices which the bees collect.

Bees proportion their work to the prolificness of the mother, or queen. Reaumur observed a hive, where they were at work on a few combs, and with little vigour. Whence this inactivity and dispiritedness so uncommon among bees? He saw the reason of it when he got into his hands the mother of the hive. She was small and pitiful in comparison with other mothers. The workers judged of her as she deserved.

Rural Architecture.

Stable Building—A Novel Method.

Ten years since I wanted some stables built, and having a saw mill, lumber was plentiful and cheap. I had no carpenter to frame the building, and did not feel equal to doing so myself. I therefore determined to build the stable by packing 2 by 4 scantling, one on the other, until the walls were high enough. I had a lot of coarse hemlock logs fit for nothing else, so I directed the sawyer to cut them all up into the above scantling. The knots were so large and the logs so shaky, that after the lumber was cut much of it required two persons to handle it, or it would have tumbled to pieces. I mention this to show how bad the quality of the logs was. In fact, these logs were the refuse of two or three years' work about the mill. There was enough of good pieces obtained from them to make joists, ceilings joists and rafters.

Sills, S by S, were first cut and laid in the ordinary way. Joists 10 by 2 were next laid on them, bearing 4 inches on the sills and leaving 4 inches all round to receive the scantling. The doors and windows were then laid out and marked conspicuously with chalk marks on the sill, outside and inside. We now commenced laying up the scantling, one on another like bricks, overlapping alternately at the corners, by working from one place of beginning, and so going all round just like laying up a rail fence. We left the overlengths projecting, thus avoiding cutting each piece. Sometimes this projection was one foot, sometimes many feet, but always more or less according to the length of the scantling used. Every few courses these projecting ends were cut off and used up. As I came to where the windows and doors were marked out, I often missed joining the portions as elsewhere, as it was useless to do so. All that was requisite was to be sure to leave length enough to cut squarely down each side. By-and-by, when cutting out each opening, each piece of scantling laid was secured in its place with about two or three 3-inch nails. I was very careful not to have any nails in the line of saw cut required. When forming the opening for either windows or doors, and when the wall was as high as the top opening required, I plumbed the sides and drew a straight chalk line to cut by, and to facilitate a begianing I cut in the saw about four or five inches deep before putting on the next piece of scantling that was to continue the wall above the opening. This trifling precaution saved me a great deal of trouble. I omitted it at first, in one or two places, and also was not as careful as I ought to have been about having nails come in the line of the saw cut, and from this cause my saw was almost ruined by cutting on to an occasional nail, which, it will be remembered, I could not

possibly see, as both head and point were hidden. One difficulty I found, which I subsequently avoided by a very simple contrivance. This difficulty was to build the corners and wall quite plumb and straight up and down, and at the same time to have the outside quite smooth and square. I tried the plumb rule with every course and the line to lay each course by, the same as bricklayers use, and this plan answered well enough; but it took twice as long to plumb a line each course as to lay it, and I soon gave that up and substituted the following in its stead: I selected twelve perfectly straight edged boards, about 16 feet long, and nailed them up at each corner, and the centre division between each corner, but not within 12 inches of the corner itself. The boards were tacked edgewise to the sill, and stood up all round the building, exposing the inside edge (nailed to the sill), as a guide by which the wall was to be carried up. These guides were carefully plumbed, so as to be perfectly upright. Without this precaution it was manifest the walls would slope outside or inside. A board standing 16 feet high, only tacked to the sill edgewise, must necessarily be very feebly sustained, and another piece was tacked to the upright in the form of a brace. To secure the outside end of this brace there was driven into the earth a piece of scantling about three feet long, and the brace nailed to it securely. This made all safe, stiff and secure, and the uprights were quite incapable of moving outwards, when laying up the walls, piece by piece, and of course were equally unable to be displaced towards the building, as the walls themselves effectually prevented this.

I recollect I finished building the walls of a stable, 25 by 16, and 14 feet high, in two days, with one man to help; and after ten years' use there is no fault to be found with this mode of architecture. I have several such buildings now, and believe them the cheapest and most durable of any, and certainly by far the warmest. Of this there is no doubt whatever. In fact, if there is any fault, they are too warm, and require ventilating holes cut opposite each horse's stall in rear and front, of about 12 by 8 inches, fitted with a sliding clap, to admit air. In cold weather, when the wind blows on one side, I open those opposite, and so alternately reverse the ventilation.

Now as to cost, (for the economy of building is certain, and the comfort and warmth equally so), one square hundred feet of upright boards outside, the same for lining inside, with studs between, braces for studding, and extra size for posts, will amount to three inch thick of a wall. The battens outside will be about equal to half an inch, and those inside half an inch more, and this makes exactly four inches thick. The lumber for this is worth about 25 per cent. more than what will be requisite for my mode of building, and the labour will be about double, or probably four times as much; the nails probably somewhat less for frame than for my plan; so that, on the whole, my mode will cost about 12½ per cent. less than an ordinary frame of upright boards; and we all know what a cold, miserable, warped appearance this kind has in a few years; whereas my building will be just as good twenty years hence as at first.

This class of building is most extensively used for elevators and buildings requiring enormous strength, and I never heard of one breaking down; nor do I believe one ever got out "of truth," or failed in its original proportions in any way. C.

Poetry.

My Birthday.

Beneath the moonlight and the snow
Lies dead my latest year,
The winter winds are wailing low
Its dirges in my ear.

I grieve not with the moaning wind
As if a loss befell:
Before me, even as behind,
God is, and all is well!

His light shines on me from above,
His low voice speaks within,
The patience of immortal love
Outwearying mortal sin

Not mindless of the growing years
Of care and loss and pain,
My eyes are wet with thankful tears
For blessings which remain.

If dim the gold of life has grown,
I will not count it dross,
Nor turn from treasures still my own
To sigh for lack and loss.

The years no charm from Nature take
As sweet her voices call,
As beautiful her mornings break,
As fair her evenings fall.

Love watches o'er my quiet ways,
Kind voices speak my name,
And lips that find it hard to praise
Are slow, at least, to blame.

How softly ebb the tides of will!
How fields once lost or won
Now lie beneath me green and still
Beneath a level sun!

How hushed the hiss of party hate,
The clamour of the throng!
How old, harsh voices of debate
Flow into rhythmic song!

Methinks the spirit's temper grows
Too soft in this still air,
Somewhat the restful heart foregoes
Of needed watch and prayer.

The barque by tempest vainly tossed
May founder in the calm,
And he who braved the polar frost
Faint by the isles of balm.

Better than self-indulgent years
The outflung heart of youth,
Than pleasant songs in idle years
The tumult of the truth.

Rest for the weary hands is good,
And love for hearts that pine,
But let the manly habitude
Of upright souls be mine

Let winds that blow from heaven refresh,
Dear Lord, the languid air,
And let the weakness of the flesh
The strength of spirit share.

And if the eye must fail of light,
The ear forget to hear,
Make clearer still the spirit's sight
More fine the inward ear!

Be near me in mine hours of need
To soothe, or cheer, or warn,
And down these slopes of sunset lead
As up the hills of morn!

JOHN G. WHITTIER

Household.

Cider Making.

At the request of a correspondent, and in order to answer a variety of enquiries, we publish the following article on cider making:—

The art of making the best cider consists in observing some very simple rules hereafter; but no one can make a first-class article without having the true cider apples to do so with. Nevertheless, an excellent drink can be made, (and one that will retain its sweetness and yet keep well,) out of ordinary good grafted fruit, by attention to the principles of fermentation and the following rules:

1st. The temperature of the building in which the cider is to be made should be about 50°, and all frost must be excluded at the first part of the process as inconvenient, and during the fermentation as most injurious.

2nd. The apples must be ground as fine as possible. Fluted rollers are the best to produce absolute abrasion of the cells that contain the juice. Without this the yield will be small.

3rd. Any kind of press will do, but if the surface to be acted on is more than eighteen inches diameter, there must be a power applied that will raise at least two tons; in fact, you may safely conclude that whatever press is used, there must be a pressure of at least one ton to the circular foot surface, and more if it can be put on. I have seen on a surface of 5 by 4, or 20 square feet (equal to 25 circular feet), two large wooden six-inch stump machine screws, and there was none too much pressure employed. However, one such screw on a surface of 3 by 3, or 9 square feet, will answer very well, provided that the frame that contains the pulp be strong enough.

4th. After pressure, the juice must be strained through a cloth so fine and of such material as to leave it quite free from any apple pumice or other matter; in fact, it must be "bright as wine" previous to fermentation.

5th. All the juice that is pressed one day should be strained and finished at once, not allowed to remain over-night standing about or neglected in any way; fermentation will otherwise set in before you are ready for it.

6th. Until you are ready for fermentation to begin, any temperature above freezing will answer well—the cooler, however, the better. Fermentation will be thus be retarded until the juice is finished and in the barrels; then the temperature should range between 50° and 55°.

These points are very important. We will now proceed to describe the process of pressing with the straw strainer, premising that

if a patent press is used this plan is unnecessary; but the old straw straining process will beat the patent press twice over in a day's work, and I think it will get out more juice or value, from a certain quantity of fruit. The patent press, however, is very convenient and cleanly, and will do well on a small scale.

For the straw strainer plan make a frame 3 feet square, of 2 by 6 in. plank, set on edge, and firmly dove-tailed together at the corners and strengthened by angle pieces. This is the mould to contain the pumice and straw. Next, construct out of heavy 10 by 10 timber a rough frame 4 by 6, with cross sills; but the top piece through which the screw passes must be so strong that the pressure of the screw will not bend or break it. It must be equal to the pressure of at least nine tons, and the side pieces must be equally strong. Place this frame on a good foundation on the ground, with a flooring of plank underneath to keep all clean; fasten it well down by braces and otherwise, so as no force applied by a horse at the end of the lever that moves the screw, can stir it out of its bed; place on the sills a double 2-inch plank floor 4 by 4, and sloping a little towards the front, covered with light boards. Next fasten all round the outside of this 4 by 4 plank a fillet, so as to prevent the juice as it pours out running away over the edge. One opening in this fillet or ledge exists, made more convenient and tight by a thin mouthpiece.

Dig a hole in the earth underneath this mouthpiece, and insert a tube or barrel to receive the juice; provide a second double piece of 2 inch plank 3 by 3, well nailed together, with a strong block and cross-piece nailed on this to receive the point of the screw. There must be an iron washer or ring so attached to the screw point that on its return upwards, after pressing out the juice, it can sustain and carry up this platform of plank. You are now ready to work

Place straw across the moulding frame, so as to project on all four sides, the joints of the straw meeting in the centres, and projecting about half way all round, and then fill in the pumice with a wooden scoop shovel until the mould is full; then turn in the ends of the straw all round, and raise up the mould. Shovel in more pumice, add more straw, and repeat the operation until you have a pile of apples, pumice and straw, four feet high, pulling up the mould as you go on Then begin and turn down the screw, and it will of course descend on the pumice, carrying the platform plank with it. It will soon come in contact with the heap, and an enormous stream of juice will quickly follow the pressure. Let the screw be freely worked down, and the full pressure be applied, and if the screw be of sufficient power and the lever sufficiently long, it will express almost all the juice the pumice contains. When no more juice runs, back up the screw, and it will carry up its upper platform of plank with it, the lower one will of course remain in its place. Then sprinkle on the heap a few pails of water, more or less abundantly, according as to whether you desire the second run better or otherwise. Allow this water to remain steeping for twenty minutes; then press again as before, and that lot is done.

Before watering, and whilst the press is down the first time, many people cut with a hay knife all round the heap, shearing off that part that bulges out, and is found to contain juice; and this is added to the following lot, placed on the top before squeezing it. I have seen the hay knife used before the last pressing with good effect; in fact, I prefer it to using it the first time. By repeating the above process, a great number of barrels of cider can be cheaply made, and the pumice is excellent as feed for cows; but they must not be allowed to eat it to excess, or serious consequences will certainly arise.

The straw affords the best medium to allow the exit of the juice under pressure. The quantity done can be increased to a mercantile scale, if there are apples enough in the neighbourhood to keep the press going. We used to have every tenth barrel for toll as payment for making up the apples, but that quantity would be hardly sufficient now. The erection of such a cider press would cost about $100, and would pay for itself the first year in an apple country. The little patent presses answer well enough, but they are very slow, although most convenient. There are fluted rollers to be obtained that will crush the fruit well and fast.

When the cider is set fermenting, no yeast of any kind is wanted; but the temperature must not be below 55° or above 60°. Fifty degrees will do well enough after fermentation has commenced. The cider must have been all fine strained before setting it to ferment.

After fermentation comes the "racking" and sulphurous acid process, which is done in the following manner: The casks into which racking is to be done must be wetted with water or juice, but the time for using the acid process must be determined by the sweetness wanted to be left in the cider. As soon as that point is decided on is the time to stop fermentation.

Flour of sulphur must be set on fire by means of a rag, and the fumes allowed to pass into the bung-hole of the cask, which must be thoroughly filled with them. The result of this combustion will be that sulphurous acid gas will be condensed on the inside of the wet barrel. This mode of treating barrels before filling them with cider, was for a long time held as a profound secret in a certain cider district in Devonshire, famous for the excellent keeping properties of its cider. This, however, was sixty years ago. The secret has long since become public property. After fermentation has thus been arrested, if the cider should still be found to be losing its sweetness, it must again be racked off into barrels that have been treated as above to sulphurous acid gas; and this process is often repeated as many as five or six time. Upon this being done several times depends the cider remaining sweet and yet brisk. It will never turn sour, and the process is very easily performed. It only requires one spare empty barrel for any number of full ones, as directly a barrel is emptied into one previously prepared; that immediately emptied, can again be filled after being fumigated with a sulphur rag.

In screwing down the screw, care must be taken that there is a socket or indent, which must be well greased, to receive the point of the screw; also certain guides must be used to keep the screw straight and exactly perpendicular. Practice will soon show the necessity of building up the heap of pumice alike on all sides; otherwise the screw will have a tendency to go to one.

No iron must touch the juice at all where first quality of cider is desired; all sorts of combinations are thereby produced, which have been condemned as fatal to the excellence of the quality or colour.

C.

Our Receipt for Curing Meat.

To one gallon of water—

Take 1½ lbs. of salt.
½ lb. of sugar.
½ oz. of saltpetre
½ oz. of potash.

In this ratio the pickle can be increased to any quantity desired. Let these be boiled together until all the dirt from the sugar rises to the top and is skimmed off. Then throw it into a tub to cool, and when *cold*, pour it over your beef or pork, to remain the usual time, say four or five weeks. The meat must be well covered with pickle, and should not be put down for as least two days after killing, during which time it should be slightly sprinkled with powdered saltpetre, which removes all the surface blood, &c., leaving the meat fresh and clean. Some omit boiling the pickle, and find it to answer well, though the operation of boiling purifies the pickle by throwing off the dirt always to be found in salt and sugar.

If this receipt is properly tried, it will never be abandoned. There is none that surpass it, if so good.—*Germant'n Telegraph*

Waterproof Boot Soles.

If hot tar is applied to boot soles, it will make them waterproof. Let it be as hot as leather will bear without injury, applied with a swab and drying in the fire. The operation may be repeated two or three times during the winter if necessary. It makes the surface of the leather quite hard, so that it wears longer as well as keeps the water out. It is a good plan to provide boots for winter in summer, and prepare the soles by tarring, as they will then become, before they are wanted to wear, almost as firm as horn, and wear twice as long as these unprepared.

Ten years ago I met with a direction similar to the above, and with some hesitation I concluded to have it tried on the soles of a pair of field boots. By a piece of supererogance, a pair of thin soled morocco boots was tarred with the others, the soles being saturated and the seaming too, all round, including the lower rim of the morocco all round the soles. As these boots are doing service yet, and have been much used every summer during the ten years, I mention the fact because it furnishes what I then wished for, namely, a proof that the tar would not

burn or otherwise hurt the leather. The soles remain like horn, and have never required any repair, and even the thin upper, apparently cracked in all directions from the first, has never torn but a little on one boot at the bend on the outer side of the foot. It has been oiled about once each summer, but the soles received only the one thorough tarring.

Boot soles will take the tar best after having the grain worn off slightly. It soon dries in if exposed to the sun, and the odour even of gas tar is quickly overcome by the all-conquering effects of dry earth. A short walk over a fallow field will remove it completely, and make it entirely unnecessary to imitate the eastern custom of taking off the boots at the house entrance, unless there be some other reason for it than fresh tarred soles.—*Cor. Country Gentleman.*

To make Mats from Sheepskins.

A fresh skin is more easily prepared than one a little dry. A strong soap-suds is used to wash the wool, first letting the water cool so as to be slightly warm to the hand. In the meantime, pick out all the dirt from the wool that will come out; then scrub it well on a washboard. A table-spoonful of kerosene added to three gallons of warm suds, will greatly help the cleansing process. Wash in another suds, or until the wool looks white and clean. Then put the skin into cold water enough to cover it, and dissolve half a pound of salt and the same quantity of alum in three pints of boiling water; pour mixture over the skin, and rinse it up and down in the water. Let it soak in the water twelve hours; then hang it over a fence or a line to drain. When well drained, stretch it on a board to dry, or nail it on the wall of the wood-house or barn, wool side toward the boards. When nearly dry, rub into the skin one ounce of powdered alum and saltpetre, (if the skin is large, double the quantity,) rub this in for an hour or so. To do this readily the skin must be taken down and spread on a table or flat surface. Fold the skin sides together, and hang the mat away. Rub it every day for three days, or till perfectly dry. Scrape off the skin with a stick or a blunt knife till cleared of all impurities, then rub it with pumice-stone, or, if more easily procured, rotten-stone will do. Trim it to a good shape, and you have an excellent door-mat. Any intelligent house-wife can dye it green, blue, or scarlet, with the so-called "Family Dyes," either in powder or liquid, and she will have as elegant a door-mat as she could desire. Lambs' skins can be similarly prepared and made into caps and mittens. Dyed a handsome brown or black, they equal imported skins. Still-born lambs, or those who die very young, furnish very soft skins, which, if properly prepared, would make as handsome sacks, muffs and tippets as the far-famed Astrachan. Any farmer's daughter could easily prepare skins enough to furnish herself with a handsome suit.—*Mechanic and Inventor.*

Miscellaneous.

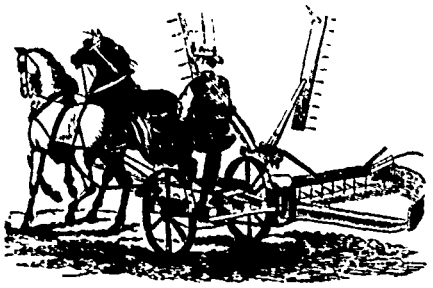
South Australian Agricultural Statistics and Exports.

The complete agricultural statistics for the year 1870-71 have been published, and they afford some information that will prove interesting to many of our English readers. It appears that out of the two hundred and forty-five millions of acres of which the colony is composed, fifty-five millions are actually being turned to account; that the quantity alienated from the Crown is 4,198,999 acres, of which 4,068,064 acres have passed into private hands; that 959,006 acres are under tillage; that 604,761 acres are being cropped with wheat, as against 310,633 acres ten years ago; that the increase in acreage last year was 72,626 acres, that the total product reached the large aggregate of 6,961,164 bushels, being the largest crop ever reaped in South Australia, and representing, at 5s. per bushel, the sum of £1,750,000; and that the surplus for export is estimated at 110,000 tons. These figures will give some idea of the great advance which South Australia has made in regard to agriculture generally, and to the production of wheat in particular. Up to the end of 1870, 130,935 acres had been taken up upon deferred payments, and since then an additional 160,887 acres have been purchased upon the same terms. There is, therefore, little doubt that at the present time there is over one million of acres of land under cultivation for various purposes. Of the 110,000 tons which it is estimated we have available for export from our last season's crop, we have shipped away 74,182 tons, which may represent in round numbers a money value of £920,000. In 1870 we exported for the whole year just one-half of this quantity and value. The total exports for the last five years have been as follows:—1866, 38,132 tons; 1867, 95,463 tons; 1868, 33,846 tons; 1869, 73,379 tons; 1870, 37,012 tons. Thus it will be seen that with the single exception of 1867 we have in seven months of the current year exported a greater quantity of breadstuffs than we have done during any whole year of the preceding five years. The total quantity of wheat and flour exported from the colony during the thirty-one weeks ending August 5, including that from the outports, has been 74,182 tons, being an increase of no less than 49,211 tons on the corresponding period of 1870.

Does Farming Pay?

We often hear it said there is no longer any money in farming. In the course of our experience we have heard similar statements concerning other occupations. A printer, adhering in these days to the old-fashioned hand-press, might make the same complaint, and with as much justice as the present farmer, who carries on operations in the old style, or a carpenter who makes his mouldings by hand and planes boards. The improvements in machinery of all kinds have so quickened the demand for labour in every branch of industry, that the farmer as well as the mechanic must abandon hand labour and use machinery, or his profit must be eaten up in expenses. Hay may be made and put in the barn by machinery now at the rate of one dollar per acre. By hand the cost would be four dollars. The old style of crop is half a ton per acre; now three times that is a fair crop. The difference is just that between eight dollars per ton and sixty-six cents. The wide-awake farmer has this difference for his profit, eight dollars being about the market price for hay in many places. The same is true of most other crops, grain and roots especially. In feeding stock and making and using manure, equally large differences result. So of breeding stock; the old style rooter, and the modern Berkshire, are not more unlike than are their severa values when made into pork. The same of the ill-fed, rough-coated native heifer or steer, and the sleek, well-fed grade Jersey or Ayrshire. The same is true of many farming communities in respect to roads, fences, and schools. All these must be fitted up with *modern improvements*, or farming as a business must suffer. We *know* whereof we speak, when we emphatically deny that farming is an unprofitable business. The capital invested will, if rightly used, return in this branch of industry as good an interest as in any other, besides having the invaluable merit of indestructibility. A workshop or factory may burn up, but land remains not only intact, but from uncontrollable circumstances is ever advancing in value. So the labour of the farmer is sure of some remuneration if properly directed. Poor farms and poor farmers are the ones whose crops fail through drought or excessive wet. On a properly conducted farm these may damage the crop, but will never destroy it. The divine promise of seed-time and harvest is for the especial benefit of the farmer; but it rests with himself in a great measure whether the fulfilment comes to him individually, or whether his more enterprising neighbour secures it.—*American Agriculturist.*

Longevity of Farmers.—In a late address before the Farmers' Club of Princeton, Mass., Dr. Nathan Allen said that according to the registration report of deaths in Massachusetts, published now for about thirty years, and preserved with more accuracy and completeness than anywhere else in the country, the greatest longevity is found to obtain in agricultural life. In the ten different occupations as given in these reports, the cultivators of the earth stand as a class at the head, reaching, on an average, the age of nearly 65 years, while that of the next class, merchants, is only about 49 years; that of mechanics of all kinds, about 48 years, and that of shoemakers about 44 years. Thus there is an advantage of about 15 years on the side of farmers as compared with merchants, and they reach an average age but little short of the three score years and ten allotted by the Psalmist for human life.



THE JOSEPH HALL

MACHINE WORKS

OSHAWA, Ont.

ESTABLISHED 1851.

THE JOSEPH HALL

MANUFACTURING CO.'Y,

PROPRIETORS.

WE DESIRE TO CALL ATTENTION TO OUR

No. One and Two Buckeye Combined Reaper and Mower, with Johnson's Self-Rake Improved for 1871.

We believe this machine, as we now build it, to be the most prefect Reaper and Mower ever yet offered to the public of Canada.

Among its many advantages, we call attention to the following:

It has no gears on the Driving Wheels,

Enabling it to pass over marshy or sandy ground without clogging up the gearing, thereby rendering it less liable to breakage. It is furnished with **four knives two for mowing and two for reaping, one of which has a sickle edge for cutting ripe, clean grain, the other a smooth edge for cutting grain in which there is grass or seed clover.**

It has malleable guards both on the Mower bar and Reaper Table, with best cast steel Ledger Plates. It is also furnished with our **new Patent Tilting Table for picking up lodged grain.** This is the only really valuable Tilting Table offered on any combined Reaper and Mower. The Table can be **very easily raised or lowered by the Driver in his seat without stopping his team.** This is one of the most important improvements effected in any Machine during the past two years.

Any one or all of the arms of the Reel can be made to act as Rakes at the option of the Driver, by a Lever readily operated by his foot. The cutting apparatus is in front of the Machine, and therefore whether Reaping or Mowing the entire work of the Machine is under the eye of the Driver while guiding his team. The Table it so constructed as to **gather the grain into a Bundle before it leaves the Table, and deposits it in a more compact form than any other Reel Rake.**

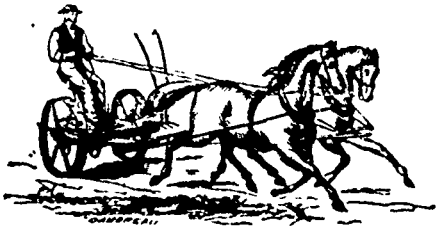
The Table is attached to the Machine both in front and rear of the Driving Wheel, which enables it to pass over tough ground with much greater ease and less injury to the Table. The Grain Wheel Axle is on a line with the axle of the drive wheel, which enables it to turn the corners readily.

The Rakes are driven by Gearing instead of Chains, and therefore, have a steady uniform motion, making them much less liable to breakage on uneven ground, and more regular in removing the Grain. The Gearing is very simple, strong and durable. The Boxes are all lined with

BABBIT METAL.

The parts are all numbered, so that the repairs can be ordered by telegraph or otherwise, by simply giving the number of the part wanted. There is no side Draught in either reaping or mowing, and the Machine is so perfectly balanced that there is no pressure on the Horses' necks either when reaping or mowing. All our malleable castings, where they are subject to much strain, have been **twice annealed, thereby rendering them both tough and strong.** Our Johnson Rake is so constructed **as to raise the Cam so far above the Grain Table that the Grain does not interfere with the machinery** of the Rakes or Reels. We make the above Machines in two sizes—No. One, large size for Farmers who have a large amount to reap—No. Two, medium size for Farmers having more use for a Mower than a Reaper. With the exception of difference in size, these Machines are similar in every respect. Our No. 2 Machine supplies a want heretofore unfilled, viz.: A medium between the Jun. Mower and large combined machine, both in size and price. We shall distribute our sample machines in March among our Agents, that intending Purchasers may have an early opportunity of examining their merits, and we **guarantee that all Machines shipped this season shall be equal in quality and finish to the samples exhibited by our Agents.** We invite the public to withhold giving their orders until they have had an opportunity of inspecting our Machines, as we believe that they are unsurpassed by any other machines ever yet offered on this continent. We also offer among other Machines,

Johnson's Self-Raking Reaper, improved for 1871, with two knives, smooth and sickle edge, and malleable guards.



Wood's Patent Self-Raking Reaper.

Buckeye Reaper No. 1, with Johnson's Self-Rake.

Buckeye Reaper No. 2, with Johnson's Self-Rake.

Ohio combined Hand Raking Reaper and Mower.

Cayuga Chief Jr., Mower.

Buckeye Mower No. 1.

Buckeye Mower No. 2.

Ball's Ohio Mower No. 1.

Ohio, Jr., Mower.

Taylor's Sulky Horse Rake.

Farmers' Favourite Grain Drill.

Champion Hay Tedder.

AND OUR CELEBRATED

HALL

Thresher and Separator,

Greatly improved for 1871, with either Pitt's, Pelton, Planet, Woodbury, or Hall's 8 or 10 horse-power.

We shall also offer for the Fall trade a new Clover Thresher and Huller, very much superior to any other heretofore introduced.

A NEW AND COMPLETE

ILLUSTRATED CATALOGUE

OF ALL OUR MACHINES

Is being Published, and will be ready for early distribution, free to all applicants.

All our Machines are warranted to give satisfaction, and purchasers will have an opportunity of testing them both in Mowing and Reaping before they will be required to finally conclude the purchase.

For further information, address

F. W. GLEN,

PRESIDENT,

OSHAWA, ONT.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Dec. 14th, 1871.

FLOUR AND MEAL.

The Produce Market, owing to the close of navigation is rather dull, but with good sleighing there would probably be considerable activity at present prices

Flour—Superfine, $5 40 to $5 50, Spring Wheat, extra, $5 50; Fancy, $5 60, Extra, $5 75; Superior Extra, $6 00

Oatmeal—$4 60 to $4 70

Cornmeal $3 40 to $3 50.

Bran, in car lots, $15

GRAIN

Wheat—Soules, $1 30 to $1 31, Treadwell, $1 28 to $1 30, Spring, $1 20, Do Midge Proof, $1 16 to $1 20.

Barley—No 1, 65c to 66c; No 2, 60c to 61c.

Oats 41c

Peas—60c to 65c

Rye—65c to 70c.

HAY AND STRAW.

Hay in fair supply, at $18 to $21.
Straw, scarce, at $12 to $16 50.

PROVISIONS.

Beef by the side 4c to 6½c
Mutton by the carcase, 4½c to 5½c
Apples, per brl., $1 to $2 00
Potatoes—per bag, 90c to $100
Poultry—Turkeys, 75c, Chickens per pair, 35c to 45c, Ducks, per pair, 50c to 60c, Geese, 50c,
Pork—Mess $15
Bacon—Cumberland cut, 7c to 8c, Canada, 7c to 7½c.
Hams—Salted 8c to 10c, Smoked 11c
Lard—10c to 11c
Butter Dairy, choice 18c to 19c.
Eggs—Packed, 20c to 22c
Cheese—10c to 11½c, Reeson's Stilton, 18c; Royal 17c.
Dried Apples—7½c to 8c.
Salt—Goderich $1 35 Liverpool, per bag $1 ·0
Live Hogs—$3 ·0 to $4

THE CATTLE MARKET

Beeves (live weight) $3 50 to $5 00 per cwt
Sheep—$4 00 to $5 50
Calves—$5 to $8
Lambs—$2 50 to $4

PROVINCIAL MARKETS

Hamilton, Dec 12.—*Wheat*, Fehl, $1 25 to $1 27, Soules $1 26 to $1 28; Treadwell, $1 20 to $1 23, Winter Red, $1 20 to $1 20, Amber, $1 20 to $1 20, Spring, $1 18 to $1 18 *Barley*, 58c to 60c, *Corn*, 65c to 70c. *Rye*, 56c. *Buckwheat*, 65c to 65c. *Oats*, 38c to 39c. *Peas* 65c to 68c *Flour*, Superfine Extra, barrel $6 50 to $7 00, Extra, $6 to $6 50; Superfine No 1, $5 to $6 00; do No 2, $5 50 to $5 75, fine, $5 to $5 50. *Oatmeal*, $3 to $3 25 *Cornmeal*, $1 75 to $2. *Bran*, 80 to 90c *Shorts*, fine, $1 25; coarse, $1 10 to $1 20. *Butter*, rolls, 20c to 25c, do, tub, 15c to 16c *Eggs* 20c to 25c. *Cheese*, 9½c to 15c. *Potatoes*, 90c to $1 *Honey*, 20c. *Apples*, per bag, 75c to $1, dried do, per bush., $1 25. *Wool*—Canada fleece, 40c to 40c, superfine pulled, 35c to 35c, combing, pulled, 32c to 35c. *Hides and Skins*—Green, No 1, inspected, $8,50, do No 2, $7 50; Calfskins, green, 10c, do, dry, 15c to 20c; Lambskins, 50c to $1; pelts 50c to $1

London, Dec 12.—Spring wheat, $1 15 to $1 18; red fall do, $1 15 to $1 17, white do, $1 20 to $1 22, Barley, 55c to 65c. Rye, 55c to 55c. Oats, 37c to 38c. Peas, 55c to 57c. Clover Seed, $4 50 to $5 25. Timothy seed $4 00 to $4 75 Butter 27c to 28c. Eggs, 20c to 22c. Potatoes, 34c to 45c. Hides, green, 8c to 9c; do., dry, 12c to 16c. Calfskins, green, 10c to 12c, do, dry 18c to 20c. Sheepskins, 50c to $1 25. Wool, 38c to 40c.

GUELPH, Dec. 15—*Spring Wheat*, $1 15 to $1 18, *Fall do.*, $1 25 to $1 30; *Treadwell do.*, $1 22 to $1 25 *Barley*, 50c to 55c, *Oats*, 38c to 40c. *Peas*, 60c to 65c, *Butter*, dairy packed, 17c to 18c, do rolls, 18c to 19c. *Potatoes* 60c to 90c. *Apples* 50c to $1 *Sheepskins*, 80c. ... *Hides* ... *Wool*, 50c to 56c,

Contents of this Number.

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GEORGE BROWN,
Managing Director.