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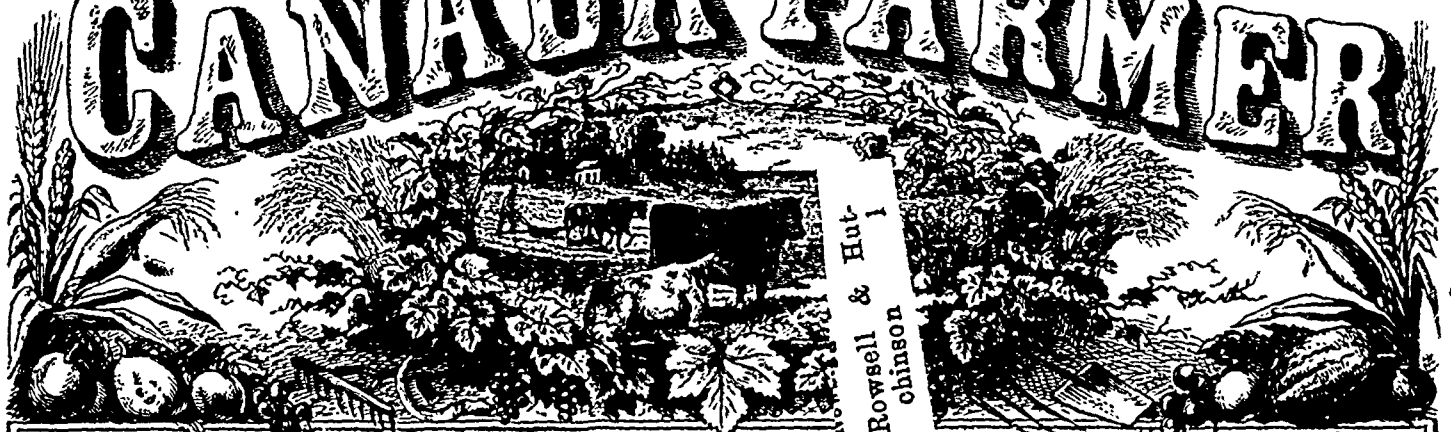
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THE

CANADA FARMER



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NEW SERIES.

The Field.

On the Retention of Moisture in Soils.

Every one knows that water, in some form or other, plays a most important part in the general economy of nature; and its influence on the soil, and consequently on the growth and maturity of crops, is deserving of the closest attention of the intelligent and improving agriculturist. It is now generally acknowledged as an established fact that the wholesale clearing of our forests, and the denuding cleared farms, in too many instances, of almost everything in the shape of a tree, have already produced a sensible change of climate, and contributed, in conjunction with other causes, to render summer droughts more frequent than formerly, and to intensify their injurious effects on the cultivated crops. How to mitigate, therefore, the effects of this evil, should be the earnest study of the Canadian farmer.

Without water, in some of its varied conditions, the animal and vegetable life of the globe must cease to exist. Whether in excess or deficiency, it is alike injurious to the labours of the agriculturist, who, to correct the former, must have recourse to artificial draining, and to counteract the natural effects of the latter he must adopt such a course of cultivation and manuring as will enable the soil to retain an amount of moisture sufficient for the healthy growth and maturity of plants. The first and most necessary step, in the generality of soils, towards the retention of moisture, is to obtain a deep stratum of well cultivated and porous earth. It will be no less useful than curious to examine a little into the relation that subsists between drainage and deep culture.

All land having a heavy and retentive subsoil, is usually found to be more or less wet and cold, conditions very unfavourable to efficient tillage and the healthy growth of crops. Such soils suffer most either in a dry or a wet season, and they are pro-

verbially known, in all parts of the world, as the most expensive to cultivate, the most difficult to manage, and most uncertain in results. The first essential step to be taken for the permanent improvement of such soils is unquestionably *efficient draining*. It may appear at first sight paradoxical to speak of draining land with a view, among other important advantages, of increasing its capacity for absorbing and retaining moisture—an *apparent anomaly* merely, that will readily disappear when the various effects which draining produces on wet land are duly considered. Indeed, a well executed system of underdraining, while it necessarily relieves land of an injurious excess of water in wet weather, enables it to procure and retain moisture during a season of drought. By relieving land of superfluous water in this manner, its numerous pores become filled with air, which always holds the largest amount of vapour in a state of invisible suspension during hot weather, and this air circulating through the pores of the soil, reaching, especially in the night, colder substances, imparts a portion of its moisture, exactly on the same principle as dew is deposited on plants growing on the surface. Any one may readily verify this by observation. It is invariably found in dry seasons (assuming other conditions to be equal) that the crops, whether grass, roots or grains, that grow on or close to an underdrain, are greener and more luxuriant than those at a distance; and a similar result will be observed in wet seasons, unless the whole field has been thoroughly drained and cultivated.

Now, we learn from observing the functions and effects of a well constructed underdrain, two most important principles, which form the very basis of an improved agriculture. First the incalculable advantages of relieving cold, stiff and wet land, of an injurious excess of water, without which no system of cultivation and manuring can be successful; and secondly, the benefits of *deep culture*, which, affording a thick stratum of active, porous soil, through which both water and air can freely circulate, and the

roots of plants as freely extend in search of food, securing a warmer and more uniform temperature, and other conditions both of a mechanical and chemical character, that are favourable in the highest degree to the growth and maturity of crops. The reader, by pondering on the principles involved in these few facts, will not be at a loss to discover the right way to pursue in order to gather the legitimate harvests of all sound and profitable agricultural improvements.

Deep and shallow, as applied to cultivation, are words that must always be understood in a comparative sense. Deep culture in some places and on soils of a special character, would in others, comprising different conditions, be regarded as shallow; hence no absolutely defined rule can be laid down in matters of this kind, that can meet the many varying conditions which exist in nature. The tendency, however, of improved husbandry, is towards deeper cultivation, a process which, in the generality of cases, it is both easier and more advantageous to carry on by degrees, rather than attempt to obtain the final object, or maximum of depth, by one or two operations. In all cases of wet soils, as has been already intimated, draining should *precede*, by a season or two, deeper cultivation; otherwise, in many cases, the latter might prove positively injurious, by producing a thicker stratum of soft, muddy earth, wholly unfit for a seed bed, and taking a long time for the water to pass off, chiefly by the slow process of evaporation. Most wet and stiff soils rest on, in moderate weather, a comparatively hard and dry subsoil, varying in depth from the surface three or four inches to upwards of a foot. Now, it is this hard pan that requires to be broken and pulverized, in order to deepen the active soil through which air and moisture can freely circulate, thereby affording the roots of plants a wider extension in search of food. The cheapest and readiest way of accomplishing this desirable object, where horse power only is available, is to follow the furrow made by an ordinary plough by the subsoil plough, say six or eight inches by the

former, and approaching a similar depth by the latter, varying of course according to the nature and physical condition of the soil. In a few years afterwards this operation might be repeated to a greater depth, with still more advantageous results. The common plough and sub-soil plough are much better adapted for this kind of work than the grubber, which, being several feet in width, cannot possibly penetrate sufficiently deep when moved by any practicable amount of animal power. The "smashing up" of land by the agency of steam, wherever available, is unquestionably the cheapest and most effectual of all methods, reaching readily a depth of twelve or fifteen inches at a single operation, and leaving the land, after a little surface harrowing, in the best mechanical condition for the reception of the seed. Sub-soiling, it should be carefully borne in mind, should always be done when the ground is in a *dry and sound state*; it loses much of its good effects when the land is at all soft, as in such condition clays have a strong mutual tendency to run together, and the poaching of the horses' feet is exceedingly detrimental. In order, then, to clean and pulverize the ground deeply, the grubber may be advantageously employed after the use of the ordinary and sub-soil ploughs; and great care should be taken to perform these and similar operations *only when the ground is dry*, otherwise as much or more harm than good will be the result. Looking at this question practically, it is sometimes difficult to observe this rule as strictly as one could wish, under the varying conditions of the weather and the pressure of farm work, and people must judge for themselves what is best and most practicable to be done in the different circumstances under which they find themselves placed; but always keeping in view the rule above indicated, and observing it in all cases as far as possible. We must reserve the continuation of this subject for another article.

Fencing.

I am about to erect a new front fence on each side of the concession line that divides our farm in the centre, and have read with much interest the cost of the various fences described in recent articles on the subject. I differ somewhat in opinion as to the cost of the various fences as set down in that statement, but of course some allowance must be made for different localities. The price of cedar posts (only 5 cents) as therein mentioned, is exceedingly low, and with us they certainly would be worth double or treble that amount. The labour, also, of erecting the different kinds of fence is not altogether fully set forth; still, on the whole, the system of board fences advocated is certainly sound. The comparison with rail fences is hardly fairly stated, unless, as I before remarked, there are local difficulties which militate against one sort of fence and in favour of another. Per my part, I hate

rail fences, and, if constructed of hard wood, they are an absolute abomination to me. All our farm was fenced with bass and ash rails (mostly bass), and not staked or ridged, only in some places locked. Many a time after wet weather, and when the rails from that cause were as slippery as eels, I have thrown down parts of several panels of fence by simply getting over them. Our foreman used to say he hardly dared look at some of the fences, after rain especially, where the contractor had stretched out the worms so much, to make a less number of rails do, that the fence was almost straight. We are going to banish at least one mile of such fence next year, and think of substituting one of somewhat different construction to any I have seen in Canada, but we often made them in our part of England many years ago, and the fences in Australia are almost altogether constructed the same way. This is the plan proposed—our idea being to construct a post and bar fence, believing it to be cheaper, far more durable, and much stronger than the ordinary board fences. All the post holes are dug to a uniform depth of 3½ feet. We take the posts, which must all have been sawed off to the exact length of 8 feet 6 inches, these posts have all been morticed with mortices of 6 by 2, and 6 inches apart, except above the first rail from the earth, in which case the space between the first and second mortice is only 4 inches. The post will be 5 feet high above the earth, and the lower mortice will be four inches from the ground. The fence will then be 56 inches high, and there will be 4 inches between the top mortice and the top of the post. The bars or rails to be used are 6 by 1½, and 12 feet long. The post holes being all dug, strain a line as tight as possible along the surface of the earth, about ten inches high; this line will thus serve to guide the depth to put the posts; a second line, strained tight also, about five feet high, will guide the line of the top of the posts. As each post is set in its place, to the right depth, and before being filled in, the bars must be placed in position and entered into the mortices, each bar passing and overlapping the one preceding it. To enable this to be done, of course the ends of the bars must be bevelled 6 inches long at each end. This can be done at the saw mill by the edging saw, for about 50c. or 75c. a thousand feet extra; as the next post is placed in position, the ends of the bars will also be entered into the mortices, as before described, the bevelled portions passing each other in each post. After all the fence is up, a short piece of inch or two inch board, 6 inches wide by 56 inches long, can be nailed between each post, so as to confine all the bars in the centre, and thereby form one resisting mass. If a piece of 2 by 4 hemlock is substituted for the inch board, 3½ inch cut nails can be used, and will hold securely; but if inch board of pine is used, wrought nails must be substituted for cut, and of course they must be clinched, but fewer will

serve the purpose. This piece uniting the rails or bars at every 6 feet makes an excellent job. This fence will last twice as long as ordinary board fences, and is cheaper, easier made, and much stronger. A friend of mine erected one forty-two years since near Guelph. It can never warp off, as boards do, nor can any one willfully let down a portion of it, and thereby allow of cattle breaking in. It is a melancholy fact that evil disposed persons will often pull down a portion of rail fence so as to readily admit the ingress of cattle. A breachy ox bears the blame, but the crop into which the incursion is made is destroyed, and the malicious brute who did the mischief escapes scot free. We have often seen ordinary boards, that compose board fences, warped off the cedar posts, where the nails have been somewhat short; and, in fact, it is no uncommon thing to see it happen even where nails of sufficient length have been used. A cedar post will not hold nails like hard wood.

I shall now proceed to show by comparison what the two different fences cost in our locality. I do not question other prices, as they may have advantages we have not, but at the prices we have to pay the relative cost will stand thus—premising that a piece of 120 feet in length of fence is the trial piece, to be made of each kind. The cost of erection of the bar fence would be greatly reduced, if hemlock be used; but hemlock cannot be used as material for an inch board fence. I have used it, and it is a miserable affair. Hemlock 2 by 6 would answer very well indeed, quite as well or better than pine 1½ by 6. In making the mortices, it is understood that a proper brake is constructed to contain the posts, in which they are dogged fast by one stroke of a hammer, and on which the exact distances of the mortices are laid out. On this brake, the ordinary morticing machine used by carpenters is slid rapidly along as each hole is bored out, and when three holes are bored that form each mortice, the chisel is rapidly driven into the centre division, thereby the mortice is instantaneously made, no cutting or squaring at the ends being requisite. These posts can be morticed so as to pay labourer's wages at 5 to 7 cents each post.

The following statement will show the comparative cost of board and bar fences. The board fence to be composed of one nine inch board at bottom, and four six inch boards above it, with one six inch cap piece, to strengthen the top board, and a cover piece of six inches wide, to cover the ends of the boards on the posts:

BOARD FENCE—120 FEET LONG.

22 Posts, at 12 cents.....	\$ 64
22 Holes and setting posts, at 10 cents.....	2 20
455 Feet pine fence board, at \$10.....	4 50
10 Pounds nails, at 4 cents.....	40
Labour, sawing off boards, hewing down and facing posts, nailing up boards, cap and cover piece, at 25 cents per rod.....	1 75
Total.....	\$11 49

BAR FENCE—120 FEET LONG.

11 Posts, (12 feet apart) at 12 cents.....	\$1 32
Morticing 11 posts, at 7 cents.....	0 77
Digging 11 holes, setting posts and entering bars in mortices, at 12 cents.....	1 32
11 Centre-pieces, 2 x 4—56 inches long, hemlock, at 7 cents.....	0 23
2 Pounds nails (cut) at 4 cents.....	0 08
420 Feet pine lumber, at 9 cents, and \$1 00 for beveling the ends at the mill.....	4 20
Total.....	\$7 92

If lumber of a common kind is used, of 1½ inches thick, it will answer well, and as the sawing is one-half less on account of the

thickness, it can be got in large quantities for less than the best inch fence boards. The ends can be bevelled at \$1 a thousand feet or less. I own saw mills, and am quite aware of the cost of each kind, and also the cost of sawing. Hemlock 2 by 6 would probably be really better to use than pine, and quite as cheap, and can be obtained where pine cannot be had. The hauling in all cases is the same, but the morticing posts can be done at the barn in wet weather, if proper provision be made beforehand.

C.

Good and Bad Neighbours in the Field.

An interesting article has recently appeared from the pen of Cuthbert Johnson, on the reciprocal influence of plants grown in proximity, with especial reference to the advantage of growing Swede turnips and mangolds together. The following is an abridgement of the article :

It was an early observation of the cultivators of the soil that there are good and bad neighbours even in the vegetable world. The Roman farmers noticed the vigour with which the vine vegetated when planted near to the elm. They were wont to call that tree the husband of the vine, and it has been supposed that the elm was, in fact, first introduced into England by the then masters of our islands when they made their vineyards.

They were all well aware, although there is a "frindship" between some plants, there is "enmity" between others. Cato, one of the very early Roman authors, noticed that the vine is at "enmity" with the cabbage. And these facts were observed by more than one author of the sixteenth century.

Modern cultivators have noticed other acts of a similar kind, as that the acacia tree is a bad neighbour ; the gardener makes the same remark as to the cabbage tribe; the agriculturist is well aware how well the corn flower (*Centaurea cyanus*) flourishes amid his cereal crops, and in no other place, and how the poppy almost always attends his crops of peas. He further notices how very vigorously the plants of wheat and rye flourish amid his tares.

These observations have, within the last year or two, led in a few places to some very practical and successful trials with our root crops. These experiments are hardly so well known to the agriculturists of this country as is desirable. They are not only valuable in themselves, but they appear to open a field of research, which in all probability will lead to other important results. I allude to the growth together, in the same rows, of the Swede turnip, and the mangold. We are aware of the difficulty with which for some time back the Swede has been cultivated in many portions of Great Britain, and this to such an extent that in considerable districts its cultivation has been abandoned. It is, therefore, most important that it has been found again to flourish on many soils when sown in conjunction with the mangold, and this not only in the best turnip

soils, but on the poor exhausted gravels of Bedfordshire—a county where the rainfall certainly does not aid the dryness of the soil, for the average annual fall of rain is there the least of all the English counties, being only about 20 inches—(it was only about 15 inches in 1870.) The mode of cultivation is thus described by Mr. John Purser, of Willington, near Bedford:—"Drill early in April four pounds of mangolds per acre, and another drill follows running one hole only, which is about a pint of Swedes, in the same rows. When we set them out we leave as nearly as we can three, some only two, mangolds to one turnip. The Swedes grow very large, and very sound and healthy. Before we adopted this plan our land refused for years to grow a turnip at all. We put them into pits or clamps by the second week in October, and they came out in the spring as sound and healthy as the mangolds. Very many other farmers near here are doing the same, and with equal success. We certainly grow a greater weight per acre than we ever have done with turnips only."

It being then established that the growth of certain plants is accelerated by having particular neighbours, we naturally inquire into the reason for this interesting fact. It is probable that it arises from some emanation either from the roots or the leaves of a plant which is grateful to its neighbour.

The writer of the article, after a lengthened examination of the subject, draws the following conclusion:—"If, then, the chemical composition of the Swede turnip and the mangold is so similar—if they appear to absorb the same constituents from the soil, or the atmosphere—we are naturally inclined to the opinion that mangold emits from its roots or its leaves something that is peculiarly grateful to the Swede. But whatever may be our ignorance of the true explanation of the fact, this want of knowledge does not diminish the importance of the discovery. And, moreover, the advantage of planting as immediate neighbours the mangold and the Swede will, in all very reasonable certainty, be derived from cultivating other plants in close juxta position. For instance, we are all aware that, like the Swede turnip, red clover, formerly so valuable in our rotations, is in many districts grown with increasing difficulty, or its cultivation only attempted at long intervals. Now, is there not a reasonable hope that, like the Swede turnip, its growth may be restored by growing it in conjunction with some other plant? Has any reader remarked a hint from dame Nature to this purpose? Is not the potato disease to be got rid of by planting the sets with some other roots for its neighbour? Here again we are taking only another reading from dame Nature's book. She does not shower the seeds of any one, but of many grasses over our soils, and she crowds together the trees of our primeval forests of various kinds, only reducing them to a single variety or two where the mean temperature becomes so low that only the Scotch fir or the birch can exist.

A recent publication of Mr. W. Patterson, of Dundee, Scotland, of a series of experiments with potatoes, carried on through many years, gives, as results, deterioration in size of tuber, and greater liability to disease when the same seed is grown a second season on the same ground.

Oiled Paper Sashes.

Make as many frames as you require to cover your beds, of strips of inch and a quarter pine; have the strips inch and three quarters wide, and if you are not carpenter enough to put them together with mortice and tenon at the corners, halve them together, using wrought nails which will go through and just clench. The frames should be six feet long and three wide, with a piece of the same as the outside put across the middle of the frame. This, if not morticed and tenoned together, had better be merely fitted in between the sides, and nailed with long out nails; its use is more to keep the frames apart than anything else. Now get good stout twine; put in tacks all round the frame, six inches apart; wind the twine round the tacks from side to side, until the frame is full that way; then go from tack to tack, from end to end, but as you pass the ball of twine down across the first twines, take a turn each time round the cross strings you will thus have a netting of six inches square over the whole. This will be quite strong enough, but you may put the strings closer if you don't think it sufficient. When you have finished, make fast the twine and drive in all the tacks level with the surface of the frame. Get some strong white paper; old newspapers will do well if the paper is thick; damp them a little (only just damp); paste them together, and stick them over the frame, well pasting the wood frames first with well boiled thick flour paste; be sure the paste is thick and well boiled. Let the paper come all round the edges of the frames; then put them by to dry. When dry, if the work has been well done, the paper will be smooth and as tight as a drum-head. Don't damp the paper too much, in the first place, or it will crack and break in the drying. Now, get some well boiled Linseed oil, get some dryers put into it, and dissolved in it; then with a paint brush go over the whole frames, wood, paper, string and all; give them a good coat on both sides, and put the frames by to dry; they will be dry in a day or two and will be as serviceable as the best glass while they last, which with care will be from two to three years, and they can be fresh covered or patched at any time. Of course dogs and poultry must be kept off them, and they must be carefully used, but for service they are really better than glass, as the plants grown under them never scald with the sun. If thought better, the strings may be put on both sides of the paper, but it is scarcely necessary.

With these frames, on beds prepared as before mentioned, everything from a turnip plant to a melon can be raised in perfection; and after the beds are done with for turnips, melons and cucumbers can be raised in any quantity, with the advantage that as the cold weather comes on in the fall, if the melons are not fully ripe, they may be covered, and thus the very latest be brought to full perfection. These sashes answer as well for hot-beds as for the cold frames. As they are very light, they must be properly weighted in windy weather or exposed situations.

VECTIS.

Experiments with Salt.

To the Editor.

SIR,—Having read many controversies on the subject of "Salt as a fertilizer," I determined to try it myself, and I now send you the results.

Experiment No. 1. On peas, three quarters of an acre, two bushels Black-eyed Marrowfat, sown on the 13th of April. Ploughed in six inches deep. A wet time following, packed the ground and rotted fully half the seed, it only coming through properly on the crown of the ridges, where the furrows stood on end. Saw a report in "Johnson's Chemistry" of peas and oats being benefited by salt and gypsum; thought it might answer for mine mixed 100 lbs. salt with 75 lbs. of gypsum, and sowed over them when about two inches high. Crop, one large waggon load of peas and straw; thrashed 24 bushels of clean peas and a little over by measure. The following year the wheat on that piece was better filled, and the straw a more beautiful colour, than the rest of the piece, although the whole was alike manured, so much so that several visitors asked me if I was growing a new kind of wheat. This led me to try another experiment.

No. 2. One acre; soil loam, about ten inches in depth; subsoil yellow clay and limestone gravel mixed, well cropped out. May, 1867, manured with 30 loads of fresh horse dung, much of it very long; had to employ a boy to fork it into the furrow as I ploughed it in; ridges one rod wide; harrowed lightly after ploughing; then sowed $1\frac{1}{2}$ bushels of Fife wheat and half a barrel of the best common salt; harrowed all in; when the wheat was in two blades, sowed 100 lbs. of gypsum; the day after sowing the wheat a terrible rain storm washed half of it out of one side of the ridges (they happening to be across the slope), and deposited it in the water furrows, where it perished. Sowed on the 18th of May. Result—Straw moderately long, stiff, glassy looking, a beautiful pale gold colour; head well filled; very plump and clear; yield, 23 bushels; cleaned three times for seed, and separated about a bushel of tailings. Considering that the half of each ridge was washed out, as above stated, I thought it a success, for the rest of my Fife wheat only averaged 16 bushels per acre. I should have said that the bind was 23 stooks of 12 sheaves.

The same year I summer-fallowed two adjoining acres; manured with 30 loads of rich stable and yard manure per acre, and sowed them, as well as the salted acre, once ploughed, with fall wheat, Soules.

Fall of 1867. Salted piece looked the strongest; sowed plaster on the other two acres, 100 lbs. to each.

1868. Wheat badly killed; salted piece the best plant and least damaged; when ripe, the grain was better and straw firmer, glazed, and nicer colour; but as all was damaged by

winter killing, I did not think it worth while to separate the grain of the different pieces to thrash; average yield, 21 bushels per acre; the whole three acres having been seeded this spring with clover and timothy, now the salt showed its power; the clover plant was twice as strong as on the unsalted piece.

1869. Salted acre could be noticed at a distance by its dark colour; crop, five loads of hay, estimated at 1,500 lbs. each on salted acre; three each on the other two. The aftermath was double on salted acre, and tall enough to sweep the cows' bellies as they went through it.

1870. Sowed 100 lbs. of plaster on each of the three acres. Crop, four loads on salted acre; two-and-a-half each on others; again excelled in aftermath.

1871. Season too dry. Crop, two loads on salted piece, one each on other two; no aftermath on any of it worth noticing. I pitched all the loads each year myself, and was careful to put on about the same quantity each time.

Now, as all the land is alike, manured alike, and plastered alike, I attribute the very large extra returns of the one acre to the salt, and I am well satisfied with the result. I have pointed the piece out to many, and all are astonished at the great difference in appearance.

If you think these facts are worth publishing, and that they will be of interest to the farming community, it will encourage me to send you an item now and then.

WILLIAM JOHN WINTER.

Massie's Mills.

Timber for Fence Posts.

A correspondent in the *Western Rural* has the following sensible remarks on the general principles to be kept in mind in selecting timber for fence posts:

The timber in a tree cut at its best is more lasting than that from a young tree, or from one past its prime, although the latter may show no sign of decay; and all trees lose rapidly in strength and solidity, and consequently in durability, from the ground up, and from the heart outwards. A post that is seasoned is, under the same circumstances, much more durable than one set green; and the nearer the heart the more lasting the wood in the same tree, if thoroughly sound.

I have heard men say that white cedar was of no value for a fence-post, not so good as oak, and they were right from their experience. They used the young trees, just large enough for one post. They soon decayed, and would not hold a nail, eight-pennys being used.

A white cedar should never be cut until it is large enough to saw and make four good posts; and if larger still, better, if, as said above, it is not failing—has not lost its solidity, which a cedar holds to extreme age.

A fence properly constructed of such posts, and pine or hemlock boards, with the posts set two and a half feet deep, and duly tempered in with gravel, and the nails used long tenpennys, will last fifteen or twenty years good; and if at the right time it is taken down, the posts reversed, and re-built with new nails, it will then last ten or more years longer.

A fence, to be durable, must not only be of good material, but be well built; and very often more depends upon the good judgment and honesty of the builder than upon the character of the material used.

Lime on Sandy Soil.

"Rustic," of Seymour West, on making the remark in the company of several farmers "that sandy soil, dressed with lime, enabled it to give a better crop of wheat both as regards quantity and quality," was met with the rejoinder "that lime was good for a clay soil, but did not much benefit sandy land, making it lighter than before its application."

The statements made upon both sides are too sweeping; that made by "Rustic" is, however, correct, provided that the sandy land to which the lime be applied be not already worn out or be not a pure and simple sand.

The chief effect of lime upon soils is due to the fact that it hastens decomposition. If there be nothing in the soil to which it may be applied to decompose, that is if there be not vegetable matter whose putrescent or rotting powers are lying dormant for want of stimulating, then lime, which must act upon something, would probably act injuriously upon the growing plant.

If the sandy land to which lime be applied has lately borne a crop of clover, has been lately reclaimed from the forest, or has been lately dressed with barn-yard manure, then there can be no doubt of the efficacy of lime, which, by stimulating and hastening the decomposition of such animal or vegetable manure, will bring the plant food contained into such a form that it can be readily assimilated by the growing plant, and both the quantity and quality of the wheat will undoubtedly be increased.

We speak, however, of lime, as chiefly mechanical in its effects; for by chemical analysis it is shown that the ashes of 100 parts of wheat straw contain 5 parts, and of wheat 3.35 parts, of phosphate of lime.

The *contra* statement made to "Rustic," that lime made sandy land lighter than before, was incorrect.

Lime has the purely mechanical effect of making clay lands more friable, while upon sandy soils its effect is to cement together, upon the same principle as that which guides the formation of mortar.

We doubt not that the opposers of "Rustic" would allow that plaster of Paris makes a sandy soil more consistent, and this substance, rightly known as gypsum, is composed of about 33 per cent. of lime, the other 66 parts being made up in equal proportions of sulphuric acid and water.

We refer our correspondent to a fuller article upon lime, contained in the *CANADA FARMER* of November, 1870, by C. E. W.

The Canada thistle is making fearful headway in Bureau and La Salle counties, Illinois. There are about sixteen acres in Bureau, and La Salle has at least two thousand acres of them. So it is said, and allow us to suggest to all concerned, that in a few years, unless it is checked and exterminated, there will be two hundred thousand acres covered with it.

Quality of Corn Fodder.

The *Boston Journal of Chemistry* gives the results of some experiments, intended to show the great superiority of corn fodder when cultivated in drills, with plenty of air and light, over that raised by broadcast sowing in a dense mass. That journal says:

"Stalks were collected from a field where the seed was sown broadcast, and also stalks growing in drills upon the same field, and they were dried in a drying closet to expel the moisture. Both specimens were planted at the same time (the 6th of May), and it was found that the plants from the broadcast sowing contained 92 per cent. of water, those from drills 83 per cent. of water. Thus it was shown that the difference of solid matter in the two was as 8 to 17 per cent. The solid matter was composed of starch, gum, sugar, and woody fibre. There was almost an entire absence of sugar and gum in the stalks from the broadcast sowing, while the stalks that had grown under the influence of light and air held these nutrient principles in considerable quantities. The stalks were collected at the period of growth just before the ear begins to form, a period when most farmers begin to cut the fodder for their cows."

There were some influences not taken into the account, which should have been included, among which is the greater degree of rapidity with which the plants approach maturity and become richer in quality when well cultivated, as every good farmer knows, the ears ripening earlier on the best cultivated land, and later on that which is infested with weeds. The broadcast fodder, therefore, should have been examined later than the other, to give a fair test, and the result might have afforded less difference between the two. The same rule, however, undoubtedly applies to corn plants as to grape vines and fruit trees, where large leaves and well developed shoots give a richer product in fruit than a crowded mass of small foliage. But there are opposing advantages on both sides; for when the stalks grow so thick that no ears can form, they are so small and soft that cattle will eat the whole, and in doing so, probably obtain more food from a given weight of fodder, than when the stalks are large and coarse, and the leaves only are stripped from them by the cattle, leaving all the stalks with the sugar they contain untouched.

The course we have adopted for the past twenty years may perhaps be regarded as a sort of compromise between the two—namely, to sow the fodder so thickly in drills or furrows that the stalks will be small enough for the cattle to eat them, but giving the plants while growing the advantages of good horse cultivation. They often bear small ears, but little grain. The quantity sown is two or three bushels per acre.

The *Journal of Chemistry* further states that stalks cut before reaching a certain stage of growth, are deficient in nutriment,

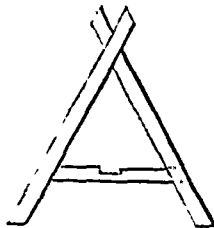
and therefore they should not be cut too early, and that the best time is usually four or five weeks after inflorescence. We have generally adopted the rule to cut when the edges of the leaves show the first indications of dying from age, and while the great mass of the leaves are yet green. If farmers will chew a portion of the stalk at the different degrees of maturity, the sweetness of the taste will enable close observers to judge with some accuracy when the fodder is richest and best.

In order to secure the greatest amount of benefit from corn planted exclusively for fodder, our experience has led us to adopt the following rules: 1st. To sow so thickly that cattle will eat the fine stalks. 2nd. To sow in drills, so that horse culture may be freely given. 3rd. To cut at the right time, as already designated. 4th and last, but not least, to cure as perfectly as possible, inasmuch as sweet green fodder is better than black, water-soaked, half fermented or mouldy fodder.

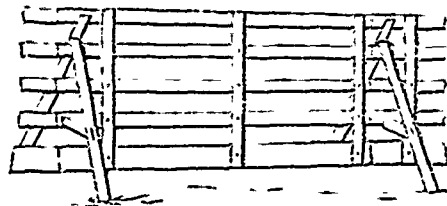
We need more experiments to determine the right degree of thickness for sowing the seed, so as to get the greatest amount of valuable food from an acre, and the difference in nutriment afforded at all different periods of the inflorescence.—*Country Gentleman*.

A Patent Fence.

The fence of which we are now about to speak has been practically tested under our own observation, and we have become satisfied of its merits. We refer to "Alex. Weir's Portable Fence," to which was awarded an especial prize at the Provincial Exhibition, 1870.



This fence is 4½ feet in height. The bottom board in each panel is 7 inches wide, first space above is 4 inches, second board from the ground is 5 inches wide, second space 6 inches, third board 4 inches, third space 7 inches, fourth board 4 inches, fourth space 9 inches, and fifth board four inches wide.



The battens at each end of the panels are laid across 18 inches from the end of the boards, and the battens are held to the boards by one wrought nail through each intersection, driven home and carefully clenched.

The posts or braces are made from sawn scantling, 2 by 4 inches, and are 5 feet long. These are halved together at an angle of 35 degrees, crossing at 3 inches from the top, so

as to resemble somewhat the letter A, with slight projections at the top.

The cross strip joining these braces near the bottom is 1 inch by 4 inches, and is framed into the posts with a dovetail. The upper side of the mortice in the post is one foot six inches from the end of the posts. In the centre of the upper edge of this cross-piece is a notch 2 inches long by 1 inch deep, into which locks a notch 1 inch deep and one inch long on the lower edge of the second boards from the bottom of the ends of each of two panels.

There is also a beveled notch cut on the lower side of each upper board, so as to allow the two to lock securely in the upper angle of the framed posts.

The advantages that are claimed for this fence, and by practical experience we feel justified in saying that these claims are realized, are the ease with which the fence can be laid, for we can put it out upon the snow when we are not pressed for time; also it is easily made, and does not need the services of a mechanic. Moreover, by removing a single panel, we have a passage-way at any part of the enclosure, through which a team and waggon, or reaping machine, may pass out—often in hauling in saving much time, which might have been lost by having to go round to the usual gate.

With lumber obtained for \$10 a thousand, the fence costs exactly 65 cents a rod. We have had a panel exposed by itself upon an elevated spot, to the high winds that have prevailed during the last two months, and they have been unable to shift it.

Altogether we can cordially recommend the fence, and until a better shall be patented, we think our farmers in want of a portable fence may with advantage buy Weir's patent.

IRRIGATION.—A writer in the *Farmer and Artisan* speaks thus of irrigation: "Having a small country mill, with several acres of low land stretching out below it, I have for several years irrigated a number of acres at a nominal expense. I extended a small ditch from the flume which supplies my mill, around the edge of the valley, and made little gates at convenient distances through which I can turn any desired amount of water, at any time when my crop requires it. I have found that by judicious watering the land just before planting, my crops grow luxuriantly through ordinary droughts, when the same class of land, not watered thoroughly in the spring, suffers severely. The land irrigated is not strictly bottom land—is never overflowed by the stream running through it, though not of course as thrifty as rolling upland. I find that the lands thus irrigated produce more without manure than my best uplands under the highest cultivation. I am therefore a strong advocate of irrigation, and would urge all farmers who have so much as a single acre lying so as to admit of it, to apply the same system.

Voelcker on Soils.

Dr. Voelcker, the eminent English agricultural chemist, lately delivered a lecture before the Chemical Society of London on the productive power of soils in relation to the loss of plant-food by drainage, in which he took occasion to refer to the imutility, for most purposes, of the analysis of soils, as ordinarily conducted. He states that there are many apparently similar soils—that is, soils in which analysis shows like quantities of the same constituents—which differ widely in their productive powers, owing to the fact that the indications are of ultimate composition instead of showing states of combination in which the ingredients exist in the soil.

Another consideration of importance is that soil analyses throw no light upon the physical or mechanical conditions which affect the fertility of land. The productive-ness of land is much influenced, too, by the character of the sub-soil and its composition in relation to the surface-soil, of which a soil analysis conveys no information. Again, meteorological conditions, such as the aspect of the field, the prevailing wind, the amount of rain, and the distribution of the rain-fall in the year, are all of the utmost importance in farming, and are, of course, not indicated by any analysis.

Dr. Voelcker, however, would not be considered as regarding such analyses as of no value, since in many cases quite the contrary is the fact. For instance, it is easy to determine whether a soil is deficient in lime or not, and thus ascertain whether it is proper to impart a dressing of this mineral. It is also known that potash salts may be applied with great advantage on some soils, while on others their fertilizing effects are scarcely perceptible; and the determination of the question whether there be enough potash in the soil will enable us to decide upon the proper action in this respect.

Again, it is possible to ascertain, by finding whether there is potash in clay, as to its being benefited by burning; burnt clay being an excellent fertilizer if the clay contains undecomposed silicates of potash; but the expense of this process would be entirely wasted if the clay be naturally poor in alkaline silicates. Again, peaty soils are often completely barren, this condition being due, in most cases, to the presence of sulphate of iron and finely divided iron pyrites, so small an amount as $\frac{1}{4}$ per cent. of the former being quite sufficient to render a soil entirely unproductive.

We can also ascertain by analysis whether a soil contains an excessive portion of one or more matters otherwise useful to vegetation, such as nitrate of potash, chloride of sodium, etc. It appears to be the fact that all soils which contain readily soluble salts, in quantities admitting of precise determination, are more or less unproductive, although the salt

may be a very effective fertilizer, when applied in a weaker solution. Thus, a soil containing 1-10 per cent., or even less, of common salt, hardly grows any crop; this being the case with land inundated by the sea. Such a proportion, indeed, of any substance is much greater than could at any time be applied with safety, while very minute quantities are frequently of the utmost efficacy; for so small a quantity as 50 pounds of nitrate of soda, applied to an acre of grass land, or to wheat or barley, and thoroughly washed into the soil, will produce a most marked effect in the darker green colour and greater luxuriance of the herbage compared with the portion not so treated. One hundred pounds of ammonia applied to an acre of land, in the shape of sulphate or of chloride of ammonium, has been known to raise the average produce of wheat 20 bushels, with a corresponding increase of wheat straw; and 300 pounds of superphosphate of lime, of good quality, has been found to increase the turnip crop in favourable seasons from six to ten tons per acre.

If a man wishes to make a living by farming, Dr. Voelcker thinks that at least from three to five times as much of the more important fertilizers must be put annually upon the land as is removed from it in the crops, a depreciation in the crop resulting when a materially less amount is applied.

Leaves for Barn-yard and Stable.

Forest leaves are excellent to supply the stable-yards, and where straw is scarce also the cow-stables and hog-pens. They can be most conveniently gathered after the first snow, or at least before the winter blasts have scattered them. They then lie compactly, and being moist, can be handled with greater facility. A cart with a few standards stuck in the sides will hold a considerable quantity; and the best thing to gather them or load them with is a wooden hand-rake, a wooden four-tined straw-fork is also very handy when the leaves are moist. Leaves absorb large quantities of the liquid manure, and are an excellent fertilizer in the spring. They can be gathered, too, when other labour about the farm is slack.—*German Town Telegraph.*

TOP DRESSING.—W. J. W. writes:—"I quite agree with your correspondent 'Old Country Man,' that top dressing with well rotted manure finely comminuted, is the best for grain or grass, and that little or nothing is lost when it is once spread; but I think that unless kept under cover, much is lost before it is rotten, and that the best of it, viz., the liquid; and, moreover, if you put out fresh dung full of juice, and plough it in one year; next time you turn it up, and thus it makes a top dressing. Put on a proportionate quantity of long manure, so much short, and plough in the first year, and my experience leads me to think that the rotation will be about equally benefited either way; but for one crop I prefer the top dressing.

ARTIFICIAL RAIN.—The latest agricultural experiment in England is surface irrigation by artificial rains. At Stoke Park this has been tried, the surface experimented on being a tract of twenty acres, in grass; and the water has been applied in artificial showers, in the night, every night during the season of 1871, excepting when natural rains made it unnecessary. The apparatus consists of pipes laid in the ground, supplied from elevated reservoirs, into which the water is pumped by machinery. A few figures will show the result per acre: Interest (5 per cent.) on cost of machinery and pipes, \$7 50; superstructure and fuel, \$7 50; manure and other top-dressing, \$67 50; cost of harvesting, \$12 50; total expenses, \$95. The value of the product of each acre is stated at \$200; the net profit is thus \$105. Land of the same character, and in the same tract, not so irrigated, netted only \$45 per acre.

DROUGHT IN CALIFORNIA.—The *Pacific Rural Press*, commenting on the formation of a company in San Francisco to raise \$100,000 for the relief of farmers who have lost their crops by drought, says:—"The imperative demand for an enterprise of this character upon the part of the capitalists, merchants, and business men of this city, will be patent to all who are familiar with the present distressed condition of the farmers in those portions of the State which have suffered most from drought. In many localities whole families are upon the brink of starvation, and are only sustained by the assistance of charitable strangers. They have no means whatever to procure seed or put in their crops. It is the purpose of this company to come to the aid of such persons, and provide them with funds, with the agreement that the money furnished them shall be refunded from the proceeds of the crops.

GRINDING WHEAT WITHOUT MILLSTONES.—At a recent meeting in Edinburgh of the British Association of Science, a paper was read by Mr. Thomas Carr upon a new mill for grinding wheat. It is described as reducing wheat by percussion while it is unsupported and projected through the air. When the wheat passes through the machine, it is struck by a series of bars moving in opposite directions. These reduce the wheat so instantaneously to a state ready for bolting, that no injurious heat is caused, and consequently the flour is of a much superior quality to that obtained by the usual way of grinding, and also at a much less cost. An Edinburgh firm has one of these disintegrating flour mills in full operation, and the advantages in its favour over the millstones it supersedes are pointed out in Mr. Carr's paper. It rarely needs repairing in comparison with other mills; requires fewer men, and thus saves in wages; is free from loss by scorching, occupies less space, and requires less driving power; and in addition to all this, produces a superior quality of flour.

Stock Department.

Sheep.

No. I.

As the winter draws on, and our evening are prolonged, let us as farmers try to devote our leisure moments to the improvement of the mind.

To say nothing of the benefits that are derived, and the practical opinions that are mutually exchanged at the meetings of our farmers' clubs, and such kindred organizations, the memory may be stored with new information, or old knowledge be more deeply impressed upon the mind, by a careful selection of reading from the more practical writers in agricultural works and publications.

We propose, for the next few months, to enter into the spirit of the agricultural press upon the different varieties and breeds of live stock, their habits and peculiarities, condensing information into as short and practical editorials as may be deemed sufficient to treat fully of these subjects.

The importance of sheep to an agricultural community is very great. Unlike other classes of domestic stock, they are double producers, coming into the market as meat, and returning to the owner an annual interest upon their first cost by the periodical growth of wool.

It is in this yearly return that sheep as a class exceed in value any other class of stock, with the exception, perhaps, of the milch cows; and it is for this reason that we never consider the stocking of a farm in Canada complete unless there are to be found representatives of these two classes.

Although the breeds of sheep are various, they are practically divided into two classes,—the long-woolled and coarse mutton sheep and the short-woolled and fine mutton sheep.

It is for the farmer to suit his sheep to his soil and locality, for the marked peculiarities in each should be regulated by the nature of the soil and climate in which they are bred.

The following table will show their relative value as wool and meat producers, being a summary of the average clip and the average carcase weight of each breed, at two years old.

SHORT-WOOL.		
Wool in the fleece.		Carcase weight, per quarter
Southdown.....	2½ to 3½ lbs	15 to 20 lbs.
Welsh.....	2 to 2½ "	8 to 10 "
Irish (horned).....	2 to 2½ "	10 to 14 "
Merino, pure bred...	4 to 5 "	14 to 18 "
LONG-WOOL.		
Corswold.....	7 to 8 lbs.	25 to 35 lbs.
Leicester.....	8 to 10 "	25 to 30 "
Liancoln.....	8 to 10 "	25 to 30 "

These are the usual fleeces and carcasses of the pure-bred sheep, but so greatly have different classes been improved by systematic and careful crossing, that these averages have

been greatly augmented, while further hardiness and better economy of feed have also resulted.

The age of a sheep is generally counted from its first shearing, and is determined by examination of the teeth.

The sheep has eight fore teeth in the lower jaw, while it has none in the front of the upper. During the first year they are all of the same size, but at from 14 to 16 months the first two are renewed, and two more every year until the fourth shearing, at which time the sheep is said to be "full mouthed."

It should be observed, however, that sheep that are well fed and kept, usually begin to renew their teeth earlier than such as are stunted from neglect.

Nine years is the natural age of the sheep, but the teeth generally begin to fail, and the animal becomes "broken mouthed," at five or six years of age. As soon as this ensues, power of mastication is greatly impaired, and an animal can hardly be considered of any value except for its fleece. Indeed, we think that no sheep, except, perhaps, certain ewes especially famous as successful breeders, should be kept after the ages of three or four shears.

In Canada, the sexes are sub-divided into rams, ewes and wethers.

BREEDING.

The farmer in Canada must regulate the time at which he admits the ram to his ewes, by the food and accommodation that he can supply to them when lambing, and to the young lambs. We believe implicitly in early lambs, but we would rather advise that lambs should be timed for the first grass, than that they should be stinted of food in the spring.

Upon the treatment of the mothers throughout the winter, and of the ewes and lambs until pasture has fairly started, will entirely depend the success of the early lamb raiser. The man who breeds good, early lambs will have the finest spring lamb for the market, and the finest shearlings; but he who neglects his early lambs will find them surpassed by those brought forth later in the spring of mothers that have been generously treated.

Fifteen months is the youngest age at which a ewe is fit to breed, and therefore, by having early ewe lambs, they can be made to breed the second lot of early lambs in the ensuing spring.

Ewes will do better in Canada upon well cured pea straw than upon any other fodder, and if to this be added a fair allowance (too few rather than too many) of turnips, and a modicum of grain, and dry but airy shelter, they cannot but come through the winter well. We shall, however, presently enlarge upon the subject of feeding.

The period of gestation is generally allowed to be twenty-one weeks; but from various experiments that we have from time to time seen on record, and from our own experience,

we consider the mean duration to be about 152 days, or very nearly twenty two weeks.

Care should be taken that the ram be not required to serve too many ewes, for in such a case he cannot be depended upon, and his growth is apt to be impaired. Moreover, should the ewes all bear, their lambs are apt to be puny.

Much of course depends upon the age of the ram, and upon this point breeders are much divided in opinion. We are inclined to favour those who advocate the keeping of a tup to his second year, when his utmost powers can be exerted without fear of injury, for the yearling is not filled out, and the serving of a number of ewes is apt to stunt that full and perfect development of his points which constitutes the chief beauty of a perfect tup. If, however, he be allowed to run with the ewes in season as a yearling, fifty should be his full compliment, but a two shear ram may safely serve from 60 to 100 ewes.

Great care should be exercised to see that all the ewes have "blossomed," or come in season, and such as will not it is most profitable to turn with the wethers and prepare for the butcher.

The provision of some extra stimulant at this season will, however, generally bring all ewes into season, and this may be made by turning the sheep from comparatively poor pasture into a good clover field, by giving them some more nutritive food, such as linseed, which is the best for the purpose; or by giving oil cake, oats, &c., for a short time previous to the admission of the ram. Some flockmasters adopt the practice of using what is called a "teaser," but the safest plan is never to trust to one ram, but to endeavour always to have two with the ewes, thus ensuring the covering of all the ewes by one or the other.

NO. II.

Ewes, when put to the ram, should be in good order, but by no means fat. A ewe too fat is apt to frustrate the uses of the ram, and during the term of her gestation a too highly fed state is apt to be very injurious to the forming lamb, and is particularly dangerous when the lambing season has arrived.

Sheep require to be kept during our severe winters well sheltered, but not too warm. Indeed, open sheds, into which neither snow nor rain can penetrate, but in which ventilation is thoroughly secured, form the houses in which sheep thrive best. Nature has provided the sheep with a coat that defies the severity of our cold weather, but when that covering becomes saturated, it is long in drying, and in consequence the damp covering exerts its evil effects upon the animal's constitution for a long time.

The proper care of ewes in lamb is simple, and may be shortly summed up thus:

Regular feeding and careful handling. Dogs should never be allowed to molest them. As the lambing time approaches the ewes should be carefully watched, and if it is practicable, should be allowed a large roomy shed, so that, when the season of labour approaches, the ewe may get away from her companions, as is always their desire. In Canada, where flocks are usually small, no excuse should be given for a failure of per-

sonal supervision and great care over the ewes at this time.

About the commencement of the season for lambing, when such occurs before the pastures are opened, we divide our shed into three compartments. These divisions are moveable. In the first are the ewes in lamb. When a ewe begins to show that the pains of labour are coming upon her, we gently drive her into the second compartment, which is small. In this, unmolested by the other ewes, she lams; and her attention not being distracted by the presence of other sheep, she devotes all her maternal instincts to the proper cleansing and suckling of her lamb. As soon as the lamb has found the full strength of his limbs, both it and the mother are driven into the last compartment.

By moving the divisions, as the number of lambs is increased, we gradually enlarge the last mentioned compartment, in which are gradually gathering the ewes and lambs, at the expense of the first compartment, which decreases as the ewes are removed from it, while the centre compartment is always kept about the same size—that is, sufficiently large to afford room for two or three ewes to bring forth their young without molesting one another. When the whole have lambed the divisions are completely removed, and the new flock has again the run of the whole shed.

It is easy to tell when the pains of labour are about to set in. The more immediate symptoms are—the ewe separates from her companions, becomes restless, constantly shifting her position, lying down one minute, and then again rising, as if to assume a more comfortable attitude, pawing the ground, and bleating as if calling to a lamb. When these symptoms appear, there should not intervene many hours ere the immediate symptom of lambing; the dropping of the water bag from the vagina, heralds the approach of her lamb.

It is very important that she be separated from the rest of the flock, and for these reasons: When sheep are disturbed by the entrance of their feeder, they usually crowd into a corner, and jostle the ewe and its young lamb; the lamb is likely to be run over by the flock, and if the ewe is thus separated from her lamb, she will often not return to it for some time, and may even take to another lamb to the neglect of her own.

Again, if the young lamb be dropped amongst the flock, in its efforts to rise, it is apt to become smeared with the dung upon the floor, and the ewe may in consequence refuse to lick it dry. The ewe refusing to lick her lamb dry, and not finding it to give it suck for some time, may often prove fatal in severe weather.

It is very seldom that mechanical aid is required by the ewe in lambing. Indeed, we believe that many lambs, and ewes too, are yearly lost by a too hasty interference upon

the part of the attendant. Nature requires time to perform all her operations, and the ewe, if left to herself, will exert all her force to part with her fetus. Directly mechanical assistance is rendered, her attention is taken off its proper object, and she is apt in her struggles with the attendant to injure both the lamb and herself.

When, however, a false presentation of the fetus (a thing of rare occurrence) takes place, the shepherd, first oiling his thumb and finger well, may gently return the fetus to the vagina, and carefully adjust its limbs to a proper presentation, i.e., the fore-feet appearing first with the nose between them.

Sometimes, from weakness, the ewe is unable to expel the lamb. In this case she may be assisted. The pulling of the attendant should, however, be very gentle, and only then rendered as auxiliary aid to the throes of the dam. The clearing (placenta) should be removed from the fold immediately.

The same principle of slow interference should be observed with the weakly lamb; when tumbling about it is attempting to rise. A lamb that manages to suck without aid will never forget its self-taught lesson, while one that has to be made to suck will be a long time ere it will attempt it without being helped. If, however, the lamb should appear thoroughly exhausted while the ewe refuses to lick it, aid should be rendered. If possible, never throw a ewe down, but teach the lamb to suck in a natural position, that is, with his nose pointed upwards. If made to suck the prostrate ewe, the lamb will for a long time after be unable to find the teat in its natural position.

If a ewe has no milk, the lamb must be fed by hand. Milk from a fresh cow is the best, and if this be heated and mixed with a little water and some molasses, it will possess as nearly as possible the purgative qualities of the mother's milk. This milk should be fed by making the lamb suck at a sponge placed in the neck of the bottle containing it, and should never be poured down its throat by means of a sponge or open bottle.

We have not space in this article to enter further into a consideration of ewes which lose their lambs, or the methods by which they may be taught to bring up foster lambs, but hope to dwell upon these points in our next.

The Waste and Folly of Cold Barns.

And what showing would the cost of winter feed of his animals make on the account-book, if the farmer keeps one? He would find that a large portion of his feed had become dissipated in the frozen air of the north winds; that a good portion of hay or corn had gone to melt ice or snow and evaporate cold rain-water, and that what was left after these things had been done had barely sufficed to keep life in his beasts. For in this case philosophy or science, or book-knowledge, call it what you will, is thoroughly corroborated by practice.

If two beasts are fed alike, except that one is kept well stabled, and the other out of doors exposed to the cold, the one thus exposed will consume just double the amount that the other will, and will be in a worse condition beside. Every man who keeps a cow knows this to some extent, though he may not know the exact figures. Here we give them—they are the result of a careful experiment made by a trustworthy feeder: viz: Two lots of sheep (of five each) were selected, of equal weights and conditions. One lot was kept out of doors and unsheltered, the other kept in a close pen. The lot under shelter ate 1,912 pounds of turnips against 886 pounds eaten by the other lot. The gain in weight was 23 pounds per head in the first lot, and 28 pounds per head in the second. The profit can be figured out by any man who knows what turnips and mutton are worth. Had not the feeding been abundant, some of the exposed sheep would have died. And yet sheep will stand more exposure than calves or heifers, or even full grown cattle. Notwithstanding all this, every winter's day one may see young calves humped up and stiffened with cold, shaking in the keen breeze, and their owners knowing at the same time that a year's growth is frozen out of them. This comes of not figuring up profit and loss.—*American Agriculturist*.

Keeping Fattening Hogs Warm.

Cold weather is fairly upon us, and hogs are now being fattened. Above all things next to economically prepared and applied food, keep your hogs warm. Never mind what some people say about a fattening hog being "warm enough," even if exposed to rain and snow. He certainly may bear the exposure, as the large quantity of food he consumes makes him very much warmer than if fed on summer food and poor slops; but, you may depend on it, the quantity of food consumed is almost in direct ratio—other things being equal—to the warmth in which the hog lives. An excellent exemplification and practical proof of this theory exists in the way experience has shown how distillery cattle fat best and fastest; and the invariable rule is to have free ventilation upwards, to allow of the exhalations passing off, but all air otherwise is totally excluded—that is, as much so as an ordinary frame building will do. The cattle would not fat half as fast as they now do if it were differently arranged. I have often been in the cattle byres, and, except in warm weather, the above is always the treatment. We all know the hog is a more luxurious animal than a bullock, and no one ever saw a bullock making himself a bed, whereas few men exist who have not seen hogs in cold weather carrying straw in their mouths to keep themselves warm in their beds. From experience gained after many years' trial, I have come to the conclusion that one quarter of the food can be saved by preparing it properly, and a second quarter can be saved by a warm house and a good bed. G.

The *Ohio Farmer* thinks it important to feed some straw every winter, as it seems to have a beneficial effect on most animals; it also thinks horses not at hard work do better on cut straw with a little grain than upon hay and grain.

The best mode of fastening a horse in a stall is the English one of attaching a light weight to the end of the halter, and allowing it to run up and down under the manger, which should always be boarded in front from the floor up. By this arrangement the horse enjoys sufficient liberty, and yet has no chance of getting cast by stopping over his halter.

The farmer who stints the feed of his stock during the winter months in order to have something to carry to market is foolish; the farmer who feeds his stock well through the winter months is wise. One makes his stock bring a price far more than the cost of the extra feed given; the other has the pleasure of seeing his neighbour's stock sell readily at the highest market, while his own is slow of sale, and at reduced price.

SELF-MILKING COW.—A correspondent of the *Prairie Farmer* gives the following cure: A very good way to keep a cow from sucking, and at the same time give her the most freedom of action, is to put the following contrivance on her: Put a strap around her neck and one around her body about midway. Take a good stout stick about the size of a hoe-handle, and long enough to reach from one strap to another. Pass the stick between the fore-legs, and tie it to the straps. It will be impossible for her to suck with it on.

PIGS POISONED BY SALT.—The *Irish Farmer's Gazette* contains an account of poisoning of pigs by common salt. Thirty-one pigs arrived at the depot in one car, all in a sickly condition. In a short time four died, and sixteen were killed because they were apparently dying. Emetics were given to the remaining eleven, and they all recovered. An examination of the carcasses showed signs of gastro-intestinal inflammation. An examination of the car showed a considerable quantity of salt scattered on the floor. Enquiry showed that the car had been used previously for carrying salt; that the pigs had been for some time without water, and they had licked up considerable salt during transit, some of which was found in their nostrils. This does not appear to be the first case observed in Europe of pigs having been poisoned by eating freely of salt.

The highest health and comfort of a horse demand that he be thoroughly cleaned every morning, whether worked or not, and after labour he should always be carefully dressed over before he is left for the night. It is no easy or simple thing to clean a horse well, and yet if done regularly and properly, it need not consume a great amount of time. The essential tools for the operation are a currycomb or card, a good brush, a coarse comb for the main and tail, a sweat knife or

scraper, a supply of old woollen and cotton cloth for rubbing, plenty of straw for wisps, a pick for cleaning the feet, and a large sponge for washing or wiping, to remove superfluous moisture, &c. The animal should be cleaned out of the stable if possible, and should be treated gently, especially the hind legs and flanks, when the brush, wisps, or sponge should be used. The skin should be thoroughly scratched and the dandruff removed. In replacing the blanket lay it a little forward of its place, then draw it skilfully back so as to leave the hair perfectly smooth.—*German town Telegraph*.

The *Moine Farmer* answers the question as to what is a "thorough-bred" as follows: "Strictly speaking, a thorough-bred horse is one whose pedigree, lineally and collaterally, can be traced to an approved oriental source, the fountain-head of the best blood of England. The thorough-bred horse of America is the only family of the horse on this continent of pure and unmixed blood. And Herbert says this pretension even cannot be made out to satisfaction in all cases, even where the American thorough-bred can trace directly in both lines to imported English thorough-bred sire and dam, because many of the most distinguished English race horses cannot establish an unquestioned descent on both sides, from royal (oriental, i.e., Arabians or Barbs) sire and royal dam, which is, technically speaking, requisite to constitute a perfect thorough-bred. But latterly, it has been deemed sufficient for a 'thorough-bred,' if his pedigree can be traced for eight generations without any admixture. In England no horse is considered thorough-bred whose pedigree is not on record in the 'Stud Book,' which has been kept up from the time King Charles II. (1660-1685) sent abroad the 'Master of the Horse' to procure oriental mares for breeding purposes. From want of such a record in this country, American horses are considered thoroughbred if the sire be known to be so, and if the dam can be traced without a stain to some mare of the fifth remove reputed to be thorough-bred."

President Clark, of the Massachusetts Agricultural College, speaking of horse-stables, very justly remarks:—"A suitable stable is the first requisite in the care of a horse. It should be capacious, well ventilated, but warm, well lighted, and so situated as to be free from dampness. Stables are not unfrequently built over cellars or depressions in the soil, which receive the manure, and are often partially filled with water. The constant evaporation from this pond keeps the entire stables damp and chilly, and thus is in an excellent condition for causing founder, rheumatism, lung fever, colic, and other diseases in the poor, exhausted creatures, whose uncomfortable nights must be passed here. Warmer, but not more salubrious, are stables over cellars, dark and close, which are fumed by the pungent dung. Such cellars ought always to be very thoroughly ventilated, not merely by an open door or space on one side, but by a constant and abundant circulation of air." But it would be far better that there be no cellars at all.

Veterinary Department.

Diseases of the Digestive Organs of Cattle.

IMPACTION OF THE OMASUM.

The third stomach or manifolds, from its peculiarity of structure, is prone to functional derangement in connection with several diseases, but is also liable to become impacted with digesta to such an extent that the important process of digestion is completely arrested. The digesta accumulate betwixt the leaves or folds, and become dry and hard, which irritates the parts, producing more or less inflammatory action of the lining membrane of the organ, and this condition extends to the fourth or true stomach, and also to the intestines.

This is a very serious disease, and many animals die from it in certain districts where the food is of an inferior quality, and where the supply of pure water is very limited. The two unfavourable circumstances combined very soon impair the functions of the digestive organs. It is commonly met with in cattle that are grazed upon coarse herbage, and more particularly in early spring, when the young grass is just coming up. The young and succulent grasses are greedily devoured, and with them large quantities also of old and coarse herbage, which proves very difficult to digest; it consequently becomes lodged in the third stomach to such an extent as to completely paralyse the muscular coat. Any description of food that does not contain nourishing qualities in proportion to its bulk, if continued, is very likely to produce this affection. The symptoms of impaction of the omasum are the following: The appetite is impaired, rumination ceases, and in milking cows the secretion of the milk is materially lessened. In the early stages there is also slight diarrhoea, which is speedily followed by constipation of a very obstinate character; the pulse is quickened to as many as eighty or one hundred beats per minute; the mouth is hot, and the muzzle dry and warm; the breathing is accelerated, and as the disease advances the animal moans heavily, and the eye has a peculiar anxious look, which is very characteristic of the disease. When the above mentioned symptoms continue, others of a more serious and more alarming nature are developed; the brain becomes affected, consequent on a congested state of the blood vessels from the altered state of the digestive apparatus. In some cases there is apparent stupidity approaching coma; the eyesight is gone, and the patient is almost senseless. This condition is speedily followed by convulsions and death. In other cases the animal becomes frantic and delirious.

The treatment of this complaint very much depends upon the stage of the disease, and

to be treated successfully the patient requires great care and attention. A strong dose of purgative medicine should be given, as one pound of Epsom salts, to which may be added two or three croton beans, powdered. It is also advisable to give them gruel, and encourage the patient to take plenty of liquids. Great advantage is sometimes obtained by giving aloes along with the Epsom salts—about one pound of the salts and one of aloes, dissolved in a large quantity of water. Stimulants or vesicants applied to the abdomen, are of benefit; and if head symptoms are developing, they may be relieved by the application of cold water or ice to the head. When the bowels are got to move moderately, recovery is likely to follow, and the strength must be supported by gruel, beer, or any nourishing diet.

Disease of the Brain in a Colt.

To the Editor.

SIR,—I am a constant reader of your valuable paper, and I find a great amount of information in it respecting the treatment of stock, both sick and well. I have at present a very peculiar case, which I wish to bring before you for advice, and before your subscribers for information, as it puzzles the people in this locality.

The case is this: About the first of October my hired man informed me that one of my yearling colts appeared to be unwell. He took fits of running about the field, after which he would stand as if sleeping. I immediately went to him, and found him standing very stupid-looking. I saw at once something serious was the matter, so I went for my neighbour, who has had a good deal to do with horses. The strange way in which he acted puzzled him; however, he gave him some nitre, rosin, &c., saying it would do him no harm, any way. I kept him shut up so that I might nurse him, for he had failed greatly in flesh since the last time I had seen him. I observed he had no inclination to eat, and never lay down, and appeared to be very weak, especially in the hind parts. On the fourth day I went for a veterinary surgeon. He pronounced the disease influenza. He did not appear to doubt his recovery, gave him medicine, and left a quantity for him. He came to see him four times during about four weeks; in that time he got medicine morning and evening. The medicine had no effect upon him; he was getting weaker every day, so much so that he could not lift his hind legs, but merely dragging them as he walked. I accordingly told the surgeon not to come any more, as his case seemed to be hopeless. The disease had now gone to such a degree that the animal could not stand still one moment. At times he would reel about as if drunk, reathing very heavily, and appeared so weak that one dare not go near him for fear of his falling. The surgeon said I was to let him out, as there was no danger of other animals catching it from him. When he gets out of the stable he starts off at a wonderful pace, over stumps, against fences, buildings, or anything that may happen to be in his way. He is so disfigured and emaciated that he has the appearance of a horse twenty years old.

He is not blind, but the disease appears to be all in his head now. He has a great desire to push his head forward, and when he gets his head against anything pushes with all his might. When food is placed before him, he eats a few mouthfuls very greedily, then leaves it. He has taken two fits, the second more violent than the first; in them he foamed at the mouth, could neither see nor hear, could not stand still, would have fallen forward had he stood for one moment, breathing as heavily, and his flanks heaving, as if he had the heaves. I would have killed him in the fit but I had no gun, and I did not like to hit him with an axe. I got him into the stable, hoping by morning he would be dead. By ten o'clock he had the lining of the stable covered with blood, and was going at a furious rate, staggering as he went along. I concluded from his appearance that death would soon close the scene; but next morning, to my extreme astonishment, he was nibbling at the hay. This happened two weeks ago. In fine weather I let him out so that he may get fair scope to travel. When he is closed up he is always untied, as he could not stand any length of time without moving. I tied him to see what he would do, but his head swung about in such a way that he would soon strangle himself. He has only lain down twice to my knowledge since he became ill. Some of my neighbours advise me to kill him, others say let him live, he will come all right. I have described his case minutely. There are no swellings upon him. What is your opinion? or can any of your numerous readers throw light on the case?

By answering this through your paper you will greatly oblige

DAVID ALLAN.

Egremont, Co. Grey.

REPLY.—Judging from your very explicit description of symptoms, it is our opinion your colt is affected with some cerebral complaint. Very possibly the symptoms are due to one or more tumors in the lateral ventricles of the brain, and if they increase in size they are likely to produce death. We cannot hold out any great hopes of a cure being effected, but would recommend you to try the effects of the Bromide of Potassium in one drachm doses daily, to be given in a pint of water. The colt should be kept in a large, warm, and well ventilated box, and the food should consist of such as is nutritious and easily digested.

Swelling on Fetlock Joint.

Mr. T. Brown wishes to know what is the best treatment for a hard swelling on the outside of the fetlock joint, caused probably by a kick or blow. He had tried several remedies to reduce it, but without effect. The horse is a two-year old colt, and has been running in the bush; it is not lame, but a little stiff.

REPLY.—Cut the hair off the enlargement, and apply about two drachms of ointment made of biniodide of mercury, one part to six parts of lard. The ointment must be applied with smart friction. The second day after blistering dress the part with sweet oil, and on the fourth day wash off with soap and water, and continue to wash every second day afterwards until the scurf peels off; then again apply more ointment, and use as before.

Diseases of Cattle.

DIARRHOEA.

Diarrhoea is the name applied to an undue quantity of liquid feces, and may proceed from various conditions of the system, and in many instances it can scarcely in itself be regarded as a disease, because it is the effect of nature to purify the system by carrying off some irritant or offending agent, which, if retained, would give rise to worse conditions. Therefore, in its simplest form, diarrhoea results from a changed condition of the mucous membrane lining the intestinal canal, resulting from a sudden change of food, or from an irritant directly applied to its surface. It is frequently brought on by eating a large quantity of rich succulent food, or drinking freely of impure or stagnant water—a frequent cause in certain seasons. It may also be produced by eating of obnoxious herbs and coarse and indigestible grasses. In young animals it occurs from disordered digestion proceeding from the nature of the food, and is known as the flux or white scour. In these cases the milk upon which the animal subsists is the cause; it is either too rich or too poor in quality, and perverts the functions of the stomach. It is not assimilated in a proper manner, but remains as an irritant, exciting the mucous membrane to an unnatural secretion. It occurs also in connection with other diseases, as in functional or organic disease of the liver, and also in connection with blood poisons attendant upon several affections of an epizootic character.

The symptoms are a copious discharge of fluid excrement, accompanied, when long continued, by abdominal pains and arching of the back; the ears and extremities become cold, and the circulation is feeble. In young calves the excrement is very light coloured, and the evacuations cause great pain and straining; the belly is tucked up, and if no relief is given there is very soon great nervous depression and emaciation, resulting from the excessive discharges.

In the treatment of this complaint simple remedies are generally the most effectual, care being taken at the same time to regulate the diet. If an irritant is supposed to be the cause, astringent remedies should not be resorted to in an early stage, as they would tend to increase the disease; but a gentle laxative should be given, as half a pint to a pint of raw linseed oil; and when griping pains are present, it is well to add about half an ounce of laudanum. The patient should be kept quiet, and only allowed a moderate supply of water. Where the animal is very weak, a quart of warm ale, with two drachms of powdered ginger, is a convenient and useful remedy.

In young calves this affection requires to be carefully treated. It is advisable in all cases where it is practicable to do so, to give the calf a moderate supply of the milk of its own mother; and when pains are exhibited, give two ounces of castor oil, with forty drops of laudanum, and repeat the dose in the course of ten hours if no relief is given. At the same time place the patient in a comfortable and well littered pen.

Horse-Shoeing.

NO. IV.

Resuming the immediate subject of these articles, let us ask the question "Why shoe horses at all?" I have seen some old-fashioned farmers, who did not travel much on hard roads, who never shod their horses. The more ambitious used to call them mean, and they in turn would laugh at foolish men for paying blacksmiths to lame their horses. Horse-trainers have learnt that all attempts to make a horse carry his head well are worse than useless. Taking as their model a young colt running with its mother, they find that this nice appearance is not obtained by checking the horse's head; but when we give him room and liberty, he assumes at once his natural and most beautiful position. So if we can get a horse to go without shoeing, it is the best and safest way. Our shoeing starves the foot of its necessary preservers. It makes the horse's action clumsy, and retards his movements. On the whole, it is doubtful whether shoeing is of so much value as we consider it. But our roads must be made hard, in order to stand the amount of traffic and be passable in the wet seasons of the year. Then we find, when putting the horse on this hard road, his feet wear too fast at the toe, and without some protection we cannot get him to do the amount of work that he is otherwise able to do. The growth of horn is insufficient for the wear; hence we resort to shoeing, and the result is we cannot see one horse out of twenty but bears some of its evil fruits. The wear at the toe is all that fails the horse, and to prevent this as easily as possible. I once saw a gentleman try gutta percha shoes on his horse; he then tried short plates around the toe, and next tried them on the top of the gutta percha; but in every case without satisfaction.

Now, the question comes to be—Can we get something to stand this wear, and that will at the same time allow the horse to have his natural footing, without retarding his lively action by its unnecessary weight, and at the same time secure the essential object of preserving sound feet? This something we can get in the shape of the French shoe already described. It is exceedingly light compared with the heavy plates usually put on. It preserves the wall of the foot from wear and breaking. The principle by which it is put on allows the sole to rest on the ground. With such a system the feet will never contract. It secures the use of the frog, which makes the horse travel with far greater ease by its elastic action. It acts also as a desirable stimulant to the frog itself, for by putting pressure on it it grows larger and stronger. A diseased frog, that is rotting away, if cleaned, and then dressed with a little calomel, will soon grow large enough, if by some means or other the horse's weight can be got to rest on it. By this system of

shoeing, broad thin flakes are spontaneously thrown off the sole without the aid of the knife.

Interfering, or cutting, will be found by this system to almost, if not entirely, disappear. The common way at present of stopping this evil is not a good one. It is generally attempted by keeping the shoe close on the inside of the foot—so close that nails cannot be put into it—and instead some are put in the toe. A much better way is to keep the shoe close and smooth on the inside, but not under the foot; then keep the outside as close as possible with safety. This throws the centre of the horse's weight nearer the inside of the foot, and in order to stand sure he steps wider, and this frees his legs. Making the inside of the shoe deep, will help some horses, while it makes others worse. One horse interferes with one part of the foot, and another with another part; so different plans must be adopted for different cases. But interfering is sometimes caused by checking the horse's head. In such cases it is useless to try to stop it by shoeing.

The nails used to hold on the French shoe are much lighter than those used for the ordinary kind; the shoe being let down in the foot, is easier kept on; the sole supporting the shoe in every direction, less strain is put on the wall of the foot by the nails. The shoe having this solid bed, makes the horse feel at perfect ease, while his foot retains all the natural advantages which were common to him in his primitive wildness. He is at the same time better adapted for a hard road than what he can be with any degree of paring, no matter how little. This shoe is admirably adapted for frost. A horse with bare feet can go tolerably well on ice. Then with the heels of this shoe turned up, and sharpened a little, it secures the double advantage of sharpened shoes and bare feet at the same time.

It is true this shoe will not answer some diseased feet; but many feet that are diseased to-day would never have been diseased had no other shoe but this ever been on them. When disease takes hold of the foot, from whatever cause it may, whether by overworking the horse, bad shoeing, or an accident, it must be dealt with according to the nature of the case. But that is no reason why we should treat sound horses in the same way. It is suitable, however, for all horses, at their first shoeing, and also for a large number who are now shod on the common principle. At first there may not be hoof enough to let the shoe down more than an eighth of an inch, for feet generally are low enough already, especially in the centre, but by practising it for a few shoeings the sole will soon fill up.

The sooner this system is adopted, the better it will be for the horse, and the more profitable for the owner.

In submitting this method of shoeing to the public, I am quite well prepared for the strong objections that will be raised against it. I have often had them to contend with before, but they only served to make me study the subject more thoroughly, and gather fresh proofs in support of the advantages of the system which I now advocate.

NO. V.

There is probably not a man who ever owned or used a horse for any length of time, who has not felt that there was something wrong with the shoeing. Dissatisfaction with the present system seems to be universal. This, no doubt, accounts for the strong and discrepant opinions entertained regarding it.

The art of shoeing is of great importance, not only to owners of horses, but indirectly to all. Even laying aside the individual services these useful animals occasionally render us all, it is on the labours of the horse, though perhaps indirectly, that every one depends for the staff of life. But to a farmer, in the busy season, the temporary lameness of a horse, on which he is depending for a share of the work, is very inconvenient; nor is it easy to estimate the full amount of the loss.

Mistakes will sometimes happen under the best care, especially with horse-shoeing; but the blame does not so much rest on mechanics as on the bad system on which they have to work. It is time to do something in the way of improving and making more useful the most valuable of animals.

I doubt not but some, into whose hands this may chance to fall, will look upon it as a suggestion in the right direction. Others may disregard it, but I feel confident that the system, the advocacy of which has been the principal object in the preceding articles, will, before many years, be largely adopted.

It is a pleasing sign of the times that a few men, possessed of master minds, are bestirring themselves to arouse the people from their dreams of fancied perfection, and are pressing upon them the necessity of technical education. It is a necessity, in order to keep pace with the moving world, as well as an advantage to all concerned, for a workman to be intelligently acquainted with the various properties of the materials with which he is employed, and thoroughly understand their relation to each other; also the place and power of every part of machinery. There is no standing still. Let us then be careful lest we go backwards. "To know the disease," in this case, as in many others, "is half the cure." The time, means and talent are in our hands: all that is left for us to do is to put ourselves in possession of the necessary knowledge.

ROBERT SABISTON.

Caledonia.

TO GET RID OF FLEAS.—Mr. Ely said, at the last meeting of the New York Farmers' Club, that there are two or three substances that are obnoxious to the flea—he does not like the smell of them, or they remind him of something he does not like to think about—these are carbolic acid and sulphur. If you want a barn thoroughly purged of weevil, or lice, or fleas, the best way is to fumigate it with sulphur. But if you whitewash all around the stables and posts of the yard with a wash made by adding carbolic acid to the lime, it will drive most of these pests away. Washing an animal thus infested with carbolic soap-suds will give relief.

The Dairy.

Grasses for Butter Farms.

Before entering upon the question of butter manufacture and factory management, it will be proper to say a word concerning the food of stock. The excellence of "fancy butter" does not depend altogether upon its manufacture, for in the first place good milk must be secured.

"Fancy butter," that will sell for a dollar per pound, cannot be made from bad material, from milk produced on weedy pastures, nor upon the rank, sour herbage of swamps, nor upon land newly seeded with red clover. The experienced butter dairymen, therefore, pay much attention to the feed of their cows, and prefer old pastures.

On the old pastures of the butter district there are several varieties of grasses that spring up spontaneously, and are much esteemed as affording sweet and nutritious feed, from which the best qualities of milk and butter are produced. These grasses form a dense solid turf, leaving no intervening spaces. They embrace the June or blue grass (*Poa pratensis*), the fowl meadow grass (*Poa serotina*), meadow fescue (*Festuca pratensis*), red top (*Agrostis vulgari*), the wire grass (*Poa compressa*), the sweet-scented vernal and vanilla grass, together with timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), clover and other forage plants.

The June grass (*Poa pratensis*) is regarded as very valuable. It throws out a dense mass of leaves, is highly relished by cattle, and produces milk from which a superior quality of butter is made. It is found growing throughout the butter districts of the country. The wire grass (*Poa compressa*) is deemed one of the most nutritive of the grasses, is very hardy, eagerly sought after by cattle, and is one of the best grasses for fattening. Cows feeding upon it yield milk of the richest quality, from which the nicest butter is made. It flourishes well upon gravelly knolls and in shaded places, and its stem is green after the seed has ripened. It is found growing in all parts of the country.

The meadow fescue is common in old grass lands where the soil is thick and grasses of different varieties are mingled together. It starts up early in the spring, is relished by stock, and furnishes good early feed. The milk farmers hold it in high estimation as a reliable grass, tenacious of life, and not running out like timothy (*Phleum pratense*) or clover. The white clover (*Trifolium repens*) springs up spontaneously in old pastures, and is highly esteemed as giving flavour and quality to butter.

The sweet-scented vernal grass grows best upon the moist soil of old meadows. It starts very early, and gives off an agreeable odour.

We have been particular in naming the grasses which are most esteemed for pro-

ducing a high-priced butter, because a record of long and well-conducted experiments has proved their utility. It is possible that climate and soil might so modify the character of these grasses as to render them less worthy of esteem in other countries than among the butter dairymen of New York; still, as the experience of farmers noted for their success in a particular direction is more or less suggestive and valuable, we give the record as it is.—X. A. WILLARD.

Raising Winter Calves.

It is by some farmers thought to be difficult and unprofitable to raise winter calves. The prices of cattle are so unfavourable that many are discouraged about raising calves, and would prefer to shift their stock into sheep. There is no good reason to doubt that by the time the present calf has arrived at maturity, good cattle of all kinds will bear remunerative prices.

We advise farmers to raise the calves and go on with a mixed stock without regard to the fluctuations in value which are caused by unforeseen circumstances, and which no one can anticipate with any certainty.

There is no difficulty in raising winter calves. We have raised a great many calves in winter time, and prefer that season because there is then more leisure to take care of them than in spring or summer. In raising calves in winter, as well as at any other time, we prefer to separate them from the cow as soon as they are born. They learn to drink more readily, and the cow submits to the loss of the calf more quietly, than after feeding and suckling it. The young calf should be well rubbed and wiped dry with straw, and given a good soft bed of straw in a warm stable, with no cracks or apertures to admit the cold air.

If the weather be cold, it should be fed with warm milk as soon as it will take it. The feeding should be frequent for a few days. This is more important than in warm weather, as the young calf becomes chilled very soon after it is hungry. After a week or ten days skim milk may be substituted for new milk if desirable. Boiled potatoes may be mashed fine and mixed with the milk, also crusts of bread after being soaked in hot water. Both are very healthful and nutritious. Hay tea, or gruel made of corn meal, oat meal, or oil meal, may be used in place of milk, being added to it gradually until the fifth week, when the milk is often discontinued.

After many experiments, we are of the opinion that no other food can take the place of milk. It is the natural food of the calf, and contains all the elements which are essential to growth and health. Oil meal should be used with care. It is desirable to teach the calf at an early age to eat sweet early cut hay, oat meal and roots. It is absolutely necessary to the health and growth of the calf that it should be supplied at all times with a clean, dry bed and dry footing.—*Vermont Record*.

Scotch Dairy Show.

The *Irish Farmers' Gazette* says:—The great show of cheese, butter, and roots, which takes place annually at Kilmarnock under the auspices of the Ayrshire Agricultural Association, was held in the Corn Exchange and several temporary erections in the immediate vicinity of the large hall. The magnitude of the show may be estimated from the fact that there were about 240 tons of cheese in the premises, roughly valued at 20,000 pounds. These figures are much larger than they have been on any previous occasion.

The *Mark Lane Express* has the following remarks on this show:—The comparison of fine English and Scotch cheese was one of the most interesting occurrences at the recent show of the Ayrshire Agricultural Association. It has been said by English judges that a few cheese-makers in Somersetshire—10 or 15, or 20 in number—still surpass the best makers of Cheddar cheese in Scotland. Last year the men of Galloway, with great spirit, offered to bring the matter to a practical test by a competition, but the Somerset men declined to meet them. Failing to obtain a competition on a large scale, a few of the Galloway men applied to an eminent cheese factor who gets the produce of some of the best dairies in Somersetshire, and he selected two "thoroughly fine" specimens for exhibition at Kilmarnock. A Scotch cheese was selected for comparison with the best English one. The Scotch cheese was one of the two which had been placed first for Lady Stuart Menteth's prize. The judges took half an hour to come to a decision, and they were not satisfied till they cut both cheeses through the middle. The quality of the two was wonderfully near. The Somerset cheese appeared to have the advantage of being a month older than the other, and it excelled a little in "style." Though no more than the usual width, it weighed 110 lbs. The Galloway cheese might be about three-fourths of that weight. It was equally fine in colour, "texture," and quality, and rather excelled the other in flavour. In the end, the unanimous decision was in favour of the Scotch cheese.

The American Dairying Interest.

The number of milch cows in the United States, according to the census of 1850, was 6,385,094; the number in 1860 was 8,728,862; the number in 1870 was 11,008,925. The number of milch cows in the State of New York in 1870 was 1,980,000, over 850,000 more than was in 1860, when it was 1,123,643.

The pounds of butter made in the United States in 1850, were 313,345,306; in 1860, they were 460,509,854; in 1870, they were 470,536,468. Of this number, in 1870, 103,097,280 pounds were made in the State of New York, which is over 23,000,000 more than were made in 1860, when we produced 79,766,094.

Of cheese, there were made in the United States in 1850, 105,535,893 pounds. In 1860 there were made 105,875,135 pounds, an increase of only about 345,000 pounds. Of this amount New York made 49,741,413 pounds in 1850; and 48,548,288 pounds in 1860, which is 1,193,125 less than we made in 1850.

The factory cheese made in 1870 was returned by the census marshals on the schedule of manufactures, which has not been compiled. We think the total production will be shown to be not less than 140,000,000 pounds. The amount of farm dairy cheese returned as made in 1870 is 50,782,824 pounds, of which 22,769,964 pounds were made in the State of New York. We estimate the total amount of both factory and dairy made in this State in 1870 at 65,000,000.

Now let us glance at the value of dairy products in our own State in 1870, assuming that we made 65,000,000 pounds of cheese. If we call the cheese 15 cents a pound—it averaged about that last year—65,000,000 pounds amount to \$9,750,000. At thirty cents a pound, 103,000,000 pounds of butter would amount to \$30,900,000—making a total of nearly \$40,000,000 (\$39,650,000) for the dairy products of the State of New York alone, counting only the two articles of butter and cheese, and saying nothing of veal and pork. The nearly 2,000,000 milch cows employed in this production can not be valued at less than \$50 a head, or \$100,000,000.

These figures will serve to impress the mind of the reader with an idea of the magnitude of the interest with which the dairyman is connected. We will only add that our exports of cheese from the port of New York, in 1870, reached 1,184,687 boxes, averaging not less than 60 pounds to the box, making a total of 72,000,000 pounds, worth about \$10,800,000.—*Utica Herald.*

Diversified Farming and Home.

We would urge upon our dairymen the importance of adopting a somewhat diversified system of farming. Every farmer should raise his bread, vegetables, meat and fruit. Wheat, corn, potatoes, oats, &c., should be cultivated so that you may not be wholly dependent upon one single crop, a failure in which would be most disastrous. If you grow what articles you want to use, you will not be subject to the fluctuations of the market, and possibly have to pay dear for them when you are compelled to take low figures for your butter and cheese. Keep a few sheep for stocking-yarn, and for mutton, and to have a few pounds of wool to sell or to exchange for cloth. In short, farm it so as to be as independent as possible, and to keep your hand in, so that you and your boys may know how to do something else besides take care of stock, milk and churn, or run to the cheese factory.

And, above all, seek to make your homes attractive and pleasant. Don't forget the good woman in the house, and leave her and daughters to drudge and get along in the old-fashioned way, while you use the mowing

machine, horse-rake, reaper, threshing machine and other labor-saving machinery. Give her the benefit of the washing machine, sewing machine, and all the possible accessories which lighten the burdens of the household. Don't be afraid of nice furniture, or even a piano. There is nothing more pleasing and refining than music. Consider the intellectual and moral natures of those around you, and do something to gratify their tastes and cultivate their love of the beautiful, which is very closely allied to the true. Remember, that the soul is of more consequence than the body, and that it is the spirit in this body, invisible and immortal, which suffers and enjoys—which has its likes and dislikes, its joys and its sorrows, and that if you fail to please and develop this, you fail in everything for which this material existence was designed.—*Utica Herald.*

A REMARKABLE COW.—At the October meeting of the Western New York Dairy-men's Association, Mr. E. W. Stewart read to the Association the following record handed to him of a remarkable cow, owned by Mr. J. H. McMillan, of Gowanda, Erie county. She is a grade Ayrshire that gave, when four years old (1869), during the year, 9,241 pounds of milk. The next year she gave 9,650 pounds of milk; and during 163 days of this present year has given 7,014 pounds of milk, or an average of forty-three pounds per day, from which has been made 14 pounds of butter per week, or 322 pounds in twenty-three weeks. The cow has been fed this season upon four quarts of wheat bran mixed in her own milk, each day, and has run in a good pasture on the creek bottom. Previous to this year she has only had abundance of good pasture and drank her own milk after skimming. This is a remarkable record, but is endorsed by Mr. Isaac Hale of Collins. At the same rate her milk (9,650 pounds) in 1870 would make 438 pounds of butter or 965 pounds of cheese.

NEW YORK STATE DAIRYMEN'S ASSOCIATION AND BOARD OF TRADE.—The first annual convention of the New York State Dairy-men's Association and Board of Trade, will be held at the Board of Trade rooms, in Little Falls, N. Y., on Tuesday and Wednesday, January 2 and 3, 1872.

In regard to the per centage of caseine in washed and unwashed butter, we gave a statement from those who claimed to have made direct experiments in the matter. "Ordinary butter," says Morton's Encyclopedia, "always contains cheese, water, and sugar of milk, together amounting to from 10 to 16 per cent. It is very difficult to get rid of all the cheese matter, as it is now in an insoluble state; but it may be removed to a very great extent by washing the butter in repeated portions of water, and decanting off the particles of caseine which suspend themselves in it. In the best kinds of butter the cheesy matter rarely amounts to more than one per cent.; in the inferior varieties there is often several per cent. present."

Entomology.

ENTOMOLOGICAL SPECIMENS may be sent for identification, or for information respecting history and habits, to the office of the CANADA FARMER. Postage should be prepaid. Specimens should be sent in a pasteboard or other box, not loose, but packed with cotton wool, or some similar material. The name and address of the sender should also accompany the package, not necessarily for publication, but as an evidence of good faith, and that we may know where to apply for further information, if required.

Cabbage Caterpillars.

To the Editor.

SIR,—I have noticed for the last two years a green caterpillar on the cabbages and cauliflowers, which I have since learned is becoming very general over most parts of Canada, and is now finding its way into the United States. In 1870 I tried a variety of cures to rid my vegetables of this insect. Amongst these was lime, gas lime from the gas works, soap suds (carbolic), but without success. This year I planted cabbage and cauliflowers again, but did not expect a crop, fearing the ravages of this insect pest again; and sure enough, with the heat of summer he put in his accustomed appearance, and I began to feel "very low" over him, as my "Early Erfurts" began disappearing before my patient gaze. In one of my rambles, however, I espied a healthy lot of fine heads of cabbage in an old Scotchman's garden; so I immediately "interviewed" him as to the cause of my failure. He immediately told me that the secret lay in one word, and that word was "ashes," hardwood ashes. I started for home, and tried it. I need hardly say I met with the greatest success. Where the caterpillars went to I do not know, and did not stop to enquire; all I know is they left, and I have now some fine heads of cabbage stored away for spring use in my cellar. These brutes also fed very heartily on the leaves of some Swede turnips that I had, but I did not notice that they did them any harm. I have since learned the history of my friend, which I give below:

His Latin name is *Pieris rapæ*. He came to Quebec about the years 1856-57, from Europe. The egg is laid by a light yellowish butterfly, having a small black spot on each of its wings. Being on a visit at Weymouth, in the south of England, last September, I observed that my friend there had lost his whole crop by this now apparently almost universal pest. It will be well to be on the look out for him early in the ensuing season, as he is rapidly advancing all over the country. From Quebec, in 1864, he found his way into New Hampshire in 1866, and in 1869 he was discovered in Hudson City and Hoboken.

Cabbages attacked by this disgusting insect are unfit for both man and beast. I have heard of cows being killed by eating heads of cabbages thus attacked, but do not vouch for the truth of it.

The remedies hitherto tried are salt, tobacco, cresylic acid, soap, and guano; but although I have tried none of the above, I am convinced that hardwood ashes are the easiest applied and the most effectual.

P. E. BUCKE.

Ottawa, Dec. 20, 1871.

NOTE BY ED.—The reader, as well as our correspondent, will find a full description, with illustrations, of this newly imported cabbage insect (*P. rapæ*, Linn.) in the CANADA FARMER for March, 1870, p. 3. We are glad to learn that he has found so simple and apparently effectual a remedy for its ravages as hardwood ashes—unleached, of course. Dusting with powdered white hellebore would, we have no doubt, be found even more serviceable, though to be sure a more expensive material. In England this worm has been greatly kept in check by the attacks upon it of a small parasitic fly (*Pteromalus pygæus*, Linn.), but until very recently this friendly insect had not been observed on this side of the Atlantic. To Mr. Sprague, of Boston, and his young son, is due the credit, we believe, of first observing this parasite in America; they have very kindly sent us a number of specimens of it. In Massachusetts and New York it is already making a perceptible difference in the number of the destructive rape caterpillars, and will no doubt ere long keep them within due bounds all over the country.

Pieris Rapæ Parasite.

It will doubtless be an interesting item of intelligence to many of the readers of the *Naturalist*, that the parasite, so anxiously looked for, as the only hope of preserving the cabbage crop of our country from the destruction threatened it by the ravages of *Pieris rapæ*, has already entered upon its labours, and in so efficient a manner as to promise immediate beneficial results.

During the latter part of September I was informed that a number of chrysalids of *P. rapæ*, which had been collected by a gentleman in this city, with a view of obtaining specimens of the imagines for drawing, instead of disclosing the butterfly, gave out a number of small flies from each. Some of them having been brought to me in compliance with my request, I was delighted to find them to be of the genus *Pteromalus*, which includes so many of our valued parasitic friends, and probably of the species which has been found so serviceable in Europe, in destroying the several cabbage butterflies there existing—viz., the *Pt. pygæus* of Linnaeus.

From the close resemblance which many of the *Pteromali* bear to one another, it is not

safe to assert positively that we have really been favoured with the importation of the European parasite, to aid in the work of subjugation of the European pest; but should further examination prove this to be the case, it will be not only a most interesting event in its scientific aspect, but also in the pecuniary results which must necessarily follow it.—J. A. LINTNER, N. Y. *State Museum of Nat. Hist.*

[We have also raised this parasite in considerable abundance, and also received specimens from Vermont. We have likewise reared a Dipterous parasite from the cocoons. Ensign—*American Naturalist.*

The Study of Entomology.

Every farmer should know something of entomology; enough at least that he may become conversant with the habits of insects destructive to the principal farm crops. By this means he may often counteract the depredations of these pests; and especially will he be prepared to meet intelligently the species that are attacking crops to a greater degree every year. Many of them are not new. Like all other animal life, insects increase just in proportion to the facility with which they may procure food and the absence of their foes. The lower the organization, the more prolific the species. This seems to be a general law of nature, hence the sudden influx of these insidious depredators, and hence the value of certain knowledge in relations to their instincts and habits.

People may now be pretty well informed in relation to the habits, etc., of the codling moth, the curculio, various borers, and many others of the more common varieties of insects, and also in relation to the proper modes of keeping them in check. If every agriculturist, however, received as a part of his education, technical knowledge in relation to some of the more important sciences relating to agriculture, and only so far as they do relate thereto, it would be but a little time comparatively until we should be able, from the mass of practical knowledge developed, to successfully combat not only these foes to the farmer, but also what is false in practice in other directions.—*Western Rural.*

The Ants of Peru.

Dr. Peeping describes the ants of Peru as most numerous in the Lower Andes; they are from an inch in size, and of all colours between yellow and black. In the huts are seven different species. One of the very useful kinds, which does not attack man unless provoked, is the Peruvian wandering ant, which comes in endless swarms from the wilderness, where it again vanishes. It is not unwelcome, because it does no injury to plantations, but destroys innumerable pernicious insects of other kinds, and even amphibious animals and small quadrupeds. "Of

these ants," says Dr. Peeping, "the broad columns go forward, disregarding every obstacle, and millions march close together in a swarm that takes hours in passing; while on both sides the warriors, distinguished by their size and colour, move busily backwards and forwards, ready for defence, likewise employed in looking for and attacking animals which are so unfortunate as to be unable to escape either by force or by rapid flight. If they approach a house, the owner readily opens every part, and goes away, and all noxious vermin that may have taken up their abode in the roof of palm leaves, and insects and larvæ, are destroyed, or compelled to seek safety in flight. The most secret recesses of the hut do not escape their search, and the army of ants, as the natives affirm, overpower large snakes, for the warriors form a circle around the reptile while basking in the sun. On perceiving its enemies, it endeavours to escape, but in vain, for six or more of them have fixed themselves upon it, and, while the tortured animal endeavours to relieve itself by a simple turn, the number of its foes is increased a hundred-fold. Thousands of the smaller ants from the main column hasten up, and in a few hours nothing remains of the snake but a clean skeleton."

Injurious Insects.

Something may still be done to prevent the increase of predatory insects. The pupæ of some of them lie dormant in the earth. The cocoons of others are concealed under old bark, also in cracks and crevices in dead trees or fences, etc. After leaving the fruit the apple-worms generally take refuge under the old bark of the trees, where they spin their cocoons and remain dormant until summer, at which time they come forth as perfect codling moths, ready to deposit their eggs in the blossom end of the young fruit. If bandages of hay or straw ropes, cotton-batting, etc., have been put around the trunks at the right time, great numbers of the cocoons will now be found under them, and they can be easily destroyed. Borers should be searched for in the collars of the trees, and destroyed by thrusting a strong wire into their burrows. The eggs of the tent caterpillar are deposited in rings near the forks of the smaller branches. They glisten in the sun, and may be easily detected and destroyed.—*Western Rural.*

THE FLYING SPIDER.—I witnessed the flight of a spider a few days ago under circumstances that were novel to me, and probably may be so to some of your readers. While sitting near a window in my study engaged with a book which lay before me on the table, one of those little creatures of that species with whose feats of acrobatic I was long familiar, appeared running across the leaf. I had never seen any of them except

in the open air before, and I was always under the impression that their so-called flight was nothing more than floating away on a line of web borne by the wind horizontally. A perpendicular ascent, or an ascent in a perfectly calm atmosphere, seemed out of the question. It now occurred to me to ascertain whether they are capable of accomplishing their method of journeying in the confined and unmoving air of a room. I placed my finger in its path, and in a moment it had crept upon it, and as I held it close before me it ran, as they always do, to the highest point, assumed the attitude usual with them before their flight, and rose slowly in a straight line towards the ceiling. As the sun shone through the window, the long thread at the end of which it hung was quite visible. The dark little insect at the end of the flashing line of brightness, ascending without an effort into the air, was a marvellous object. The flight must be exactly like a balloon ascent. The thread which the insect emits is lighter than the atmosphere, and floats upwards, bearing its tiny aeronaut with it. I should think the first part of this thread must be lighter than that to which the spider is attached, as I could see the line extending upwards quite perpendicularly.—W. A. O'CONNOR, in *Science Gossip*.

DESTRUCTION OF THE WALSH CABINET IN THE CHICAGO FIRE.—We have no reason to suppose that the great Chicago fire consumed any considerable number of noxious insects, with the exception of that very familiar and domestic species known, in scientific language, as the *Cimex lectularius*. If these had been the only insects destroyed, resignation would have been an easy virtue. But, as if it were ordained that no kind of interest should escape grief and loss from that great calamity, so the science of entomology was put under heavy contribution by the destruction, not only of many small amateur collections of insects, but also by the ruin of the large collection belonging to the Chicago Academy of Science, and over and above all, in value and importance, was the admirable cabinet of insects purchased by the State from the heirs of the late Benj. D. Walsh, of Rock Island, and which had been deposited in the Academy for safe keeping. The value of this collection consisted not only in the large number of species represented, but still more in the scientific accuracy with which they were labelled and classified. About a tenth part of this cabinet, which happened to be at the residence of the writer, consisting mostly of duplicates of Coleoptera and Lepidoptera, which had been set aside for the Industrial University, is all that is left of this famous Cabinet. When we consider the long years of patient toil and research of which this cabinet was the result, the thought of its irrevocable destruction becomes too painful to be dwelt upon, especially by the professed entomologist, to whom this cabinet was invaluable for purposes of reference.—*Prairie Farmer*.

Apiary.

A Review of Bee Culture During the Past Season.

The spring of 1871 was very disastrous to bees, and a large number of colonies died throughout the country. The warm weather in March induced keepers to set out their bees; but the weather was too cool for breeding, yet warm enough for bees to fly out and search for honey and pollen. The consequence was, colonies became depopulated and perished; many persons lost eighty per cent. of their stock. Then, again, the dry weather in some parts greatly affected the stocks that survived, causing swarms to issue so late in the season that they were unable to secure enough honey for winter use, and therefore had to be taken up or fed; and as but few attended to feeding, the fall found in such sections the number of colonies even less than in the fall of 1870.

In other sections, where the dry weather did not affect the honey harvest, the stocks that survived came on well, and more than made up the loss through depopulation in the spring. Taking the country throughout, I think it would be safe to say that an average amount of honey was taken.

ITALIAN BEES.

The Italian bees still retain their reputation as good honey gatherers, and the demand was fully equal to that in 1870, while the demand for queens was even more than we could supply. Some have written to say that they find it difficult to keep the Italians pure. This difficulty will become less every year, as the Italians are fast superseding the common bees; and I may just say here that there is no great object for bee-keepers to keep them entirely pure, unless they wish to raise queens for sale, as the hybrids are equally good honey gatherers with the pure Italians. There has been much controversy among the bee-keepers in the United States concerning the purity of drones bred by pure Italian queens which mate with common drones. The question still remains unsettled in the minds of many.

ARTIFICIAL IMPREGNATION.

The method of controlling impregnation, said to have been discovered by Mr. Ellen S. Tupper, Brighton, Iowa, is still doubted by many, and as yet has not worked the revolution in bee culture that was anticipated. Even if there have been cases of artificial impregnation, the chances for failure attending the various plans suggested are fully equal to those of natural impregnation by the flying out of the queen to meet the drones.

FOUL BROOD.

Foul brood, that dreadful disease, has at last made its appearance in several parts of Canada. Up to last year, so far as I have been able to learn, only one or two isolated

cases were known. When it first came under my notice, I urged the utter destruction of all colonies affected; but it was not done. During last year it has appeared in several places, and in one or two cases in a very aggravated form. I trust that those bee-keepers who have stocks affected will take every precaution that it does not spread; and this is very difficult, as robber bees will carry the affected honey from one apiary to another. The appearance of this disorder, and its increase in Canada, is a matter of deep regret. All other diseases or difficulties attending bee culture sink into insignificance compared with it.

HONEY EXTRACTORS.

Extracting honey by the use of the machine called "honey extractor" has been practised during the past year to a very considerable extent in the United States, and somewhat in Canada. There is no longer any question as to its advantages for obtaining honey where frame hives are used; yet care must be taken that the bees are not robbed, and, as a rule, it is not safe to take honey with the honey extractor after the white clover honey harvest is over.

FRAME HIVES.

The demand for frame hives is steadily on the increase, and in consequence many almost worthless hives are thrown on the market by parties sanguine of reaping a fortune by hive making. Good frame hives are almost a necessity, but poor ones should at all times be rejected. As bee-keepers become more acquainted with the nature and habits of the bees, the more readily will they see the necessity of frame hives, and the better will they be prepared to judge of the different patterns offered for sale.

Several new works have been promised, and were expected to appear last year, but have been unavoidably delayed. One by Rev. L. L. Langstroth, which sickness prevented being issued; also my own dollar work, which I fully expected to issue last year, has, like others, been laid on the shelf, but will appear as soon as possible, when due notice will be given in this journal.

The advancement in bee culture, as a whole, has, during the past year, been fully equal to that of any previous year, with a steadily increasing interest.

J. H. THOMAS.

Brooklin, Ontario.

Nothing is wanting but good hives, good pasture, cleanliness, and attention to insure a rich reward to those who engage in bee culture; but training is quite as necessary to the full comprehension of the occupation, as it is to the trade of a carpenter or shoemaker.

GERMAN BEE-KEEPERS' CONVENTION.—The seventeenth annual meeting of German Bee-keepers was held in the city of Kiel, in Holstein, on the 10th of September, and the three following days. The principal subjects of discussion were Living Bees, Bee Hives, Implements of Bee-culture, Honey, &c. Salzburg, in Bavaria, was chosen as the place of meeting in 1872. The city of Halle was named as a desirable place for the meeting of 1873.

Wintering Bees out of Doors.

There are many bee-keepers who have no convenient place in which to house their bees, and must therefore winter out of doors. In such cases the bees ought to be protected from the north winds as much as possible. A high fence made of boards will break off the wind and keep them much warmer.

Particular attention should be paid to ventilation. There should be no current of air through the hive, particularly upwards from the bottom to the top. Many good stocks have perished from no other reason. It is always best to give upward ventilation, but when upward ventilation is given, there should in no case be any openings at the bottom of the hive. In giving the bees upward ventilation, care should be taken that no heat escapes; all openings should be covered with some warm material that will absorb the moisture but retain the heat. It is well with frame hives to remove the honey board altogether, and put on in its stead a frame covered with wire cloth, over which thick cloth may be spread with care, so that no heat can escape. This should also be done with stocks wintered in-doors, though strong stocks require but thin cloth, while weaker stocks require thick cloths, and in some cases very strong stocks do not require a cloth when wintered in-doors, especially if the bees are Italian or hybrids, as they generate more heat than they require. When such is the case they become uneasy, and make considerable noise, consume a larger quantity of honey, and often become diseased. They should have more ventilation.

J. H. THOMAS.

A Test of the Dzierzon Theory.

The Baron of Berlepsch, in the late revised edition of his work on "*Bees and Bee Culture*," speaks of the evidence of the correctness of the Dzierzon Theory as to the production of drones, as follows:—

"If the male or drone egg does not require impregnation, all Italian queen bees, of pure race, must certainly produce pure Italian males or drones; and all queen bees of the common or black race, must as constantly produce black males or drones—even though such queen bees were fertilized by males or drones of the opposite race. And such, too, is found to be the fact. I will not, however, refer to the Italian queen bees for proof of this, because here we may easily be deceived, by regarding as a pure Italian, one in which there is, from birth, already an admixture of black blood. But the pure black or common queen bees, fertilized by an Italian drone, always furnish unmistakable and conclusive evidence of the truth of this statement. Of more than thirty such queens which I have had an opportunity to observe, there was not among all the *drones* produced by them, a single one to be found that bore any resemblance to an Italian drone. All of them were obviously of the pure black or common race; whilst the *workers* proceeding from the eggs of those queens showed diversities of marking and colouring. To which of the races a drone belongs is distinctly shown by the central or lower side of his

abdomen. If that be *yellowish* in colour, the drone is either a pure Italian or a hybrid; if it be *whitish*, he is a pure black or common. The dorsal or upper side of the abdomen is deceptive, as some pure common drones show brownish rings."—*American Bee Journal*

Cure for Bee Sting.

On this topic, of such poignant interest to many, whether bee-keepers or not, Mr. S. Way, of Batavia, Ill., writes as follows:—

"To cure a bee-sting, let the patient drink half a tumbler of whiskey as soon as stung. This will keep the poison from going to the lungs. A wet sheet or pack is good after the whiskey. I have used this and the pack for years in my family with perfect success."

We fear that if this remedy be popularly accepted as a specific, some inveterate toppers might find it agreeable to get into a habit of being stung.

We have the following remedy also from Mr. F. S. Dougall, of Stonerville, Canada:—

"I find the best thing for the sting of a bee is alcohol. Bathe the part stung with it immediately. It will kill the pain and stop the swelling. It has proved itself to be the best thing I ever tried. It was by accident I found it would give relief."

Another correspondent recommends the immediate application of pure spirits of turpentine.—*American Bee Journal*.

I find strong aqua ammoniac (hartshorn) the best remedy. Apply immediately, but do not rub the spot stung.—J. H. THOMAS.

NOTE BY ED.—The above is a fair specimen of amateur medical prescriptions—a mixture of good practice with the broadest absurdity, and betraying utter ignorance of physiology. The idea of "whiskey keeping poison from going to the lungs," could never occur to one who knew anything of the circulation of the blood or the process of absorption. A person must be badly stung, or badly frightened, who would have recourse to a wet blanket or "pack sheet" for such a trifle. As most of these animal poisons depress the nervous system, any stimulant is useful, and in severe cases, especially those occurring from the attacks of a large number of bees, the readiest and most efficient restorative would be indispensable. This would account for the good effect of the whiskey. But we quite agree with the editor of the *Bee Journal* that to accept that remedy as a specific would be a convenient excuse for dram drinking, to which the humour of the thing would add a superfluous zest.

The external application of alcohol would be beneficial simply as a cooling lotion, the result of its evaporation.

Mr. Thomas's remedy is the most rational. The acid poison of the bee is neutralized by the alkaline ammonia, which also acts as a stimulant and cooling agent. We have often witnessed its good effects, and except in severe cases arising from special idiosyncrasy or the stings of a swarm, nothing else is required.

To Judge the Quality of Honey.

This is an interesting question, and one, we believe, not very generally understood. Honey, of course, is judged mainly by its colour; but owing to the fact that there is often a very great difference in the colour of the comb, and the additional fact that bees often put white honey in dark combs, and *vice versa*, it is manifest that very great care must be exercised in taking into account both the comb and the honey. The proper way to judge honey is to strain it into glass jars. You can then readily judge of its colour. But then there are at least two other qualities to be considered—thickness and flavour. In judging of its thickness, it is necessary for the judge to know whether that quality was imparted in the first instance, or whether it is due to the action of light; for light (the chemical rays) act upon honey very much as it does upon the iodide of silver, on the photographer's excited collodion plate.

Take two bottles of honey from the same comb, seal them up perfectly tight, and keep them both at the same temperature—only one in the sunlight and the other in a dark room, and the former will gradually grow thick and finally assume a semi-crystalline shape, while the other will retain its original fluidity. This is one reason why bees always work in the dark, and why honey should always be kept in the dark or in opaque vessels.

It would be very improper to award a first prize to a jar of honey that had become thickened by the action of light, because it thereby becomes deteriorated. Still, honey, to be superior, should not be very thin. Flavour is also a very important consideration, and must always be required. A good flavoured dark honey may sometimes be superior to a white article which looks much better. The thickness and thinness of honey depend upon the source from which it is gathered, rather than upon the secretive action of the bee, whether we admit that the insect makes or simply gathers it. *Scientific Press.*

In one county in California there is an apiary of two thousand bee-hives. The Californians have been very successful in importing Italian bees, which have thus far proved to be the best honey-makers.

NORTH AMERICAN BEE-KEEPERS' SOCIETY.—The two bee-keepers' associations, known as the "North American" and "American," met in Cleveland, Ohio, on the 6th December. The session was continued the next day, when the two societies were consolidated under the name of the "North American Bee-Keepers' Society." A constitution was adopted, and the following officers elected: President, E. Quimby, St. Johnsville, New York; a number of Vice-Presidents were elected; Secretary, Rev. H. A. King, New York; Recording Secretary, Prof. A. J. Cook, Lansing, Michigan; Corresponding Secretary, A. J. Root, Medina, Ohio; Treasurer, N. S. Mitchell, Indianapolis, Indiana.

Correspondence.

My Farm.

To the Editor.

SIR,—I had a presentiment, which I expressed in one of my former letters, that many of our farmers would get caught in bad weather with their roots, because I saw so many neglecting the fine weather in the early part of November, and putting off the stowing in hopes that the roots might grow more. Such greediness for a larger growth has surely brought its punishment upon the man whom I saw drawing in a load of turnips, covered with frozen dirt and snow. When he was lifting roots in a half frozen state, his more forward neighbour, having his roots clean and snug in the cellar, was reducing the expected throng of spring work by steadily ploughing a large acreage this fall.

We have nearly all made a mistake with our wheat this year. We sowed too late, and it will fare badly unless we are favoured with a constant covering of snow during the current winter. Depend upon it, Sir, take one season with another, it is necessary to have fall wheat in the ground by the 10th of September.

The markets have taken an unexpected turn lately. Barley has risen rapidly, and bids fair to hold its own as against oats. It appears that the Western barley crop will fall very short of the expectation. This is always the way. We presume that the probable crop returns of the West are taken from facts collected by the railways. Now, it is to the interest of these large companies, holding immense tracts of land ready for settlement, to make the most flourishing returns of the fertility and productiveness of the neighbouring farming lands, and thus to hold out great inducements to the old country emigrants. For this reason we have the same story every year, viz., that the wheat, the barley, the corn, or some other crop, has not yielded commensurate with the proclaimed expectation.

My farm, inasmuch as it applies in these letters, has pretty well resolved itself into the compass of my buildings, for all the out-door operation that we have performed is the cutting up of rough wood lying about in the bush, and setting it up on end so that it may not be buried by the first heavy snow storm.

Feeding stock is then the first operation, and I will tell you how I feed, and I can only wish that others, especially those who despise the nearest approach to book farming, would let us know how they feed. But as I feel sure that we cannot persuade them to publish their experience, why I will advertise it for them.

I have in my mind's eye a farm, not very far from here, in which all operations are performed on the principle that all tidiness is a

waste of time, and that no advantage can possibly be gained on the morrow by present liberality. Well, I passed the other day, and seeing a young colt that I knew to belong to the place, with a big rip all up one flank, the playful mark of a too close attendance upon a long sharp-horned beast, I called in to see how the farmer was getting on. After considerable talk, and a walk round the buildings and yards, I gathered that the following was the *modus operandi* of feeding.

To begin with the horses. Their stable was built under the mow of the barn. This mow was very badly floored, and as it contained second growth clover cut for seed, you may imagine the state of dirt in which were his horses. Well, he gave his horses no oats since they had stopped ploughing, although they were pretty busy drawing his own wood, and he expected to have lots of work, as soon as sleighing commenced, drawing logs to the mill; but he gave them lots of hay. True, it was old hay, not over-sweet; because, you see, good new hay has been as high as twenty-five dollars a ton.

As to bedding. Well, straw was scarce, and the horses pulled as much hay out of the mangers as would keep them off the floor at nights. Oh, that stable made me shiver; the drafts crossed every way, and on the day that I was in there the thermometer stood at about 8°, and a high wind blowing; those horses stood shivering and humping their backs like a pair of camels. He would not blanket them because they would take cold, standing around, loading wood, &c.

Well, he tied up his cows and fed them about half a bushel of turnips apiece per day. He fed them whole; they were a bit frozen already, but still, he said, the "kye managed to chew them somehow."

The young cattle did well enough; they ran in the yard; it wouldn't pay to feed them; they'd be alive in the spring, and would pick up through the summer; they had a straw-stack to run to, and were very fond of picking about the fresh stable manure, (mighty little there was to pick out of the latter.)

Pigs thrive on turnips, a few, and very solidly frozen. The same slovenly, untidy way of throwing out what food was allowed, on the snow, or on the dirt, was observable through all his operations.

I would now call your attention to the manner in which cattle should be fed, so that you may lay the two plans side by side. To any farmer who feeds ten or more head of cattle, a chaff cutter is, I consider, an almost indispensable item. In a short time I shall have stopped feeding hay entirely. By using the chaff cutter and a moderate supply of chopped barley, I keep all my animals on straw. I consider that the use of barley, when worth 60 cents a bushel, is far more economical than of hay at \$20 per ton, and there is no doubt that a very small proportion of grain, with straw, will satisfy an animal more effectually than hay without grain.

Of course, I am not here speaking of stall feeding. I am only alluding to those animals that have to be wintered and kept growing.

For a week I fed three milch cows upon cut hay and turnips, and the result was 12 lbs. of butter between them; in the next week I substituted straw for the hay, and added two pecks of chopped barley per

day between them, and the result was an increase of 3 lbs. butter per week, or a cash value of 90 cents, at an extra expense in feed of 30 cents, besides the substitution of straw for hay.

OLD COUNTRY MAN.

Ancaster.

Agricultural Matters in the Northern Districts.

To the Editor.

SIR,—Now that the last crops of the year have been gathered, and much of the grain threshed, a more accurate estimate of the actual amount of produce can be arrived at. The harvest of 1871, judging from newspaper reports, was, in many parts of Ontario, an abundant one; but, unfortunately, several causes contributed to render it less bountiful in this section of the Province. Chief of these unfavourable influences was the remarkably dry weather experienced last summer. Those farmers whose lands had been ploughed in the previous fall, and who were enabled to sow their fields at the earliest moment, reaped fair returns; but where sowing was delayed, the seed, unmoistened by rain for months, died in the parched and dusty soil. Generally speaking, clay land, spring ploughed, yielded a crop very much under the average, so far as grain was concerned; while root crops, in nearly all cases, are very deficient in quantity, and hay is more scarce and dear than ever before known at this period of the year.

While on this subject, it may be remarked that there is no reason why clay land, under proper cultivation, should be affected by drought to any serious degree. But proper cultivation here, though by no means unknown, is altogether unpractised. No hard clay soil can be relied on till underdrained, and, in all these counties there are very few underdrained fields. Some farmers are ignorant of the advantages offered by such a mode of culture; others, possessed of the necessary means, believe that it would be a remunerative operation, but not so remunerative as the lending of money at high interest—a thing always obtainable in a new country; but the great majority would gladly invest capital in the work, did they possess it, or could they procure it at a reasonable rate. An excellent editorial on this question appeared in a late number of your journal, proposing the adoption of the English plan in the matter, namely, that Government should lend money, at low rates, for the purpose. No better measure—no other measure nearly as good—could be proposed for the benefit of the Canadian farmer, or for the benefit of the whole of Canada. But no such measure need ever be expected from such legislative bodies as Canadians have of late years been deceived into electing. Oh, for one year of a Canadian Parliament whose members should apply their efforts towards benefiting their country—not towards enriching themselves.

Agricultural progress here has been much retarded by the want of easy and rapid communication with the front—a want which will shortly no longer exist, as Owen Sound is about to become the terminus of one or more railways, and the townships in this neighbourhood—St. Vincent in particular—having contributed large bonuses, a few months since, towards the extension of the Northern Railway to Meaford—some twenty miles—and their efforts being well seconded by the energetic directors of that company, the whole track is nearly graded, and, in spite of wind and weather, the rails are already laid for much of the distance. Few public works have been prosecuted with so much vigour. Yesterday, with the thermometer at 2°, and a keen wind, their workmen, standing knee-deep in the rushing and half-frozen waters of the Beaver River, were laying the foundation for the bridge at Thornbury. In a very short time, it is supposed, the N. R. R. trains will run through to Meaford.

Speaking of the weather, it has been such as to astonish the “oldest inhabitant,” and would have astonished his grandfather, had that venerable individual been still “around.” October had been oppressively dry and hot. Most of the soil, for want of rain, was too hard to be easily ploughed, and farmers were anticipating the customary “fall rains,” to enable them to work the ground to greater advantage; many of them prognosticating, from the appearance of the weather, a long, open fall, and, probably, a “green Christmas.” Never were a community more mistaken. A constant succession of northerly gales, laden with snow and sleet, has brought winter on us with a suddenness and severity never before experienced. The commencement was most violent. For nearly two days and nights snow fell heavily, being meantime driven by a strong and very cold wind across the country, in such dense, blinding masses as almost to shut out the light of the sun. The thermometer fell in one night from 33° to 2°, and has ranged from 2° to 6° for a number of days. The rapidity of the change was startling. Through the same field where, three or four weeks since, everything was so scorchingly dry and hot that the slightest spark set the stubble on fire, I was today plodding my way, among drifts of snow many feet deep in places, to my barns, to feed cattle, sheep and pigs, which seem as much surprised and annoyed at the sudden change of weather as the human inhabitants of the district.

The low prices obtainable this year for beef and pork have seriously deranged the plans of many farmers, most of whom had more cattle and swine on hand than for years past, and relied on their sale to meet engagements. The rise in wool, and the higher price of wheat, however, will partly reimburse them, particularly if fall wheat should yield and sell well next year, as the success of this crop in this neighbourhood has lately been

very marked, and now, probably, there is four times as much ground under fall wheat as has been in any preceding year.

With all its drawbacks, any one who compares the relative enjoyments of an agricultural life, and those of a continuous residence in cities, cannot fail to give the preference to the country occupation. In spite of bad weather, bad crops, and bad farming, farmers generally grow richer and richer every year; and in the acquisition of their yearly gains, there is a continual interest and pleasure unknown in any other employment. What is lost in one crop, or description of stock, for which the season is unfavourable, is generally truly recompensed by the success of other departments; and, as the conditions necessary to success become, as they rapidly are becoming, better known and appreciated, the number of failures will diminish—the number of successes greatly increase.

R. W. PHIPPS.

St. Vincent, November 30, 1871

Free Grant Lands.

To the Editor.

SIR,—You will oblige me, and others interested, by answering the following question:—Can a person take up a free Government grant of land, and fulfil the conditions by clearing up the requisite quantity of land, and building a house, without going and residing on the land for three or four years? That is, inasmuch as I am not an agriculturist, but a mechanic, and would wish to have thirty or forty acres cleared before moving on to the lot, can I employ paid labour to do the required work for me?

J. P. BASLENDORFF.

Drumbo.

Interpreted literally, the Act requires the personal residence of every one taking up free grant lots, during not less than six months in each year. But in a case like that of our correspondent, we believe the Crown Land Department would put a liberal construction on the terms of the compact, and would accept the residence of a tenant or hired labourer on the land, provided all other conditions were faithfully met, as a sufficient compliance with the requirements of the Act. Before making such arrangement, however, the intending settler should have a distinct understanding with the Commissioner of Crown Lands.

“AGRICOLA,” Kinburn.—There is not yet any Agricultural College in Canada. One is contemplated, and a Government grant has been voted for the purpose. We do not forward replies to advertisements in the manner specified. There are very few moneyed agriculturists in this country who employ a farm manager, as is often done by gentlemen of landed property in England. We cannot hold out much hopes for any one from the old country obtaining employment here in that capacity. The best course to adopt under the circumstances would be to advertise in THE GLOBE, giving an address to which replies might be sent by post.

Letters on the Weather.

NO VI

To the Editor.

SIR,—As I hope my previous letters have made my meaning sufficiently clear, I will devote this to bringing forward additional facts in support of the supposed coincidence between sun-spot periods and rainfall.

Early in the present year, 1871, I observed in the *Canada Year Book of Facts* a paper by Prof. Kingston, which showed that a record of rainfall had been kept at Upper Canada College for several years previous to the establishment of the Toronto Observatory. This period covered a sun-spot maximum in 1837, and a minimum in 1833, and I was anxious to know if those had been dry years.

I noticed, however, that, according to the Kew observers, the min. of 1833 occurred late in the year, Nov. 28, and the max. of 1837 in December of that year; hence I thought it likely that, as the dry seasons follow the turning point of spots, they would be found to have occurred in 1834 and 1838.

I wrote to Professor Kingston, and stated the facts referred to, and asked to be favoured with the record of rainfall kept by the Rev. Mr. Dade previous to 1840. In reply, he informed me that the record was incomplete; that only one year was entire, but that year, fortunately, happened to be 1834, one of the years when a dry season was to be expected, and the record showed for that year 22 inches, a very dry year.

I am sorry that I have not been able to see the entire record; for though the year 1838 may be imperfect, it may contain enough to enable us to give an estimate of the rainfall of that year, which would not be far from correct, but we have already from this record another proof of the coincidence which I have endeavoured to establish in this series of letters.

I will now refer to corroborative evidence drawn from another source.

In the present *Year Book of Facts*, Prof. Kingston has given a paper on the height of the water of Lake Ontario, as measured at the Toronto harbour; and through the kindness of Mr. Smith, Assistant Harbour Master, I have been able to draw the curve of the annual mean height of the water of our lake up to the present year.

This curve shows that at every sun-spot max. and min. the water of our lake has been low, rising between min. and max., and falling between max. and min., but always falling low at those points; and this not only shows a coincidence with the sun-spots, but proves that this influence is not local, but widespread over the country which is drained into the St. Lawrence; and the lesson of the present dry year seems to teach that a great belt or zone, stretching across the North American continent, is thus affected, for the Mississippi, and even the Sacramento rivers, have also been unusually low.

There is another point of evidence which bears on the subject, and though not Canadian, is important in this connection.

The Astronomer Royal for Scotland, C. Piarré Smyth, in his Report to the Board of Visitors of the Royal Observatory, Edinburgh, in July, 1871, gives us a record of temperature taken at that Observatory since 1836, and the curves of temperature in that report show a cold period at every sun-spot maximum and minimum, and a point of high temperature between every min. and max., showing some kind of connection, or rather coincidence, between sun-spot periods and the weather.

Mr. Stone, Astronomer Royal at the Cape of Good Hope, has noticed a similar coincidence in the record there; and though I have not seen his curves, there seems to be no doubt but that, both in the Northern and Southern hemispheres, weather changes exist which coincide with changes observed on the surface of the sun; but at no point of the earth's surface has this connection been made out more clearly than in our own country, and at Toronto.

Referring to the results reached at Toronto, Prof. Smith says:—"These results touch closely on the hopes of physicists to render meteorology more of an exact science by getting at its cosmical relations; but they also touch equally close on another point where the highest science is at present completely dumb, although, too, it is the very point where the utmost amount of benefit might be conferred on the largest number of people, viz., some approximate indications of the character of the seasons a year or two beforehand."

With this letter my series closes, and if your agricultural readers follow their teaching, I feel sure they will have no cause to regret their course.

If any of your readers wish to pursue this subject further, they will find it more fully discussed in the past and present numbers of the *Canadian Magazine*.

OMICRON.

Leasing Small Farms.

To the Editor.

SIR,—Allow me to draw attention to a subject of interest to a certain class of your readers. I refer to the purchase and management of farms by mechanics, tradesmen, and the like. Each one is apt to imagine that he is engaged in the poorest occupation, and men will too often be found ready to embark in something they know nothing about. I find it getting quite common for such parties as I have named, as soon as they have a few hundred dollars saved from their earnings, to lay it out in buying land in the vicinity, probably from 10 to 50 acres. This is right as far as it goes, and for reasons which I shall enumerate, the investment is safer than any bank or savings society; it is placed in such a position that the possessor is unable to run to his savings and withdraw a few dollars whenever he sees anything to suit his fancy; and he will not dispose of the land without due consideration; the principal will continue to increase, from the fact that land in the vicinity of a thrifty village or town will never decrease in value; and last, but not least, should he chance to live on it, as a great many do, the walk to and fro will tend to promote his health and happiness.

What I wish to speak more particularly upon is the management of those farms by such persons. I do not think that I could do better than give a general description of several which I have under my observation. The purchasers of these small lots see thrift and activity among the larger farmers in the neighbourhood, who devote their time and attention to their occupation. Having heard of a small farm for sale, within their means, they at once seize the opportunity to make a purchase, and then conclude they are on the right track to prosperity. Wholly unacquainted with their business, they think that they have done nearly everything that is necessary; all that they have yet to do is to engage some one to work. Unable to stock it properly and purchase implements, they employ some man who has a team and apparently not much to do, and pay him in trade; or, it may be, he works it on shares; or they get some neighbouring farmer who chances to be fore-handed, to work it on shares. Very few care to let it for a term of years for a certain rent, because they would receive a stipulated sum, and no more, while in the other case they encourage bright hopes of larger gains. They are invariably disappointed. Now and then a few dollars will be required for expenses, and they are dealt out with a doleful face, while everything is expected to keep itself in proper order. The person working it is supposed to be as much interested in the management and care of the place as the proprietor, who meanwhile looks placidly on, devotes his time to his occupation during the week, takes a stroll on Sunday over his farm, and in anticipation realizes large returns from his landed estate.

Is it to be wondered at that, when pursued in this fashion, farming should be counted a losing business? Had these owners of small lots acted as a little reason and common sense would have dictated, it might have been different. They should have leased the place for a term of years (the longer the better) to some industrious man who understood farming, with the conditions that he should keep things in repair, and put a sufficient quantity of stock upon the place to eat up the coarse material, haul the manure on the field as fast as made, and have a rotation of crops. It would be an incentive to the lessee to take an interest in the place, and till it for his own benefit, and at the end of the time specified the owner would not only have realized more profit from his land, but it would have increased in value from 20 to 25 per cent., and his mind would have been free from a good deal of anxiety.

Should this happen to fall under the notice of some of those I have attempted to describe, cause them to consider the matter carefully, and take a more enlightened view of the subject, I shall consider my object accomplished, and be tempted to write again.

AGRICOLA.

FLAX.—There are flax mills at St. Mary's and at Stratford. Our correspondent "Agricola" will find much information on the subject of his enquiry in a small pamphlet published by Mr. J. A. Donaldson, Emigration Agent, Toronto, on the cultivation of flax in Canada.

A Word of Counsel and Encouragement.

To the Editor.

SIR,—Allow me, through the medium of your columns, to say a word of encouragement at the outset of a new year to my brother farmers.

Where failure and disappointment have been the result of our efforts during the past year, fresh energy and activity may still place us where we wish to be. Where success has attended our exertions, further energy may be requisite to enable us to continue to hold the ground we have gained. To the former unfortunate class, let me say it is of no use for the sufferer to look back upon the past except as a warning for the future. Above all things, do not brood over troubles. Such depression never mended matters, and only furnished food for despondency. The common utterance of dejection, "It is of no use to try any longer, I am dead beat," is the very worst that can be indulged in. The thought always present under such circumstance, "I owe so much money, and it must be paid," is certainly bad enough; but bad as it is for you, it is worse for those to whom you owe. You have suffered all you can; their's is yet to come; both you and they must bear it. True, they may be better able to bear it, but the suffering is the same; and if they can bear it, surely you can. You are ready to ask "How can I hope to pay my debts now, when I have nothing to pay them with, and no better prospect in the future than in the past?" This question must be fairly faced and answered "simply you must." Depend upon it, provided despondency is banished, better times will come. Constantly thinking over such miseries banishes rest and sleep, and without both the nervous system will never rise superior to calamities. Besides, very few are "dead beat"—none are whilst they are truthful, sober and have health and strength; but health and strength will depart if any such miserable despondency is indulged in. The sooner all so situated rise up and shake off all such feelings the better. Put on as bold front, tell the truth, state facts, and show where and how the failure occurred; and all who are then made sufferers by your acts, seeing clearly that you have not wilfully deceived them, will give all the time they themselves would require under similar circumstances. It is better for them to do so, and indeed for all parties concerned.

But happily the number of those who require the foregoing counsel and advice, it is to be hoped is not large. Still there are some to whom such "crumbs of comfort" will prove good food, and be appreciated. Many a time in former years I have been strongly impressed with just such few homely words and advice, and have, when suffering under such depression, read and re-read the comforting words, and have felt better and

stronger for it, and been far more able to face evils than before reading them, and these or similar sentences would recur to me again and again, long after the paper from which they were read was laid away.

To those who are thriving and well doing, there may still be a word to say. Do not allow your prosperity to harden your heart to the wants of others less favourably circumstanced than yourself. Rest assured, a kindly consideration for others less fortunate will add to your own happiness and comfort. Do not allow sloth and idleness—often the result of prosperity—to come creeping slowly but surely on you; for, depend upon it, the energy and activity that caused your advance will be required continually to enable you to hold your better position. C.

Canadian Fruit, Flower and Kitchen Gardener.

To the Editor

SIR,—Would you inform me whether it is the intention of the Fruit Growers' Association to furnish any scions of fruit trees to graft, and a copy to each member of the work by Mr. Beadle, soon to be published, on Canadian Horticulture, as hints have from time to time been given of such intention?

By answering the above you will oblige a member of said Association T.

REPLY.—We understand that the publishers have sold the book, that Mr. Geo. Crawford, 43 Richmond Street East, will sell it through the medium of canvassers, and that it will not be distributed to the members of the Association. You had better address a note to Mr. Crawford, who will give you full particulars as to prices according to the different styles of binding. The Association will furnish scions of supposed hardy sorts of the different fruits to those living in the colder sections who may apply for them to the Secretary, on condition of their giving a report of success or failure.

Fish Manure.

Mr. George Makinson, from Newfoundland, writes:—

“In your columns I would be glad to be informed how to keep fish manure from being destroyed by maggots. In this county we get it too late to reap any benefit from it until next season; and when made into compost, much of its valuable manuring qualities are destroyed by maggots. Can you suggest any way to remedy this?”

NOTE BY ED.—There are a number of different insects whose larvæ (grubs or maggots) live upon putrid animal matter, especially blow-flies and some tribes of beetles. Almost the only way to prevent their discharging their duty of removing carrion, &c., from the face of the earth, is to keep the material out of their reach by enclosing it in tight vessels. This, we should think, would not be practicable in the case of fish manure—or if practicable, would be too expensive. Various chemicals might be employed to render the

manure distasteful to the maggots, but there is great danger in employing them of destroying the valuable properties of the manure. We should not like to suggest any remedy for the maggots, lest such a result should follow from its application. Can any of our readers recommend from actual experience any reliable remedy?

The Coming Weather.

To the Editor.

SIR.—Now that the topic of the weather is before the public, it will perhaps add a little interest to the subject to allow me a word. You will perhaps remember that I called on you last spring with a number of diagrams, and that I explained to you my theory. Subsequently I called on a gentleman of high professional authority, who advised me, as being the shortest way to establish the theory—to predict; “For,” said he, “if you can tell us beforehand what weather is coming, your theory will be established beyond a doubt.”

It would be wasting time to tell you what I have done in this way in my own neighbourhood, or to recount the hits and the errors I have made. I shall not either say one word in this place as to what my theory is, but content myself with stating the probable kind of weather for the months of January and February, 1872.

January, I undertake to foretell, will be very stormy and cold; the probabilities are the month will be as cold as that of 1857. February will be as high above the average temperature as January will be below it, and our rivers will be all breaking up in this month. W. B.

Pinkerton, Co. Bruce, Dec. 16, 1871.

The Canada Farmer.

TORONTO, CANADA, JAN 15, 1872.

Our New Volume.

In entering on the labours of another year, and issuing the first number of the ninth volume of this periodical, it is unnecessary to make any fresh statement of our objects and aims, or to urge the claims of the CANADA FARMER on the support of the agricultural community of the country. We very cordially tender our thanks to the many friends who have aided and encouraged the enterprise from the outset, as well as to those who have more recently been enrolled on the list of our subscribers. We hope their numbers will increase; and for ourselves, can only promise that the will and the effort to make the journal worthy of their support shall not be wanting.

We would once more solicit communications from any who are engaged or interested in farming; especially would we invite the records of actual experience. Enquiries from correspondents shall always receive due attention, though we may sometimes, from unavoidable circumstances, be compelled to de-

fer replies longer than we could wish. We desire that every subscriber shall take a personal interest in the paper.

To Agricultural Societies we look for a hearty co-operation. It is through their efforts, more than any other agency, that enlightened views on the most important industry of the country may be spread, and a worthy spirit of enterprise stimulated and directed. To the members of such societies, therefore, the CANADA FARMER is offered, as heretofore, on the most favourable and liberal terms.

The present number, the first of a new volume, is sent, according to custom, to all our subscribers for the past year, though their subscription expired in December. But no other number—and we particularly request attention to this intimation—will be sent to anyone who has not paid the subscription for the current year. We would also again remind intending subscribers of the importance of sending in their names early, in order to secure full sets, and complete their annual volumes.

The rates of subscription, and terms to clubs and Agricultural Societies, as will be seen by reference to the prospectus on another page, are on the same liberal scale as heretofore.

An Agricultural Retrospect of 871.

Though the past year has not been marked by any very extraordinary events affecting agriculture, it may not be unprofitable to take a brief review of the leading circumstances of the period as they bear on this most important national interest.

The character of the season has perhaps presented more exceptional features than anything else connected with the subject. Nothing special marked the early winter months. On the whole, the season was comparatively mild. The mean temperature of January was slightly below the average, but that of February and March was above the average, though each month had a brief season of intense cold, the lowest reading of the thermometer at Toronto occurring on the 24th of March, when it fell as low as 17° below zero. April was again on the whole warm, and spring opened early. It is many years since farmers have been so forward with their sowing as they were able to be last spring. In May the country was visited with the first signs of that drought which, during nearly all the subsequent months, has been so persistent and widespread. June was fortunately favoured with an average rainfall—a circumstance which no doubt saved the crops. Each subsequent month has been characterized by excessive dryness, affording, however, notwithstanding its disadvantages, splendid weather for harvest. The temperature throughout the year has been no way extraordinary, if we except the un-

usually early and sudden commencement of the present winter. Both November and December have been remarkably cold months, and the temperature of the 20th December—20° below zero at Toronto—is the lowest that has been recorded here for many years.

Such has been the character of the season; and it is somewhat noticeable that under these circumstances the crop returns have been so good as we find them. But the same thing has been observed in Britain and other countries, and crops have generally suffered far more from a wet season than from one of excessive dryness. The wheat crop especially turned out well. Oats, also, very generally yielded well; while the other cereals, taking the country throughout, turned out better than was expected. Hay was, however, nearly everywhere, a short crop. The continuance of the drought through the fall months has had a serious effect on root crops, and potatoes and turnips are in many parts reported as having yielded much below the average. The advantages of deep culture and drainage under these adverse circumstances, have been strikingly exemplified, both in resisting the influence of the drought and obviating those summer frosts which, before proper drainage was introduced, inflicted yearly damage in some localities. Among the most destructive consequences of the severe and protracted drought have been the disastrous fires which have made the past year memorable, not in Canada only, but to a far more tragical extent in Michigan and other North Western States.

The ravages of insects on field crops during the past year have from various reasons received a marked check. Very little complaint has been heard of the midge, which in former years has done such serious damage to the wheat, but the Hessian fly seems to have re-appeared in some localities. Grave and well-founded fears were entertained with regard to the rapid advance of the Colorado Potato Beetle; but the injury inflicted, though severe in some localities, has been comparatively slight. Still, our vigilance and precaution must not be abandoned. All past experience shows that this insect is one of the most destructive to which the potato crop can be exposed, and its advance is sure and rapid. Happily, its numerous insect foes seem to have increased in a ratio commensurate with its own rapid multiplication, and perhaps to this circumstance we may have been greatly indebted for the comparatively small amount of damage inflicted.

Passing from this rapid glance at the character of the season and the crops to the condition of the market, it may be observed that the grain trade of Canada during the year 1871 has not been noted for any remarkable peculiarity. The balance of the wheat crop of 1870 was disposed of with increasing advantage to holders, until it was definitely ascertained that the new crop of 1871 would be sufficiently large to afford a considerable surplus for export. From January to May

there was a gradual appreciation in the value of spring wheat, the price advancing from \$1 15 to \$1 40. This was due chiefly to the scarcity of the article and the steady demand for milling purposes. Fall wheat advanced within the same period from \$1 25 to \$1 50, but under the influence of bright harvest prospects a gradual lowering of values took place until the price of spring came down to \$1 12 in the beginning of September, and it is remarkable that at the same period \$1 12 was also the ruling figure for fall, notwithstanding the heavy importations of Western Spring, which were called for by the extreme scarcity of the home product. The new crop of spring wheat did not entirely come up to the expectations that were formed of it, and instead of sending prices any further down than the point above indicated, there was a slow but sure advance to the end of October, when our quotations for spring stood at \$1 23, and for fall at \$1 34. The fall wheat crop must be regarded as one of the largest ever produced in this country, while the sample was also superior to anything that has been seen for several years. This fortunate circumstance enabled us to export to the English market the great bulk of the surplus at good paying prices. The quantity of white wheat shipped to England since the crop began to offer freely is estimated in round numbers at three-quarters of a million bushels, but of spring wheat not more than 50,000 bushels were exported; and of red, 100,000 bushels.

The market has been generally quiet and steady during December, closing with a tendency to more moderate prices, in sympathy with a slight falling off in the English market.

The trade in barley this year has also been quiet. The balance of the crop of 1870 went out slowly at moderate prices, which never exceeded 70c., ranging from 58c. at the beginning of the year to the higher rate towards the middle of August, when it was generally anticipated that the light yield of the new crop, along with its excellent quality, would ensure higher prices in the American market. The Americans, however, had a large crop of their own, and not much inferior in sample to that of last year. The opening price (62½c. in car loads) was considered unsatisfactory, and farmers were long in making up their minds to accept it, but as it did not improve, they had to submit, and at length the receipts became quite liberal, followed by a slight decline in prices, which recovered again for about a week towards the end of November, reaching to 75c., subsiding again to 65c. While the delivery of this important cereal has been liberal, it is considered that farmers have still on hand a large percentage of the crop, held in anticipation of higher rates in the spring.

There is very little of interest to note in regard to coarse grains, with the exception that peas were never before offered in smaller quantities in this market, or so entirely

neglected by buyers. The old crop was marketed slowly at advancing rates, ranging from 66c. to 90c., which latter was the prevailing quotation from the 1st of April to the middle of May, when there were promises of a prolific yield, but owing to the extreme dryness of the season these promises seem not to have been fulfilled, and a moderate crop was the result. This, however, did not have much effect on prices, which have continued since harvest to fluctuate between 60c. and 73c. Some are of opinion that a large proportion of the crop has yet to be delivered.

Oats have been generally firm in price and in active demand, chiefly for local purposes. From the beginning of January to the middle of March the price rose from 42c. to 55c. From that period until harvest the range fluctuated from 47c. to 52c.; but when it was understood that the crop would be a very large one, the price went down to 34c. From the middle of September there has been a gradual advance, and quotations at the close of the year were pretty steady at 43c. to 44c., with increasing supplies.

The price of hay, though one of the shortest crops of the year, has only within the last two months advanced beyond a moderate figure. The scarcity has at length, however, told on the market, as it must have done sooner or later, and \$25 per ton has been paid in Toronto, while still higher prices have been reached in other places. Good sleighing will probably for a time again reduce the value, but when the bad roads and busy time of spring are added to the nearly exhausted supply in the country, it is probable that the price will be still higher. Straw has, under these circumstances, naturally been scarce and high. Farmers will learn, perhaps, to value it more than they have done for feeding purposes. They may also from the experience of the year learn the necessity of greater economy in feeding their stock. The steamer and the straw cutter will perhaps come into more general use than heretofore.

The dairy interest has been affected somewhat by the drought; but the production of cheese has notwithstanding been very large, and though prices ruled low during the summer months, there has been a considerable advance lately, and the market has been firm at good paying rates.

A matter very closely affecting the agricultural prosperity of all new countries is the extent of immigration; and during the past year, in spite of the supineness of the Government, there have been large accessions to our population from this source. The urgent need of labourers, and the great importance of the subject in other respects, have led to the formation of more than one association for promoting immigration to this country; and counties, or townships and municipalities, will act wisely if they follow the example very generally.

Much of this imported labour has been absorbed in the construction of new railways, and this is another feature that has marked the past year. Considerable activity and progress have been manifest in these very important enterprises. The Toronto, Simcoe, and Muskoka Railroad, projected from Barrie to Bracebridge, has been opened as far as Orillia; the extension of the Midland has been completed from Lindsay to Beaverton; the Whitby and Port Perry Road extends up to the latter point; the Toronto and Nipissing is finished to Woodville, 63 miles from Toronto; the Toronto, Grey and Bruce is open to Arthur; the North Grey extension of the Northern will connect Collingwood with Meaford, and is already nearly completed to Thornbury. These and similar undertakings, will do immense service in promoting the rapid settlement and prosperity of the country, though probably during their progress that great difficulty with which the Canadian farmer has to contend—the scarcity and high price of labour—will continue, unless a very great increase takes place in future immigration.

The length to which this notice is already extending warns us to refer only very briefly to a few other matters. Very marked impetus has been given to the importation of improved live stock, and during no previous year have so many persons been engaged in this enterprise, or have so large a number of valuable animals been introduced into the country, as in the course of the past year. Many of these importations have been sold to American breeders, but a large number happily remain with us, and their influence on the live stock of the country cannot but be very beneficial.

This large importation has given quite a marked feature to our principal agricultural exhibitions, and has contributed much to their interest and success. We can only allude in this place to another development in connection with these shows, namely, the growing tendency to hold large union exhibitions. This change will work advantageously, if it is not overdone, and not carried out in a spirit of hostility to the Provincial Fair.

The amendment of the Agricultural Act, which makes the election of all the members of the Council of the Agricultural and Arts Association annual, places the control of this institution more than ever in the hands of the farmers of the country, if they will only use their powers. The settlement of the free grant lands, and the excellent plan of putting up buildings on some of the lots, at a moderate price, are matters that should be more diligently pushed than they have hitherto been. The Agricultural College and Experimental Farms are yet scarcely more than projected, and will require much careful wisdom on the part of the Administration to carry them out to a practical and worthy issue. The recognition and aid given by the Government to the Fruit Growers' Associa-

tion and Entomological Society, have already told greatly in favour of these valuable institutions, which are destined, we feel assured, to take high rank in the education and elevation of the country, besides adding materially to its productive resources.

With one more reference only, though much might yet be said on a great variety of topics, we must close this article. We allude to the increasing use of agricultural implements and machinery. These are hardly manufactured fast enough to meet the growing demand. Among the new introductions that seem to be making way is the double furrow plough, which we believe will be found on many farms to effect a great saving of time and labour, and unless superseded by some still more efficient implement, will come into very general favour.

On the whole, the year affords evident signs of progress amongst us, and though greater zeal and activity are needed in the direction of promoting immigration, diffusing information, raising the intelligence of the farmer, and generally stimulating improvement in agriculture, the aspect and promise of the future are yet hopeful and encouraging.

The Farmer's Holiday.

The present times, especially among the nations foremost in civilization, are characterized by incessant activity, urgent competition and restless enterprise. With a large class, indeed, life is from beginning to end a perpetual struggle. That this condition of things is otherwise than hurtful to mind and body—injurious to man's physical and moral health—we do not believe. By the beneficent ordering of the Almighty, the sentence of labour pronounced upon our race as the punishment of the first transgression has been transmuted into a blessing; and from the enforced exercise of our powers spring life's best enjoyments as well as its noblest achievements. But toil unrelieved—continuous drudgery—is an evil, nevertheless, and not only a hard lot, but unless elevated by some grand motive, will prove unfruitful either of real profit or pleasure. The gain, if any, will be purchased at too great a cost.

Relaxation from work, and recreation in some form, are good for all of us. This relief is more needed in some callings than in others, and perhaps its necessity is less felt by the farmer than by most men. This arises partly from the nature of his occupation, which is mostly in the open air, and is, moreover, not continuous, and partly because the relaxation which other men must make comes to him in the ordinary course of his business. Hence it is not surprising to find from the statistics of mortality that the average duration of life is very much in favour of the farmer, as compared with the average in any other calling.

With the Canadian farmer, seed time, summer, and harvest, are emphatically the busy seasons of the year—seasons all too short for the work that has to be crowded into them—and long days, rising early and working late, are the ordinary experience of every one engaged on a farm during this busy period. But with the winter comes a welcome change. Not only do the shortened days curtail the hours of labour, but the occasions for work are very greatly narrowed. Some city people, indeed, imagine that during winter the farmer has literally nothing to do. This is, however, a great mistake. In a well ordered farm no period of the year is a season of idleness, and there is plenty of occupation to profitably fill a large portion of the months of frost and storm that in this climate effectually preclude all field operations. The care of stock, without which farming is scarcely ever profitable, demands at this time a large amount of attention and no small labour. In addition, the marketing of produce, the preparation of firewood, both for the increased demands of the cold season and in anticipation of the coming busy time, and a hundred other requirements of the farm or the household, will bring abundant occupation for the winter days. There are those, too, who must labour, either in cutting and hauling wood for sale, or in some other way to earn the means of subsistence, or eke out the too scanty profits of the summer's work. In new settlements and bush farms, moreover, there is usually plenty to do in chopping and clearing the land, taking saw-logs to the mill, or other work for which the winter is the best or only time. In short, the winter is a season of comparative leisure only, and not by any means a holiday time of indolence or play.

Now, it is obviously the interest and duty of the farmer to make the best use of this comparative leisure. The opportunity it allows for positive recreation should not be lost. Farm life and a rural home will be more attractive, to the young especially, if not made a ceaseless round of task work and drudgery. The season is one that invites much pleasant social intercourse, and it is well for young and old to cultivate an unselfish interest in those around them, to mix in the society of their fellows, and take a share in all the claims and kindly offices of good neighbours.

There are other still more valuable uses to which the winter leisure of the farm can be made subservient. The long evenings afford excellent opportunities for profitable reading, or for mental culture in other ways. The man who would cultivate his farm intelligently and to the best advantage, who would not see himself outstripped in social standing and commercial success by his more enterprising fellows, must read. During this season, too, farmers' clubs can most conveniently hold their meetings; and these associations are capable of becoming important means of instruction and improvement, as

well as promoters of neighbourly feeling. We should be glad to see them organized in every district where agricultural societies have been established.

The prudent farmer will not neglect this favourable season for attending to his accounts, though to do this properly a few minutes daily during the whole year will have to be spared for making the necessary entries. The plan of operations for the coming year may now also be duly considered, and all needful preparations foreseen and attended to in time.

These are a few of the ways in which the break in the farmer's busy life can be put to good account. The time need never be lost. The relaxation alone is no inconsiderable boon, and may be counted among the advantages that specially distinguish this occupation, and which no wise man will undervalue or throw away. Let no farmer who would rise to the true dignity of his calling choose for himself or impose on others a life of incessant toil, degrading the man to a mere working animal, and voluntarily reducing life to a weary struggle in procuring the means of living. The farmer, at all events, may be thankful that to him there comes a season when he may with a clear conscience enjoy comparative rest from his labour, give freer play to the social instincts of the heart, and satisfy to some extent at least the cravings of the mind. "Farmers must work," it has been said, and we would add, that if they would be healthy and happy, they must also rest.

The Weather.

December has been characterized by a continuance of the same severe weather which marked the latter end of the previous month, accompanied by a gloomy state of the atmosphere not very common in a Canadian winter, and high keen winds of great and unusual violence, often exceeding 40 miles per hour, and in one case reaching 61 miles per hour.

The mean temperature of the month was 20°.3, being 5°.7 below the average, 6° colder than December, 1870, and the lowest monthly average for December, except that of 1859, which is registered as 17°.9.

The highest temperature was on the 23rd, 48°.2; the lowest on the 20th-21st, -21°.0, being the lowest recorded in any month of December; the lowest previous being -14°.8 in 1857. The warmest day was the 23rd, of which the mean temperature was 37°.5; the coldest the 20th, mean -3°.8.

Rain fell on 4 days, and amounted to 0.940 inches, being 0.74 inches less than the usual December fall.

Snow fell on 20 days, and amounted to 14.2 inches, being about the average depth; the heaviest fall, 3.5 inches, occurred on the 22nd.

The amount of cloudiness has considerably exceeded the average—20 days being wholly clouded, and 11 partially so.

The prevailing winds have been W., with some slight tendency towards the E during the last four days.

Annexed is a table showing the deviation from the mean average of some of the weather data for each quarter of the year from December 1870 to November 1871. The prefix + signifies that the annexed figures represent so much above the average, and - indicates an amount below the average.

Autumn	Winter	Spring	Summer	Mean Temperature.
-23	0.0	+3.2	-0.1	
-4.053	-0.431	+1.402	-1.913	Amount of Rain
-2.7	+2.7	+4.1	-1.4	Days of Rain
+1.3	+3.3	-0.4	0.0	Amount of Snow.
-5.3	10.5	0.0	0.0	Days of Snow
+0.6	+0.3	-0.1	-0.2	Am't of Cloudiness.
+1.5	+2.0	+0.4	+1.3	Velocity of Wind.

Agricultural Societies.

The time fixed by statute for the annual meetings of the Agricultural Societies is now close at hand, and the important duties which the period once more brings on should be well considered. The date for holding the meetings of Township Societies is the second week in January—that is to say, on some day between the seventh and fourteenth of the month; and that for the County Societies during the third week—or between the fourteenth and twenty-first of the month. At these meetings, the report of each society for the past year, including especially its financial condition, is to be presented, and officers are to be elected for the ensuing year. On the last point no one, it should be remembered, is allowed to vote who has not paid his subscription before the opening of the poll, the time for which is specified to be not earlier than 12 o'clock at noon, nor later than 4 o'clock in the afternoon, of the day of meeting. Much of the efficiency and prosperity of a society depends on the directors, and especially on the Secretary, and it is therefore highly important that a wise choice be made in this matter of the election of officers.

CANADIAN HERD BOOK.—Numerous enquiries have been made respecting the publication of the "Canadian Herd Book," which has for some time been looked for with not unnatural impatience, our breeders meanwhile entering their thorough-bred animals in the "American Herd Book," of which Mr. Allen brings out volume after volume with astonishing rapidity. We are glad to learn that the long expected register, more particularly interesting to ourselves, is ready for the press, and that the second volume of the "Canadian Herd Book" will shortly be published.

THE CANADIAN FRUIT, FLOWER AND KITCHEN GARDEN.—This work, by Mr. Beadle, to which we recently called attention, is now in press, and will be ready for delivery early in spring, in time for all garden operations of the coming season. In the hope of giving it ear'y welcome and more particular notice on its appearance before the public, we now merely make the announcement, and refer our readers to the advertisement in the present issue. We believe the work to be just what is wanted to aid the Canadian farmer in his efforts to make the surroundings of his home attractive, and at the same time to profitably cultivate the garden plot, which is too often unwisely neglected for the larger operations of the field; and not the farmer only, but all who have a piece of land to cultivate about their dwellings, or even a few plants to cherish within doors, will find useful guidance and instruction in the forthcoming publication.

PRAIRIE FARMER.—We have much pleasure in directing attention to the advertisement of the *Prairie Farmer*. This is the veteran and pioneer of the agricultural press in the West. Published at first as a monthly periodical, it has now for some time appeared in a greatly enlarged form as a weekly, and has deservedly enjoyed a high reputation and wide popularity with our neighbours in the States. The serious damage inflicted by the fire scarcely interrupted its regular appearance, and in a wonderfully short time the enterprising proprietors have brought it out with even improved appearance, and all its old excellence and attractions fully maintained. Our contemporary, always among the most welcome of our exchanges, has our hearty sympathy and best wishes for its continued prosperity.

THE NATIONAL LIVE STOCK JOURNAL.—A notice of this periodical appears in our advertising columns. In the *CANADA FARMER* for November, we had occasion to speak of this comparatively new periodical on its re-appearance after experiencing its full share of the disasters of the great conflagration in Chicago. As its name implies, it is specially devoted to the department of live stock, and is always full of interesting and valuable information in reference to the breeding and management of farm animals, with notices of all important sales and new importations. It is second to no periodical of its class.

Horticulture.

EDITOR: D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

On Practical Climatology.

"The want of a perfect and simultaneous system of meteorological observations has long been felt by individual observers. The climatology of so vast an extent of territory must surely influence man's present happiness and future destiny; but a perfect and unbroken cord of observations taken at the same hours has, up to the present time, not been attempted. This cannot be owing to its want of importance, for it has a direct bearing on the health of individuals, on agriculture, and on the wealth and commerce of nations."

The above remarks, written in 1866 by Arthur Harvey, Esq., for the "Year Book" of 1867, are still in force, little or nothing having yet been done by either individuals or agricultural societies to further the science in Canada. Some regrets are also expressed in the Report of the Department of Agriculture of the United States for 1870, just issued, in which the writer, André Poey, late director of the Observatory at Havana, says: "A division of meteorology should be established in connection with the Department of Agriculture." This gentleman, in a very able and practical article, gives much useful information in a condensed form, with excellent suggestions for future observations, and regrets that although stations are established for observations under the direction of the War Department, these observations will only have a partial and indirect bearing on agriculture.

The observatories of Quebec, Montreal and Toronto, give the state of the barometer, thermometer, rainfall, and direction of the wind, daily throughout the year, and in some other countries these observations are carried on with much more detail than here. In England, for instance, by walking into the Exchange in Liverpool, you may see the direction of the wind, the state of the weather, if cloudy, sunshine, or rainy, at fifty different points in the United Kingdom and on the continent of Europe, all telegraphed up to the latest moment. These observations are of great utility with regard to shipping and commerce; but in a country like this, where the climate varies in every degree of latitude as well as longitude, it would be of the utmost importance to agriculture if some means could be taken to have an accurate register at least of the thermometer at all inhabited points, at distances of not more than fifty or sixty miles apart, and also of the rain and snow fall, with the date and depth of the first three falls of snow, and the number of days it covers the ground during winter. At present the only practical idea of the climatology of this country with regard to fruit

culture is to be gained by carefully watching the birds which inhabit the various sections of the Province, and the date of their appearance and departure.

The writer having lived for many years near London, Ont., has noticed that many kinds of birds found there in great abundance are never met with in this vicinity (Ottawa) by any chance. Amongst these I may mention the quail, the meadow-lark, (*Sturnus ludocianus*), and the bluebird (*Sylenia sialis*). I am unable to account for the reason why the two latter do not reach this section, being birds of passage, and our summers are as genial as those further west; but I suppose the food they prefer is not found here in sufficient quantity to entice them to our more northern region. Perhaps some of our naturalists could throw light on this subject, and I for one should take it as a great favour if the cause was made known. The insect life required for the bluebird, who feeds principally on Coleoptera caterpillars, spiders, and other insects, and ripe fruits in their season, may be extinguished by the rigour of our winters, and the small amount of cereals grown here may possibly be the reason for the non-appearance of the meadowlark.

I am not surprised at the absence of the quail, because even as far west as the township of Warwick—30 miles west of the city of London—these birds are frequently decimated by being smothered in the drifts which form along the snake fences. Here, where the snow lies for three months or a half on the ground every winter with the greatest regularity, they could not possibly obtain sufficient food to support life.

Prairie fowl are sometimes shot as far east as Walpole Island, on the St. Clair River, but in no other part of Canada. Again, Ptarmigan, I believe, are not found to the west of Quebec. Chipmunks and red squirrels, which lay up stores for the winter, are found here in great numbers, but the black squirrel, who obtains his food from day to day in the woods, is never met with, although exceedingly plentiful in the western part of this Province, where acorns and beech-nuts, upon which he principally lives, are found in great abundance. This fact shows that our snows are too deep, and the time of their remaining on the ground of too long duration, for him to gain a livelihood. It is also found that although we have sufficient summer heat to ripen the peach and the grape, and I have no doubt the fig also, our winters are so severe that, without some mode of artificial protection, these varieties of the vegetable kingdom cannot support life through it. The Lawton blackberry has not yet been successfully established, and some other plants require unusual care to keep them from being killed by frost. The apple also, from some cause, has become a partial failure, and orchards, which are seen on nearly every farm from Bowmanville to Windsor, are

rarely met with in this neighbourhood, although apples are successfully grown upon the Island of Montreal. I am not yet fully prepared to say that this is the fault of frost. I am more inclined to think that sufficient care is not bestowed upon the trees, and that they become a prey to borers and other insects; but I intend giving this subject my best attention. Although the climatic changes range from 96° in the shade in summer to 40° below zero in winter, and are destructive to many of the inner fruits, I am still in hopes the apple, our greatest stand-by, may yet be grown in reasonable abundance.

It does not appear that we are freed from the insect pests which prey upon the fruits of the west on account of our long cold winters. It is true we had not the Colorado potato beetle last summer, but we expect him next. We had three days and four nights last winter during which the thermometer did not at any time rise above 7° below zero, and the lowest touched during that period was 37° below zero. I thought this would have touched the currant-worm or sawfly, but he appeared rather to like it, although the exceptionally cold spring made him hatch out later than usual. When he did appear, he was very persistent in his attacks, and required looking after until the end of August.

I believe, as a rule, we have more inches of frost in the ground than is found about Quebec. This is owing to the snow falling earlier there, which keeps the soil from freezing, and digging may sometimes be performed after clearing away the snow in the middle of winter. Some interesting experiments might be made by burying potatoes at various points in similar soils at different depths, and watching in the spring to observe the lightest covering of soil that would protect them sufficiently to enable them to sprout. Such experiments as these require co-operation throughout the Provinces.

I am now trying some experiments with the peach, the tenderest of our fruits. I have about twenty seedlings this year from the stone. I have taken up most of them, cut off the tap roots, and pruned the tops pretty severely, and laid them in a trench. In the spring I shall plant out, leading the roots in two opposite directions from the stem. Next autumn, by digging away the earth at the two sides, where no roots are planted, I expect to be able to throw the young trees over on their sides into trenches, and burying them up, having first gathered the branches close along the stem. But I do not intend to let my experiments at defeating Jack Frost rest here; I propose also growing some on the "souch," cutting off the tree a foot from the ground, and burying the branches which radiate therefrom during winter; and my third plan is to grow on the French cordon system, leading two branches eight inches from the ground along a wire. These arms may also be covered with earth, leaves, or some other protection. I am looking forward with no little interest to the report of the Fruit Growers' Association on the Eumelan grape, which has been distributed over the greater part of Canada; here it was killed down to the snow line where unprotected. This report will give the best essay we have yet had in this country on practical climatology.

P. E. BUCKE.

Ottawa, 11th December.

The Rose.

To the Editor.

SIR,—I was much pleased with your editorial on roses, published in the November number of the CANADA FARMER, not only because the rose is the floral emblem of my natieland, but because it reigns, I may almost say supreme, among the beauties of the garden, possessing, as it does, so many intrinsic claims on our admiring notice, as to form, colour, fragrance and variety.

It has been a source of regret to me, ever since I settled in Canada, that I have found myself unable to cultivate the rose in this section of Ontario, to such an extent, and with such results, as to afford me the satisfaction I ever experienced from such cultivation in England. There I grew none but *budded roses*, and there I was in the habit of performing the budding operation myself. The process is a very simple one, and may be undertaken any time from the beginning of August to the middle of October; the requisites being simply strong, straight stocks, buds taken from any roses required, a budding knife, and wet bass. Roses of different kinds may be budded on the same stock, and if the arrangement of *habit* and *colour* be tastefully attended to, the effect is very pleasing.

I notice also an extract on the like subject from the *Cottage Gardener*, containing a short list of Tea Roses. These, when in bud, before the blossom is fully developed, are, perhaps, the most charming of all roses; but then they are very delicate, too delicate at all events for the climate of this neighbourhood. The "Hybrid Perpetual" and the "Hybrid Bourbon" roses are more robust, and would be less liable to be injured by spring frosts; and I think it is from spring frosts, after the removal of the "snowy blanket" to which you happily allude, has been removed, and from fall frosts before that "blanket" is induced, that we have more reason to dread adverse climatic influence, than from the severity of winter itself.

A great improvement may have, most likely has, taken place in the cultivation of roses in England during my sixteen years' absence from "home," but I have a vivid and most pleasing recollection of some standard favourites in the two classes referred to above, such as Dr. Marx, Baronne Prevost, Madame Laffay, William Jesse, &c., among the hybrid perpetuals; and Coupe d'Hebe, Souvenir de la Malmaison, Gloire de Rosaméne, &c., among the Bourbons; and I should be rejoiced to see these and others blooming in my garden once more if I could but entertain the pleasing hope of growing them with any prospect of their surviving, and surviving without deterioration.

I should be glad to know whether *worked roses* can be cultivated in this district—40 miles north of Lake Ontario, and 60 miles east of Toronto—with any prospect of suc-

cess; and if so, whether and where good stocks can be obtained. In Europe, the French stocks are, or were, held in greater favour than those grown in England.

In conclusion, let me again thank you for your able advocacy of this most delightful of all flowers, the "Garden's Queen," as Byron styles it, the "Fleur chère à tous les cœurs."

VINCENT CLEMENTI, B.A.

North Douro, Dec. 14, 1871.

Manuring Evergreens.

Evergreens will not thrive in poor soils much better than deciduous trees; but it will not do to apply manure in the same incautious manner. I have known persons to mulch the soil about the evergreens upon their lawns with fresh horse manure from the stable, and the fumes arising therefrom caused the leaves on the lower branches to drop off. Manure for evergreens should be old before applied; and if composted with sods or muck, all the better. Cow droppings are far better for evergreens than horse manure, especially on warm, light soils. I try to obtain a supply of this for my trees, and spread it upon the surface in autumn, and dig it under in spring. For all the broad-leaved evergreen shrubs, such as *Rhododendrons* and *Kalmias*, there is nothing better in the way of fertilizers than a compost of cow droppings and old sods or leaf mould from the woods. Manure containing a large amount of ammonia seems to be too heating, and the roots that come in contact with it soon receive a check to their growth. — *Rural New Yorker*.

Arnold's Grapes in Missouri.

Samuel Miller, in writing to the *Western Rural*, gives the following account of these Canadian Hybrids:

Bran—One of Arnold's Hybrids; is the earliest grape we have; about the size of Clinton, of first-rate quality, very productive, vine healthy and vigorous. But those who wish to get it must wage war against the birds, when they are plenty, as otherwise they will not get the grapes.

Autuchon—A beautiful white grape, nearly as good as Golden Chasselas. Bunch long, rather loose, berry medium size, translucent when ripe, vine vigorous, healthy and hardy.

Othello—A large, black grape, bunches large, berry oval, eats about midway between our best native and a Black Hamburg, a late variety, and in my opinion quite promising.

Caracopia—Another of Arnold's, as the three preceding also are; pleased me very much last season, but this year the birds did not leave me a taste of them, as they ate them all before ripe.

HOW TO KEEP THE CHILDREN AT HOME.—

If you wish to make your children satisfied with home and country life make it attractive and pleasant by surrounding it with fruits and flowers, and supplying the table with the delicious fruits of the seasons.—*Small Fruit Recorder*.

Flowers in the Window.

With the return of winter will come the desire to have a few flowers in the window, something bright and beautiful to look at, when all without looks cold, and bleak, and dreary. To help our readers in the pleasant task of caring for the plants in the window, and to guide them in the selection of those that are of easy culture and likely to afford them the most pleasure, we now present a few suggestions.

Select, if possible, an east or south window. Our days are short, plants need light, and as we can give them at best only a few hours of light, it is important that there should be as much of brightness and warmth in it as we can furnish. If an east or south window cannot be had, then a west window is better than a north.

The room should be one where the night temperature does not fall below 40°, and, if possible, is not maintained much above 70° by day; also, it should be one not usually occupied by the family in the evening, for at night we draw the curtains, stir up the fire, light the lamps or the gas, and increase the temperature several degrees above the average temperature of the day. But plants require that when the daylight fades the temperature should decline. Night is their time for rest, but they cannot rest if the temperature be as high or higher than it was during the day. The effect is similar to that produced upon a human being by depriving him of his wonted sleep.

The room should not be one that is heated by a furnace; the air from it is apt to be too dry and too hot. If it must be heated by a furnace, set a pail of water in the register, and at night shut off the heat so that the temperature may fall gradually to about 45° before morning. Again, gas-lighted rooms are bad for plants. Enough gas escapes in the evening, unconsumed, though the flame seem never so perfect, to kill delicate plants, and to injure materially the most robust. If they can not be kept out of such an atmosphere, by closing a glazed door or sash so as to shut them out from the air of the room, then better not try to keep plants in the window at all.

Arrangements should be made for giving the plants fresh air whenever practicable. The most convenient way is to have the upper sash moveable, and let it down at the top, taking care that the plants do not stand in a draught of cold air, and admitting it in quantity proportioned to the weather outside; when it is very cold and frosty, very little or none at all, and more when the weather is moderate.

The leaves of plants need washing in order to remove the dust that gathers on them and fills up the pores. Geraniums, and like hairy and soft leaved plants, are best washed by taking them to the sink, and syringing them thoroughly through a fine rose. Glossy leaved plants, such as Camellias, require to

have the leaves sponged off one by one. In all cases, soft and tepid water should be used. This washing should be done often, say once a week.

In watering, use tepid water, and learn the requirements of the plants, so as to adapt the amount to their need. An Ethiopian Lily will rejoice in watering that would kill a Cactus.

The drainage of the pots should be perfect, so that surface water can escape through the hole in the bottom of the pot. If the pots stand in saucers, pour off the water that runs into them, and not let it be soaked up into the pot again. Yet this rule, though of very general application, need not be observed in the case of aquatic plants.

A very common error in window gardening is that of attempting too much. Too many plants are crowded into the little space at command, so that it is impossible to give each the air and light it should have. Again, plants of too diverse character are brought together. It is no uncommon thing to see tropical plants that require stove heat, and plants from the temperate zone, if not even Alpine plants, all crowded into the same window, and subjected to the same temperature and treatment. Better far to have one healthy, well grown plant, that will yield its flowers in perfection, than a dozen sickly, feeble, wretched plants, that have no beauty either of leaf or blossom.

We subjoin the names of a few flowering shrubs and plants that are suitable for window culture, with a few hints on the treatment peculiar to each.

THE DAPHNE makes a charming window plant, and if any will thrive in a west window, this will. It is an evergreen shrub, producing bunches of sweetly fragrant white or pinkish flowers on the ends of the branches. The pot in which it is grown should be filled one-third full of broken crocks, so as to secure perfect drainage. The leaves should be kept perfectly clean. While the plant is growing it should be freely watered, and the temperature maintained at about 73° by day, to about 45° at night.

THE HELIOTROPE is a very great favourite, on account of the profusion of bloom and the delicious fragrance of its flowers. It should be encouraged to grow large by giving it plenty of pot room and plenty of window room. It may be pruned and trained into any desired form.

MONTHLY ROSES, especially the tea-scented, are beautiful window plants. They need rich soil, thorough drainage, frequent washing of the foliage with a fine rosed syringe, as even a temperature as possible, carefully guarding from draughts of cold air, and smoking with tobacco if the green fly makes its appearance. They should have the morning sun, but be shaded from the afternoon sun when it has become powerful.

HYACINTHS make beautiful window plants grown either in pots filled with soil, or in moss, or in water. They should be kept in a dark cellar, free from frost, until well rooted, and then placed in the window to

bloom. As soon as the flowers begin to expand, the plants will require abundant watering. If kept in a low temperature, say 65°, the flowers will last much longer.

THE CYCLAMEN is especially suited for window culture. The bulbs should be planted in pots in November, in a rich loam, intermingled with a little pulverized charcoal, with the crown of the bulb just peeping through the surface of the soil. They should be kept in a cool atmosphere and close to the glass, until the leaves are well grown and the flower buds begin to appear; then they should be removed to a somewhat warmer atmosphere and a sunny window. The variety known as *C. Persicum* has white flowers tipped with rosy purple, and will bloom from January to March. When the bloom is over, water should be gradually withheld, and when the foliage dies off they may be stored away in the cellar in some place where the mice will not get them, until next November.

THE IVY may be grown in any part of the room. The pots may be placed on the floor and the plants so trained as to festoon a window or arch a door-way, or to wreath a picture frame or mirror. They require to be watered often, yet the water must not be allowed to stand about the roots. There are varieties with golden and silver variegated leaves; others with lobed, or palmate, or heart-shaped leaves. All are pretty, grow rapidly, and endure the heat of our sitting rooms, with their dust and extremes of temperature, and want of light, in a most astonishing manner.

VERBENAS.—By striking young plants in the last days of July, and potting them first into thumbs, and then into larger as soon as the roots have reached the sides, and keeping them in vigorous growth, pinching back the leading shoots, and nipping off every flower head, the Verbenas may be made to bloom beautifully in the window all winter. There is danger from over watering and the aphid or green fly; against these be on your guard.

SCARLET AND SCENTED-LEAVED GERANIUMS are easily grown in the window. They want plenty of light, plenty of air, a moderate temperature, and to be frequently turned so as to expose all the leaves to the light. They do not bear crowding, nor excess of water.

From these each one may make selection of such as each prefers. Do not undertake to grow them all. More pleasure will be derived from one well grown plant than from any number that are over-crowded, drawn up and sickly.

Catching Curculio.

The following table, sent us by a correspondent, and which has been already too long laid aside, is very interesting, showing that the evening is fully as favourable a time for catching the curculio as the morning.

He commenced to jar his trees for them on the 21st of May, with the following result:—

	Morning	Evening
May 21	0	12
" 22	0	0
" 23	1	13
" 24	1	33
" 25	41	23
" 26	45	59
" 27	13	22
June 1	21	25
" 2	0	25
" 3	23	34
" 4	5	15
" 5	9	2
" 6	10	4
" 7	5	5
" 8	0	1
" 9	0	0
" 10	0	2
" 11	0	0

Fruit in Lancaster-Front, County of Glengary.

A gentleman taking considerable interest in fruit culture, and desirous to obtain all the information that he can on the subject for his own benefit and that of his neighbours, writes to the Secretary of the Fruit Growers' Association of Ontario, from the above locality, that there are not one hundred grafted apple trees in bearing in that section, no pears, nor improved plums, and very few of the small fruits, and nobody can tell from experiment what varieties might succeed, or mention the name of two survivors of some thousand trees of forty different varieties from Rochester, planted fifteen years ago.

This is truly a very unfortunate condition of things, and shows more conclusively than a volume of arguments the need of just such an organization as our very valuable Fruit Growers' Association, and the large field of usefulness that is spread out before it. Its object is to carry information to just such places, to tell them what varieties have succeeded in other localities, and encourage them, by the distribution of scions and trees and fruit-bearing plants, to make experiments in their cultivation, and to report the results to the Association for the guidance of others.

The writer of the letter from which we have been permitted to quote, understanding the advantages to be derived from being a member of the Fruit Growers' Association, has sent to the Secretary his membership fee for 1871 and for 1872, and asks for full information of all the doings of the Association, that he may lay before his neighbors the advantages of membership and induce them to join.

If they have any appreciation of the comforts which a few fruit-bearing trees will confer upon the family, the delight they will afford to the children, the greater attractiveness they will give to home, every person in that neighbourhood who can lay any claim to civilization, will surely be grateful to this gentleman for calling their attention to the many and great advantages which are to be derived from becoming members of the Fruit Growers' Association, the additional information which they may hope to obtain of the varieties most likely to succeed, how to plant them, how to prune them, how to defend them from insect and other enemies.

The Association intends distributing some desirable fruit trees to its members next spring, and confers a double quantity upon each member for every five new names he sends to the Secretary with the fee for 1872. We rejoice to learn that last year its membership was nearly doubled, and that there are now about eight hundred members; yet this is far short of what it should be. With such a fine fruit-growing country as we possess, every farmer should be a member, and

have a copy of its annual report, which is worth far more than the annual dollar, to say nothing of the fruit tree or vine that is annually given to every member. We hope soon to be able to say that its membership is counted by thousands instead of by hundreds, believing that the influence of the Association upon the welfare of this Province, upon the happiness, prosperity and enjoyments of our fellow countrymen, will be of lasting benefit.

Cutting Away the Old Wood of Blackberry and Raspberry Bushes,

I have noticed the recommendation of some of the pomological authorities to cut away all the blackberry and raspberry canes close to the ground, as soon as the fruit is gathered. I think such a recommendation is an egregious error, and if put in practice, the productiveness of the bushes thus treated will be seriously impaired. Let producers of blackberries and raspberries adopt such a practice, and they will soon perceive the injurious effect on the hardiness of their bushes, and in the production of inferior crops of fruit, for the reason that such a premature removal of the old wood interferes with a very important habit of the bushes. From the commencement of the growing season until the fruit is fully ripe, all the energies of the bushes are concentrated to the accomplishment of the one object of the perfect development and maturity of the fruit. The circulation of the sap has all been towards the leaves. The roots are so exhausted at this period—when the fruit is fully ripe—that they are poorly prepared, after having produced a crop of fruit, to develop a new system of canes for the following season, if the old wood were cut away. As soon as the fruit is gathered, the circulation of the sap is reversed, so that all the remaining energies of the bushes are directed to the strengthening of the roots. The leaves on the old canes play an important part in this operation, as the sap in them goes down into the roots before the leaves are cast, to aid both in strengthening the roots and in developing new canes. Hence if the old canes are cut away before the leaves have fallen, the hardiness of the bushes will be more or less injured. But as soon as the leaves of the old canes are so much faded that they are about to drop, the old canes may be removed without any injury to the future productiveness and hardiness of the bushes.

It must be remembered that the canes of blackberries and raspberries are biennial, while the roots are perennial. Dame Nature, therefore, has provided that the fruit-bearing canes of the present year must remain where they grew until the canes which are to yield a crop of fruit next season stand by their side fully developed, and made to receive the mantle of their progenitors. As soon as the bushes have ceased to grow, the old wood may be cut away without injury. Yet in localities where the bushes are exposed to deep snow, if the bushes are not laid down during the cold weather, the old canes will aid in keeping the new ones erect. The old canes should always be removed very early in the growing season.—S. E. Tonn, in *Tilton's Journal of Horticulture*.

New and Rare Plants.

Crytolaira—is a new tribe from the gold regions of South America. They require a moist atmosphere when in a growing state, with rough, sandy, vegetable soil, to keep them beautiful and fresh. Propagate every spring from the tips of the shoots. They are capital basket plants for shaded situations.

C. metalica—has bright scarlet flowers, with thick oval foliage, of an olive green, with a central pink band on the midrib, diverging through its hairy foliage.

C. choutaensis.—The flowers are white, an inch in diameter, shaded with lilac, and appear in profusion for several months. The foliage is purple on the under side, and on the upper side a shaded green, sparkling with a golden metallic lustre—a very charming plant.

Begonias—Are refreshingly new, and all blooming in early autumn and winter with a profusion to please the most fastidious; all of the easiest possible culture in a temperature of forty to sixty degrees in winter. They grow and flower most freely when renewed from cuttings every spring.

B. boliviana.—A new feature, with large pendant flowers, of a rich coral colour, and in great abundance.

B. veleni.—Similar to the former, with flowers of a rich crimson colour.

B. glaucophylla scandens.—A climbing species, and a first-rate basket plant. Its long pendant shoots are just the article for window culture.

B. wiltonensis.—A plant two feet high and two feet wide, of six months' growth, was a complete bouquet from the pot to the tip, of a delicate pink colour.—*Tilton's Journal of Horticulture*.

New Show Pelargoniums of 1871.

A correspondent of the *Florist and Pomologist* gives a description of the twelve Show Pelargoniums which have received first-class certificates during this year:

Admiral.—The lower petals are lilac-rose, on the upper petals a large maroon blotch shaded off to the edge, with a margin of pale lilac; the flower is large, with a bold, white centre, extra fine quality and good form.

Ada.—Top petals dark, margined with bright rose; lower petals deep pink, with white throat; free blooming, and flowers of fine quality.

Cesar.—A very bright coloured flower of fine form and substance; lower petals crimson, painted with darker veins; top petals dark maroon, with edge of bright crimson; extra fine.

Charlemagne.—The lower petals a soft salmon-peach colour; small maroon spot on the top petals, with broad margin of pale carmine rose; bold white throat; flowers of splendid form and large bold truss.

Conquest.—Lower petals bright rosy-scarlet; large maroon blotch on the top petals, with margin of purple; a bright and showy flower of fine quality.

Chieftain.—Lower petals rose; deep maroon blotch on top petals, with shaded rose margin, and bold white throat; a flower of superb form and fine quality.

Blue Bell.—Lower petals light bluish purple; black spot on the top petals, with edge of pale purple, white throat; a novel and very attractive flower.

Imperator.—A rich dark flower; the lower petals maroon; top petals black, with a narrow edge of lively crimson.

Pompey.—The lower petals orange carmine; upper petals shaded maroon, with margin of rich orange; large clear white centre; flowers of large size, richly coloured, and of the finest form.

Prelate.—Lower petals maroon, dashed with purple; upper petals glossy black, with narrow purple margin and white throat; flowers bold and fine.

Royal Bride.—The lower petals an exquisite shade of soft salmon pink; a maroon blotch on top petals, with margin of pink; large white throat; a very beautiful flower, of fine quality.

Reubens.—Lower petals rosy purple; large glossy maroon blotch on top petals; a medium sized but very pretty flower.

Zephyr.—Heavily painted crimson lower petals; rich black top petals, with a very narrow margin of crimson; a richly painted flower, of fine substance and quality.

Thinning Fruit.

Dr. Farley, of Union Springs, N.Y., informs us that early in the season he directed his hired man to thin the pears on a row of fifty bearing trees, by taking out one-half the poorest looking ones. This was done; but being a year of great abundance, the thinning was not sufficient. The pears grew so much larger in consequence of the operation, as to heavier load and a greater number of bushels, than the remaining unthinned trees. He thinks it would have been better to have thinned out one-half the remaining pears by a second operation, both on account of the benefit to the trees by bearing a smaller number of specimens, and the great superiority of the fruit and its higher price in the market.—*Country Gentleman*.

Waterer's Laburnum.

What is known in the Surrey Gardens as Waterer's Laburnum, is much superior to the ordinary Laburnum. It is not so large in the foliage nor in the individual flowers as the Scotch Laburnum. But imagine racemes a foot long or more of the brightest of yellow flowers, hanging in countless profusion, and some idea may be formed of the splendid effect of this tree, the distinctive merits of which lie in the profusion of its flowers, the great length of its racemes, and the bright colour of its individual flowers.—*Florist and Pomologist*.

Primula Japonica.

We present our readers with an engraving of a new Primula, recently introduced from Japan by Mr. Fortune, and raised in England by Mr. Bull, of Chelsea. The *Florist and Pomologist*, in introducing it to the public, speaks of it as being "as hardy as a peasant, as resplendent as a princess." We learn from the same authority that it is just ten years since Mr. Fortune met with it in Japan, a basketful of blooming plants, having been brought to his door. These were sent by

good account." The flowers are about an inch in diameter, of a lively magenta colour, the individual flowers being very suggestive of those of a highly coloured Phlox Drummondii. On the occasion of its being exhibited at the meeting of the Royal Horticultural Society, on May 31d, its first public appearance in England, it was voted a First Class Certificate by acclamation. One great merit of this new Japanese primrose is that it yields varieties no less beautiful than itself. Of its hardiness there can be no doubt, since plants which have been standing all the win-

Autumnal-Flowering Crocus.

The Crocus, as one of the earliest ornaments of the flower garden, is universally admired, and, indeed, for neat, dwarf, and compact growth, and varied shades of colour, Crocuses are unequalled for margins or edges of flower beds or borders. They are among the first flowers that remind us of spring, but the autumn-flowering kinds have no such reviving influence. They tell of coming gloom, wet, snow, frost, dreary winter with its storms and blasts. Should we value them



him to England, but none of them survived the voyage. Subsequently seeds were sent to Mr. Fortune, by W. Keswick, of China, and Walsh, Hall & Co., of Japan, and from these Mr. Bull has been so fortunate as to succeed in raising some plants. The *Florist and Pomologist* adds: "Our gardens have thus secured a perfectly new, thoroughly hardy, and exquisitely lovely primrose, one which is not only valuable on account of its intrinsic beauty, but doubly valuable as placing in the hands of the hybridizer important new materials, which will no doubt soon be turned to

ter fully exposed in the trying atmosphere of London are perfectly healthy, and came into flower about the middle of May." We learn that some of our enterprising nurserymen have already ordered this attractive novelty, and our lovers of the beautiful will be able to obtain this new gem.

The accompanying illustration is drawn to a scale of about one-half the natural size of the living plant, and with due allowance for the reduced proportions, will give a very fair idea of the exceeding beauty and luxuriance of this new hardy exotic.

less for that? They flower, it is true, at a time when flowers are plentiful, if indeed we may so term blazes of scarlet, yellow and blue, representing about half a dozen species of plants, which are all we want as regards their profusion of bloom. But there is pleasure in variety, a charm that no repetition can effect. I think there is something very refreshing in autumn-flowering plants. They seem to revive, to give life and hope in the declining year. Springing up close to plants that have been a mass of beauty, they are enhanced in beauty—they give to Nature beauty even in her decay.

Autumn-flowering Crocuses differ from those which bloom early in the spring, for, like the autumn-flowering Cyclamen, the flowers appear before the leaves. These plants grow in the dull autumn and winter months; in fact, all their growth is made and matured in the dullest, coldest half of the year.

All that these Crocuses require is well-drained soil, thriving best in a rich light loam over gravel. They succeed in the sunniest situation, and thrive equally well in partially shaded positions, doing admirably on the margins of shrubberies, and they are gems by the margins of woodland walks, and at the foot of rock-work; in fact, everywhere. They do not interfere with the summer-flowering plants, which may be planted between them. They should be taken up every second or third year, and the roots divided. This is best done when the leaves begin to fade. Enrich the ground with some well-decayed manure or leaf soil, and replant at once.

The autumn-flowering species are not numerous. So far as I know they are confined to three, or at most four, viz.:

Crocus speciosus.—Flowers large, purplish-blue, beautifully striped. It is the finest species of Crocus, being very free-flowering and beautiful. It flowers from the middle of September.

C. sativus.—Flowers large, pale purple, with long orange styles. It flowers in September. It is synonymous with *C. autumnalis*.

C. rotundus.—Flowers violet purple, with a yellow throat. It flowers in October, and continues to bloom in November.—*Cottage Gardener*

The Day Lily.

There are two varieties of this pretty flower, the one yielding large tube-shaped and very fragrant flowers, of a pure white, borne upon stems which attain a height of about two feet, but the flowers begin to open towards the base of the flower stalk, which gradually elongates, and the flowers appear in succession. Each flower lasts only for a single day, hence the name Day Lily.

The other produces light blue flowers in the same manner; these are more cup-shaped, not fragrant nor quite as large as the White Day Lily, and comes into flower a little earlier.

There is also a blue flowered sort, with variegated leaves, which makes it a very pretty plant.

These are not true lilies, but are called by botanists *Funkias*, and are best propagated by dividing the roots in the spring. They are all perfectly hardy.

APPLES FOR PROFIT.—If you wish to plant apples for profit, let your orchards be largely of winter sorts, and of those that have succeeded the best in your localities. If you expect to grow good fruit, give it good care.—*Small Fruit Recorder*.

Pyrus Malus Floribunda.

The *Florist and Pomologist*, for November, presents us with a fine coloured engraving of a flowering branch of a hardy ornamental tree, which is but little known as yet. The *Florist* says that a prominent position in the very front ranks of hardy ornamental deciduous trees must be allotted to this remarkably free flowering plant, which forms a small tree, producing long slender branches, which burst out in early spring into leafy garlands of brilliantly coloured flowers. From each of the numerous buds proceeds a short spur-like shoot of about an inch in length, bearing several small lanceolate leaves, and terminating in a kind of corymb of seven or eight lovely blossoms, which thus convert the branches into very brilliant floral wreaths.

The flower buds are of a rich crimson, looking like clustres of small, elongated cherries; when half expanded, the flowers appear as if striped with white and carmine; when fully expanded they are white, the fine petals being white inside and rich crimson on the outside. Their profusion renders the tree exceedingly gay and ornamental; and in the earlier stages of development, owing to the abundant but gracefully disposed trusses of highly coloured buds, the appearance of the tree is truly gorgeous. Beautiful as are the flowering almond trees in the early spring, they are utterly eclipsed by this handsome *Pyrus*, which has not only a more elegant, but more brilliantly coloured inflorescence, with a setting of small green leaves.

There is no doubt but that this tree will prove more hardy in our climate than the flowering almond; that, indeed, it can be grown wherever our apple trees will flourish, and prove to be a very pleasing addition to our small-sized ornamental deciduous trees.

Lilium Excelsum.

This species, though not new, is one of the finest in cultivation. It is also found catalogued under the name *L. testaceum*.

The stem grows from four to five feet, and sometimes, under high cultivation, even six feet in height, with scattered lanceolate leaves: The flowers are pendulous, in whorls of from three to nine each, nearly flat, of a beautiful salmon buff, with bright scarlet anthers, thus making a very fine contrast.

It flowers the last of July; is very sweet scented, and, like most of the Japan lilies, is perfectly hardy, and will grow in any soil not too wet or sandy.—*Pitt's Journal of Horticulture*.

SETTING EVERGREENS IN THE FALL.—Several years ago I set 135 white pine and hemlock shrubs, in October and November, being told that then was the time; they were set with the greatest care, and the result was nine out of every ten died. I concluded then that fall planting had gone up with me. I then tried spring setting, by putting in 400 *Arbor Vitae* and Norway Spruce, and out of the 400 only four died; the 396 are now living realities, fresh and green.—*Cor. in Country Gentleman*.

PEARS IN VERMONT.—After twenty-one years' experience in the nursery business and grafting in a great many parts of Vermont, I have succeeded in finding eight or ten varieties of pears that will do better than the apple, and give more certain crops. I have one tree of the Buffum, twelve years old from setting, that bore full six bushels last year. The Flemish Beauty pear stands at the head of all pears in Vermont—is perfectly hardy.—*Rural New Yorker*.

CULTURE OF CLIANTHUS DAMPERI.—On the 1st of February put two seeds in the pot in which the plants are intended to flower—an 8-inch pot is quite sufficient. For soil use turfy loam and a little well-decomposed dung, with a mixture of sand; charcoal drainage is good, and a little turfy fibre to surround the collar of the plant I consider is of great importance. Plunge the pot or pots to the rim in a brisk bottom heat, and if a square of glass is placed over them the seeds will germinate sooner. If one seed come it is well, but if two vegetate it is better. By no means separate them, as two plants make a splendid specimen, or rather a better display. Over-watering is fatal; give only a little when they are in need of it. Plenty of light and air must be afforded.—*Cottage Gardener*.

HOW TO MAKE THE QUINCE FRUITFUL.—I had in my garden several trees, which for quite a number of years had never borne the value of one peck of fair quinces, and I had about made up my mind to destroy them, when a neighbour called on me and stated his had been in a similar condition until he took them in hand. First he trimmed out all dead and useless wood. He then hoed and cleaned away all grass, &c., which tended to retard their growth, giving them clean cultivation. He then gave them a thorough manuring, with fresh horse manure, and from that time his trees had never failed to produce a full crop. I accordingly adopted his course to the letter, and so long as I continued this course had an abundant supply, and of the finest quality.—*Cor. Small Fruit Recorder*.

SEEDLINGS FROM EUROPEAN GRAPES.—We learn from a communication in the *Country Gentleman* that Mr. David Thompson, of Green Island, Albany Co., New York, has been making some experiments in the raising of seedlings from European grapes for several successive generations, in the hope that in this way he will be able to raise a generation of this class of grapes that will endure the climate of this part of the continent. It is claimed that he has so far succeeded that he has growing in the open air several hundreds of these seedlings, and sufficiently hardy to endure the climate at that place. It remains yet to test their adaptation to other localities by planting these seedlings or vines raised from cuttings of the most valuable in different parts of the country. This is an experiment that might easily be tried in any part of Canada, requiring only a little exercise of patience in rearing and fruiting the vines for a few generations, and this could be done in a few years, as the vine will usually fruit the fourth year from seed.

Household.

How to Prevent Oil Lamps Bursting.

A late number of the *Scientific American* contains a valuable letter from Prof. J. M. Barbour, of La Grange College, Missouri, on a very simple device for preventing the bursting of oil lamps. It consists simply in fastening the burner on with a cork instead of a screw, when, if an explosion does take place, the cork will blow out, leaving the lamp and oil intact. He has experimented for over twenty years in explosive gases, and has proved the correctness of this plan upwards of five hundred times during his lectures. For instance, he fills a strong glass decanter of one quart capacity with equal volumes of olefiant gas and oxygen, and plugs the mouth tightly with a cork. When the gases are fired it will blow the cork out with a loud explosion and force, but the decanter, which he holds during the experiment in his hand, is unharmed. The same experiment may be tried with an ordinary lamp with perfect safety. The reason why the glass does not break is because there is a ready exit for the force, and there is no necessity for rupture. The olefiant gas and oxygen exert a greater explosive force than could possibly take place with any mixture of hydro-carbon vapor and atmospheric air. The only danger when applied to an oil lamp, would be to throw out the inflated wick along with the cork; the oil, according to the Professor's experience, would seldom, if ever, ignite. The device is not patented, and it appears effective and reasonable enough to knock all the other patent safety non-explosive contrivances into the shade.

VARNISHING.—When applying varnish, do it quickly, have the material cut or reduced with spirits of turpentine until it flows freely and without a gummy feeling. Do not brush after the varnish begins to set, but thoroughly before. A heavy or very light coat will not prove best, a medium coat should be the rule. After a little practice all the furniture of the house, and the bugies, carriages, etc., about the premises may be kept looking like new with little expense, and without employing a practical painter.—*Ohio Farmer.*

An enterprising housewife in Ohio, who for several years has received the first premiums for the best display of canned fruit exhibited at the annual State Fairs, was abruptly deprived of her laurels this year. Her fruit was as fresh and plump-looking as usual; but there happened to be lady on the committee for awarding premiums who insisted on opening one of the cans, when it was discovered that the fruit had been put up in strong brine. As this process of preserving fruit, although novel, was not considered such an improvement as to merit encouragement, the collection was promptly ruled out, to the great indignation of the fair owner.

Poetry.

Growing Old.

Ah me! How fast the years go on
The gray hairs mingle with the brown!
And yet these whitening hairs should be
A chain of silver links to me,
Forged by the gentle hand of love,
To lift my earth-bound heart above!

Sadly I watch the fires burn low,
Which in these dimmed eyes used to glow
But courage, heart! When falls the night,
Then hidden stars reveal their light!
Shall not my soul, heaven lit within,
Gleam brightly out, though eyes grow dim.

How fast Time's ruthless fingers trace
The lines and furrows in my face!
Yet, though the world finds written there
Only decay and age and care,
Set in my forehead let me see
God's seal of immortality!

God can take from me all my store,
Yet leave me richer than before.
Trustful, through life his hand I'll take,
And Time's sad changes he will make.
My stepping-stones to that best shore
Where change is gain and time is o'er.

Wrecks.

Through all the dreary dismal night
The storm king rules with ruthless power
And straining eyes seek for the light
That flashes from the beacon tower

Out where the long reef's breakers glare,
And sunward toss their diamond rain,
The morn, at last, with golden lance,
Has pierced the dizzy lighthouse pane

A fair, frail form, is kneeling there,
Amid the breakers' deafening roar:
To Heaven she lifts her pleading prayer
For one whose ship will come no more.

The rocks are strewn with wrecks at morn,
And many wrecks no'er reach the shore;
And many hearts are rent and torn—
But wrecks of what they were before.

O maiden, in the lighthouse tower,
Thy watching and thy prayers are vain
No plea of thine, or wish has power
To bring the lost to thee again

Above him float the wreck and drift,
The yeasty surge, the froth and foam
The restless waves that change and shift,
The roll'g tides that go and come

The passing keels of home-bound ships,
The storm's loud shriek, or loved one's prayer
Naught, naught can move those silent lips,
No sound can reach that listless ear.

'Tis thus with life's bright hopes and dreams,
'Tis thus life's joys and shadows blend
Thus come to naught its cherished schemes,
And thus its high endeavours end.

Wrecks! wrecks! wrecks! all about are strewn
On sea, and land, and everywhere
Not wrecks of costly ships alone,
But wrecks of hopes and hearts are there.

Ah, we must lift our hearts above
To find a shelter from the storm,
And trust in Heaven's unfailing love
To keep us ever safe from harm.

Agricultural Intelligence.

Hamilton Township Farmers' Club.

At a meeting of the Township of Hamilton Farmers' Club, held on the 16th December, Mr. W. Riddell introduced the subject of discussion by reading a paper on

THE BEST AND MOST PROFITABLE BREEDS OF CATTLE.

The question was treated with special reference to the circumstances of the township and neighbourhood.

From the earliest records of our race we find that cattle have been domesticated and in the service of man. In early times the natives of Egypt, India and Hindostan, showed the high value they placed on cattle by putting the bull and cow among their deities, and judging from their use in almost all climes, no animal could have been selected whose value to mankind is greater, as not only the milk and flesh, but almost every part of the animal, is useful—the fat, the skin, hair, horns, and intestines.

The use of the ox in agricultural and other labours may be traced in almost every country, and to periods of the remotest antiquity. In South Africa they are as much the associate of the Caffres as the horse is of the Arabs; they share his trials; they have been trained for war. In Central Africa they perform the same service for the fashionable ebony beauties that our well trained steeds do for fair ladies among ourselves. In Spain and other countries they trample out the corn. In India they raise the water from the deepest wells to irrigate the thirsty plains of Bengal. Their value and usefulness to the early pioneers of our forests are undeniable. All those of us who have had any experience in clearing up new wild lands can bear testimony to this. As to the cow, it is hardly possible to do justice to her value; rich and poor are alike dependent upon her for those highly esteemed and useful articles—butter and cheese.

The rearing and feeding of cattle is one of the most important branches of agriculture. Much of the success of a farmer depends upon the judicious management of his live stock, without which our land cannot be maintained in a proper state of fertility. We should like to impress this homely motto on the minds of our farmers, "that without dung there is no corn—without cattle there is no dung."

So far as the necessity of keeping cattle is concerned, we are, I suppose, all agreed; but most likely on the question which is the best and most profitable kind to keep, there will be a great difference of opinion. No doubt our friends, Westington, Deioe, and others, will tell us that the Durhams are the best and most profitable; while Mason, and Eagleson, will be ready to reply—commend them to the Devons for profit; and Wright, Pratt and

Newton will stand up stoutly for the greater profitableness of the Ayrshires; and I have no doubt that my esteemed friend Mr. Roddick will tell us that he prefers the Gallo-ways to any of them.

We do not suppose that any one breed of cattle can in all circumstances be said to be the most profitable. Much depends upon the purpose for which they are kept. Some keep cattle strictly for breeding purposes, raising stock to sell for breeders. In that case they must keep a breed that is in demand—for which they can find a ready market. Others, again, keep cattle chiefly for giving milk, either for selling new or else for making into butter and cheese. For this purpose alone we would infuse the Ayrshire blood into the best of our common stock. The number of cheese factories that have grown up amongst us of late years has caused some of our farmers to turn their attention chiefly to keeping cows to supply these factories with milk. Others, again, depend chiefly on feeding, turning their cattle into beef. Most of us, however, use them for all these purposes, breeding from them what stock we want, milking them, and, when no longer profitable for these purposes, we turn them into beef. I need hardly remind this meeting that, though we speak and hear of *native cattle*, there is really no such thing as a native breed indigenous to Canada, but that all our cattle have been introduced into the country, from time to time, by settlers, from the places they came from, and no doubt from the breeds they fancied or could procure.

The Durhams, or Shorthorn cattle, have for many years past been the most fashionable and favourite breed both in Britain and here, and they are fast spreading to many other countries. Their large size, their early maturity, their fattening properties, render them very desirable stock; but their high price will long prevent the pure breed from becoming common among our farmers; but I think that thorough-bred bulls of this breed, used on the best of our common cows, (a cow ought always to carry her pedigree with her), will give us as profitable a beast as we can get. Taking care always to use a good bull—one as near thorough-bred as we can get—this will give us a good hardy grade, of good size, that will give us as much milk as any other breed, and will likewise fatten well when past milking. The steers, too, make good oxen, if any are wanted; they feed well, and make good beef at an early age. There is, I think, little doubt that the Ayrshires will give more milk on the same feed than the Durhams will. For milking properties alone, the Ayrshire breed stands undoubtedly at the head of the list, but, as compared with the Durhams, they are rather deficient in size, do not fatten so easily, the steers are not so large, nor—at least when young—do they fatten so easily.

Of Devon cattle I have had no experience.

They are reported to make the best of working oxen, and to do better on light pastures than the Durhams.

Though not immediately connected with the subject allotted to me, I may be allowed to say that much of the profit of cattle depends on the manner they are kept. I say nothing of winter keeping, as that was discussed at our last meeting. I rather think that many of us keep rather too many cattle for our pasture. I am every year more and more impressed with the opinion that it would be profitable for us to grow some kind of feed (say Indian corn or tares, or something of the kind,) for our cattle, when our pastures begin to fail, as they usually do, during our summer droughts, especially in such a dry season as the past, when our pastures were dried up early, and we had very little fall feed.

The total number of cattle reported in this township by the census of 1861 was 4,977. The census of the present year for cattle has not been published yet, as far as I know; but judging from the assessors' returns, there is just about the same number of cattle at present in this township as there was ten years ago.

Mr. Wm. L. Burnham said, that as far as his experience went, he agreed generally with what Mr. Riddell had said; he did not go for a pure breed; he liked his stock mixed with the Ayrshires; did not approve of the pure bred Ayrshire, but liked a cross from them and the Durhams; thought that cross was the most profitable both for the dairy and for fattening.

Mr. Edward Bellerby had always endeavoured to get the largest cattle. As long as he got bulk he was satisfied. He generally tried to get a good large grade, with a good deal of Durham in it; they answered him best in the barn-yard. He always could get an extra price for a large animal.

Mr. Pratt said that he had had experience in breeding cattle for twenty-two years. He first tried the grade Durhams, putting his cows to Mr. Wade's bulls; he found the steers and heifers from them rough, large beasts, very hard to make into beef; thought them at best a coarse animal, that cost more to make into beef than they were worth when fed. He then tried the Ayrshires; they were, he thought, the most profitable animal for any farmer to keep; thought they were hardier than the Durhams, and gave far more milk. In our mixed husbandry we wanted an animal that would give us the most milk, butter, and cheese, for the feed consumed. He believed that was the Ayrshire. A Durham cow would milk very well for a month or two after she calved, but soon failed in her milk, while the Ayrshires would milk all the year round. It was a trouble for him to get his cows dry when he wanted them, as he liked them to go dry a month or so before they calved. He got more milk from his cows now than he did in the latter end of October; thought that if he had had Durhams he would have had no milk by this time; was sure the Ayrshires would produce more money from the same ground than the Durhams would; for beef alone the Durhams might be best; but for milk, or milk and beef combined, the Ayrshire was far the best and most profitable.

Mr. F. Aitchison said he could say very little about this business of breeds of cattle. He had some experience in Durhams and grades. In his part of the country he knew some hired men who bought the large Ayrshires, because they thought they *eat most feed*, (their masters had to feed the cows, and they wished as much for their work as possible); but those who were not so greedy were content with a smaller grade cow. They often made two or three pounds of butter a week with the small cows, as the others did with the large Ayrshires; thought our common cattle were hardy and easily kept; good for milk, but they would not make as much beef as the Durham grades would; he liked the Durhams, but their price was high in this neighbourhood; thought a cross with them was the most profitable for our farms; thought the old-fashioned Durhams rather hard to feed, but that our present Durhams were good for both milk and beef; thought to cross Ayrshires with the Durhams was rather an unnatural cross.

Mr. Bourn thought that what thirty years ago we used to call a good native made a first-rate animal for milk; but these cows, when fed, did not come to the shambles as well as the Durhams or their grades did; the higher bred the animal was, the better for beef, but not for milk; thought that for our purposes cows were best about three parts bred, (but you lost if you put such cows to a common bull); the steer, too, fed well, would make eight or nine hundred weight, at, say two years and six or eight months old, on pasture, with a month or two of feeding at last; thought these grades the most profitable, as they would milk well if not too high bred; though he had seen common cows milk better than them; would advise not to over-feed a breeding cow; he had to physic them sometimes before calving, for fear of the milk fever; he preferred the Durhams to the Ayrshires; thought a grade Durham was equal in milking qualities to a grade Ayrshire; held that the Ayrshires required more feed to put on extra weight than the Durhams did.

Mr. Lapp never went into breeding much; was very favourable to Ayrshires mixed with our common cattle; found them very profitable for dairying purposes; to feed the Durhams might be better than the Ayrshires; but he never went much into feeding cattle.

Mr. Sidey said he regretted there were so few of our farmers that took any interest in these meetings. He thought it would be both pleasant and profitable to meet and exchange ideas with each other, for a few hours once a month or so. With reference to the subject of discussion, it was a new idea to him that we really had no native cattle; if we had any, he supposed they would be allied to the buffalo. In crossing, if for beef, would prefer the Durham; if for milk would cross with the Ayrshires; with a cross between our common cattle and a Durham bull, he could bring to the market, in say at two years and eight months old, a far better animal than our common cattle, at the same expense. He thought this cross would exceed our common cattle fully one-third.

BOW PARK SALE.—The sale of short-horns at Bow Park came off very successfully on Tuesday, the 19th December. Over 500 persons were present from all sections of the Province. The stock was in excellent condition, and sold well. Mr. Mathews, Mayor of Brantford, officiated as auctioneer. Twelve head of splendid prize steers and other stock were sold at private sale.

Agricultural and Arts Association.

A meeting of the Council of the above Association was held on Wednesday the 6th Dec., in the Agricultural Hall. There was a full attendance, the Hon. Mr. Skead occupying the chair.

The minutes of the last meeting were read and confirmed.

THE PROVINCIAL EXHIBITION AT LONDON.

The long-contested account of expenses for entertaining the visitors from the Maritime Provinces to an exhibition held in London in 1869 was at last ordered to be paid, the amount being about \$300.

THE LATE EXHIBITION AT KINGSTON.

The Secretary read his report as provided by the statute of the affairs of the late exhibition at Kingston, giving a detailed statement of the number of entries in the various classes and the financial result of the meeting. The report which was addressed to the Hon. J. Carling was very long, and occupied some time reading.

COMMUNICATIONS.

The Secretary announced the receipt of a catalogue of the First Annual Exhibition of the Provincial Agricultural Association, held in the town of Winnipeg, on the 4th, 5th and 6th October last. The prize list was a long one, in the premiums comparatively large. A letter from Mr. G. B. Spencer, of the Customs Department at Winnipeg, accompanying the catalogue was read. Mr. Spencer in one part of his communication said, "I regret that the Fenian Raid which took place on the same week of our first Exhibition, prevented not only exhibitors but spectators being present. We, however, continued it and kept open one day, which will have a most beneficial effect on the Exhibition to be held next Autumn. You can readily imagine the serious effect, injurious to our cause, when I tell you that on Wednesday, Thursday and Friday, the days set apart for our Exhibition, no less than one thousand men enrolled themselves to serve in defence of our country during those three days. The excitement was intense, and, moreover, the extensive prairie fires, raging before and about that time, also prevented many exhibiting. We, however, anticipate a most favourable result next autumn."

Several other communications upon minor matters were read, and action taken upon them. The affairs they referred to were of no public interest.

THE HERD BOOK.

Mr. YOUNG said that several enquiries had been put to him as to when the herd book would be ready for publication.

The SECRETARY said that the book was ready for the press at any minute, and only awaited the sanction of the committee, which had not yet met to consider the subject.

The Hon. DAVID CHRISTIE suggested that animals of four crosses should be recognised as eligible to be entered in the Herd Book;

that was done in England, and he did not think it well to adopt a higher standard here.

After some further conversation it was agreed that the matter should be referred to the Committee for them to report on in the morning.

The Board met again Thursday morning at half-past nine o'clock.

A number of accounts were passed.

The chairman of the committee to whom was referred the question of the standard of eligibility for entry in the Canadian Herd Book, and the prefixing of stars in pedigrees which are not regular, reported that the committee recommended that the standard recognized in England, viz., the possession of at least four well established crosses by thorough-bred bulls—be the standard for admission to the Canadian Herd Book. The committee could not recommend the admission of stars, in cases of defective pedigrees referred to in the second volume of the Canadian Herd Book.

It was explained that a star attached to the name of a sire signified that his pedigree was not well established.

The report was adopted. No other business of importance was transacted.

Hamilton Farmers' Club.

WINTER CARE OF STOCK

At a meeting of the Township of Hamilton Farmers' Club, held at Coldsprings, on Wednesday, the 29th of November—Peter Sidey-Esq., in the chair,

Mr. John Pratt, who had been appointed at the last meeting to introduce the subject for discussion, said that, in speaking of the care and management of farm stock during winter, he would begin with the most important of our farm stock—the horse.

The horse should be kept in a stable of moderate temperature, light, and well ventilated. He should have a sufficient supply of hay and oats, with a few turnips or carrots, be fed regularly, and be supplied with plenty of water; he should be well littered, kept clean, and sufficiently exercised when not working; if he is working constantly, he should have a full supply of the above feed. Young colts, before they are taken from the mare, should be fed a little to accustom them to eat, the feed to be a small quantity of boiled barley or oats; this feed to be continued after they were weaned, with hay when they are put in the house.

Cattle should be tied up in the stables as soon as the after-grass fails in the fall. Care should be taken not to leave them out too late in the season, as they lose flesh fast in cold, wet, stormy weather. They should have a liberal supply of clover hay or clean oat straw, and turnips or mangolds; they should be allowed to run out through the day when the weather is fine, with free access to water at all times when out. Calves need not be

tied up, but may be put in a house where they can eat out of a rack or manger.

Sheep should be kept in a dry, airy house, and fed with clover hay and turnips; they should have a yard to run in at leisure, and not more than twenty should be kept in a flock together.

Pigs should be shut up in a dry, warm place, well littered, and have plenty to eat.

Mr. F. Aitchison said he hardly knew what to say about feeding stock. He almost let his stock come and go as nature sent them. He agreed generally with Mr. Pratt about feeding horses. He would give them plenty of hay and oats, with a feed of boiled barley once or twice a week. Several things had to be considered in feeding; economy had to be studied; hay, at eighteen dollars a ton, was expensive feed; so were turnips; would rather let them live at the straw stack, would prefer good dry open sheds for his cattle, rather than tying them up; thought they would stand cold better coming out of a good open shed than coming out of a warm stable. Calves he would tie up all night, and let them run out in the yard all day, and throw them the refuse of the horse stable to work among. Sheep he would keep in an open shed, and pen together; approved of giving them pea-straw all winter; thought they did as well on pea-straw (not over well thrashed) as on hay; when the lambs were about coming, the ewes ought to have some gruel and some turnips, so as to feed the lambs well and give a good growth of wool. One thing he thought Mr. Pratt had overlooked, that was salting stock in winter; did not believe that stock ought to have much salt during winter, as at that season they were apt to take more than was good for them if they had the chance.

Mr. Pratt explained that his cattle did not seem to care for salt in winter. He always salted his hay well, and perhaps they got as much that way as they needed.

Of pigs, Mr. Aitchison thought he would keep few or none; with pork at four dollars a hundred, they were not worth keeping; were troublesome stock any way; had to keep his shut up all the time; thought he killed our pigs too young; would make better meat if they were older; never thought he could make pigs too fat.

Dr. Tisdale thought that any animal used for food ought to be kept in as natural and healthy a state as possible. Pigs ought not to be kept and fed as they usually are, shut up in a dirty pen, and made as fat as possible; they ought to be fed with corn, kept clean, and allowed room for exercise. Most of our bilious troubles, so common in the country, were caused by using too much fat pork; if fed as he had said, or on grass, pork was as wholesome as any other meat if not too fat. No animal, when overfat, was wholesome meat. He spoke of pork chiefly as a summer diet. In Russia, in winter, to keep up the calorie, they actually took oil.

Mr. Sidey said that he considered fat a heat-producing article; thought that fat meat kept up heat; thought that Mr. Aitchison's was mistaken economy in feeding stock; thought there was no way of keeping stock

cheaper and better than in building good houses for all of them as soon as we could; when tied up, the small or weak cattle got whatever you liked to give them, and could eat it in peace without being driven about by the larger beasts; thought there was no danger in giving cattle all the salt they liked during winter, if given regularly, or laid in troughs, in some place where they could get at it whenever they liked; thought that salting our straw stacks would probably be as well as giving them the salt; thought they ought to have it at least once a week; thought salt gave cattle an appetite.

Birmingham Cattle and Poultry Show

The annual show of fat cattle and poultry was held in Birmingham during the last week of November. The display of cattle was excellent in most of the classes. The first prize for the best animal in the show was won by Mr. Bruce, of Burnside, for a remarkably fine polled heifer. The best Shorthorn, taking the awards of the judges as the criterion, was shown by Mr. Stratton, of Alton, Wiltshire; the best Hereford by H. Bellridge, East Hanney, Berkshire; and the best Devon by Trevor Lee, of Broughton House, near Aylesbury. In this class the Queen also showed some fine animals, which were "highly commended." In Herefords, Her Majesty gained the first prize for a two-year old steer.

In reference to the award for the best animal in the show, the *Mark Lane Express* observes:—

In the course of ten years the Innkeepers' Plate or prize for the best beast in Bingley Hall has been won at four meetings by Shorthorns, at three by Scotch black Polls, twice by Herefords, and once by a Shorthorn-and-Aberdeen cross. On three of these occasions the best of all has been taken from the cow and heifer classes, but it may be interesting if not more directly useful to give the complete return:

- 1861—Mr. McCombie's polled cow.
- 1862—Mr. Stewart's cross-bred ox.
- 1863—Mr. Swaisland's Shorthorn heifer.
- 1864—Mr. Phillips' Hereford steer.
- 1865—Mr. Rowland Wood's Shorthorn steer.
- 1866—No show of cattle.
- 1867—Mr. McCombie's polled ox.
- 1868—Mr. Heath's Hereford steer.
- 1869—Lord Aylesford's Shorthorn steer.
- 1870—Mr. Pulver's Shorthorn steer.
- 1871—Mr. Bruce's polled heifer.

Of these, Mr. Swaisland's Shorthorn heifer, Mr. McCombie's polled ox, and Mr. Heath's Hereford, were also *gold medal* animals at the Smithfield Club show; as since the establishment of a Champion Plate in London the Birmingham ruling has been followed with Lord Aylesford's and Mr. Pulver's Shorthorns.

There was a beautiful display of sheep, with Lord Berner's Leicesters as usual taking the chief honours. The Prince of Wales gained the first prize for Southdowns.

The show of pigs was of moderate merit; the Duckerings, who have been for two successive years at the head in this class, gave place to more successful competitors in the persons of J. Wheeler & Son, winners of the cup for the best pen of small-breed pigs; the Marquis of Aylesbury, who gained the first prize for the three best fat pigs of one litter under 10 months old; and J. Biggs, of Leighton Buzzard, who took similar honours for the three best under 15 months old. Some pigs were again disqualified on account of age by the referee, Professor Gamgee, in spite of positive assertions on the part of the exhibitor's farm steward that the ages were correctly stated, and that the disqualified animals were of the same litter as other pigs that were allowed to have been correctly entered. This will no doubt subject the teeth test to sharp criticism.

Of the exhibition of poultry, the *Mark Lane Express* says:

Bingley Hall still maintains its supremacy in respect to its exhibition of poultry, of which there was a grand display, with no less than 2,057 pens. All the varieties but the pigeons were well represented, and the general condition in which the specimens were shown is highly creditable. The following weights of the winning pens may be interesting:—Ducks, white, Aylesbury, drake and one duck, 1st, 17lb. 12oz.; 2nd, 16lb. 12oz.; 3rd, 15lb. 4oz.; 4th, 13lb. 10oz. Ducks, Rouen, drake and one duck, 1st, 19lb. 5oz.; 2nd, 19lb. 1oz.; 3rd, 18lb. 15oz.; 4th, 18lb. 10oz.; 5th, 18lb. 8oz. Geese, white, birds exceeding one year old, gander and one goose, 1st 56lb. 9oz.; 2nd, 56lb. 9oz. Ditto, birds of 1871, 1st, 48lb. 6oz.; 2nd, 44lb. Ditto, grey and mottled, exceeding one year old, 1st, 60lb.; 2nd, 51lb. Ditto, birds of 1871, 1st, 47lb.; 2nd, 37lb. Turkeys, cocks, exceeding one year old, 1st, 36lb. 4oz.; 2nd, 32lb. 8oz. Ditto, hatched in 1871, 1st, 28lb.; 2nd, 23lb. 4oz. Turkeys, hens, exceeding one year old, 1st, 38lb. 12oz.; 2nd, 35lb. 8oz. Hens, hatched in 1871, 1st, 38lb. 10oz.; 2nd, 27lb. 2oz.

Smithfield Club Cattle Show.

The Smithfield Club Show of Fat Cattle, following as usual the Birmingham Exhibition, was held at Islington in the first week of December. Unfortunately, a number of the cattle transferred from Birmingham were found badly infected with foot-and-mouth disease, and some of the Bingley Hall prize beasts were not shown at all at Islington from the same cause—the presence of the malady having been detected in time to prevent their re-appearance in public. The occurrence of this dreaded disorder detracted not a little from the interest and success of the occasion. Nevertheless there was on the whole a good show. The Shorthorns were in largest force. The Herefords were only meagrely represented in point of numbers; Mr. Heath's ox being, according to the *Mark Lane Express*, one of the best of this class. Mr. McCombie's polled ox was beaten by better beasts. The Queen was the winner of the first prize for Devons.

The Champion Plate, a cup, value £100, for the best beast in the show, was won by J. Stafton, Alton Priors, Wiltshire.

Lord Berner's Leicesters were again a long way ahead in the sheep classes.

The pigs were a good show. The Queen's Suffolks, from the Prince Consort's Farm, Windsor, gaining first prizes.

The Diseases of Stock.

THE CATTLE PLAGUE.—The accounts received from France relative to the cattle plague are most discouraging, as they not only show that the disease is spreading at a fearful rate in many of the Departments where it has long existed, but that the authorities are far less vigilant than the emergency of the case demands. In the Department of the Nord the disease has now approached so near to the Belgian frontier that the greatest fears are entertained lest it should again enter that kingdom, to prevent which troops have been despatched to several places on the frontier. Upwards of 24,000 animals were killed in the Department of the Nord since September, and very recently about 200 in the district of St. Omer. Besides this serious state of things as existing in France, we learn that the cattle plague has again entered Moravia, and has broken out in four or five villages containing much cattle. The disease likewise not only maintains its hold in Lower Austria, but is extending the area of its infection, despite the repressive measures had recourse to by the authorities. The malady is reported to have disappeared from Verro in Livonia, but to be equally rife in Galicia and the southern parts of Poland.

THE SIBERIAN PLAGUE.—This disease, which possesses a fatality almost equal to cattle plague, and attacks horses and occasionally man himself, as well as cattle and sheep, has broken out with much virulence in several places in the Government of St. Petersburg, having travelled thither either by way of Archangel or Moscow. Special sanitary committees have been appointed, quarantine established, and military *cordons* drawn around the infected places, but at present with comparatively little benefit.

PLEURO-PNEUMONIA.—The infected counties of England number thirty-three, and of Scotland fourteen. No cases are reported from Wales. One hundred and eighty-six centres of infection exist in England, and fifty-eight in Scotland. The disease still continues in the dairies of London and some other of the large towns, information of its existence being suppressed as much as possible by the owners of the cattle. The reports from Holland show a still further diminution of pleuro-pneumonia in that country. Ninety-eight parishes are returned as centres of the disease, forty-one of which are in South Holland, twenty-one in North Holland, and twenty-six in Utrecht.

FOOT-AND-MOUTH DISEASE.—During the past month the fluctuations in the number of cases of this disease have been very considerable. On the whole, however, the beneficial effects of an increased vigilance on the part of the local authorities to give full effect to the means they possess for suppressing the disease have become more apparent. The attacks, which had risen in England, Scotland, and Wales, to about forty thousand in one week in September, have now decreased to about thirty-two thousand; but the centres of the infection have not materially lessened. The movement of diseased and infected cattle, Irish and English, is still among the chief causes of the wide diffusion of the disease. From the continent our information continues to show that a decrease of the disease is still going on in Holland, Spain, and other unscheduled countries.—*The Veterinarian for December.*

Canadian Farming.

A gentleman on the editorial staff of the New York Evening Post—a most respectable paper—has been visiting Montreal and inquiring into the condition of agriculture in the neighbourhood of that city. The conclusions arrived at have been set forth with great frankness in the Post. They are highly favourable to the character of the farmers in the localities examined. The writer says, among other things:—

“We came away with a very decided impression that we ‘Americans’ have a great deal to learn from our British American cousins, or that if we do not learn it we should miss an opportunity for real improvement; and that we are, even in our best cultivated regions, very much behind the Canadian standard of farming.”

“It is not worth while to trace out the why and the wherefore of this superiority, referring it to the soil, the climate, the accessibility of manure, and all that; the land is no richer, the climate is no more favourable, nor are the facilities for getting manure any better than in hundreds of counties at home which we could name. The true reason for the difference is to be sought in the character of the men who carry on the farms in the two countries. Without intending, of course, any disrespect to our farmers, we do not hesitate to say that we are very, very far behind our English-Canadian neighbours.”

Assisted Emigrants.

A considerable outcry is raised because a good many of those who, during the last few years, have been assisted to come to Canada by benevolent contributions from friends in England, under the promise that they would repay the advances made to them, are not fulfilling these promises, though now perfectly able to do so. We regret that this should be the case, though we are not very much surprised at it. A large number of those, thus sent, were thoroughly pauperized before, and received charity for subsistence as well as for emigration almost as a matter of right. Of course they ought to pay. It would be merely simple honesty for them to do so. But that they will is a different question. Of course the courts are open for the recovery of all just debts. It would be quite right to make an example of a few who are able but not willing to pay, and it might have a salutary effect upon others. They would scarcely like to be pilloried before the country.

Steps are being taken at Bracebridge to establish a cheese factory. It is said that Muskoka is admirably adapted for stock-farming and dairy purposes, and there would seem to be fair encouragement for the promoters of the scheme.

POULTRY SHOW AT BUFFALO.—The Western New York Poultry Society have determined to hold their second annual Exhibition at St. James Hall, commencing January 16th, and continuing till the 23rd.

MR. COCHRANE'S EXPORTATIONS.—Mr. Cochrane has recently sold to the Earl of Dunmore eight head of Shorthorns, consisting of two Duchesses, two Oxfords, and two Cambridge Roses. The two Duchess heifers are the produce of Duchess 101st and Duchess 103rd, which Mr. Cochrane bought in calf last summer for 2,500 guineas, and the same price has now been paid for their calves. These high-priced animals have safely arrived at their destination on the other side of the Atlantic.

Australian meat, preserved, is, according to English papers, beginning to compete, in England, with the home product, and affect the butchers' trade and the cattle market. The Governor of the Montgomery Prison has, he writes to the London Times, tested it in a variety of ways, and it has proved highly satisfactory and much cheaper than the English butchers' meats. This meat is so preserved that it is not necessary that a can's contents should be used up immediately after it is opened. He had a six-pound can opened, and it kept eleven days in the larder perfectly good.

The United States census bureau has prepared the following table which shows the value of farm products in each State, exclusive of live stock, for the year ending June 1, 1870. It is the first table of the kind ever compiled with any degree of accuracy.—

Table with 2 columns: State/Territory and Value. Includes Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Tennessee, Texas, Vermont, and Territories (Arizona, Colorado, Dakota, Idaho, Montana, New Mexico, Utah, Wyoming).

The Museum of the Agricultural Department at Washington has recently received several very interesting additions, among which are mentioned specimens of some new varieties of silk-worm eggs, and rich crape silks from Japan, through General Capron, together with specimens of a peculiar kind of paper, having a leather-like fiber. The silk made by these worms is the finest produced in Japan, and is of such quality that the French Government has, for a year or so past, been introducing the eggs into France for the purpose of improving the breed of their own silk-worms.

A new article of commerce which the New York custom house returns show has been imported in large quantities, the past year, is 'paucaution juice,' and is produced in Jamaica and San Domingo. Only lately has the virtue of this substance been known. It is of a gummy nature, capable of being turned into an article as beautiful and useful as the best paper-mache, and at a much less cost. It is pronounced a beautiful and durable material for book covers, while the cheapness of its production will make it very popular.

Mr. John R. Craig, Edmonton, has recently effected the following sales of unreported stocks.—To S. G. Reed, Portland, Oregon, imp. Berkshire sow Romford Belle, for \$500—took first prize for sow under one year at Essex County Show, Romford (Eng.), June, 1871. To same person, a young Berkshire boar, 10 days old, for \$200, from imp. prize sow bred by Lord Clermont, Newry, Ireland. To James Orr, Wexona, Ill., imported Berkshire boar, 3 months old, for \$100. To Mr. Stratton, Litchfield, Ill., imported Berkshire boar and sow, 3 months old, \$200. To Jas. M. Wills, Bloomington, Ill., imported Berkshire sow, 3 months old, \$100. To J. Kepple, Bardolph, Ill., imported Berkshire boar Gunpowder, 10 months old; imported Berkshire sow, 3 months old; and 3 Berkshire pigs, 4 weeks old, all for \$25. To H. C. Wiswall, Jacksonville, Ill., Berkshire boar pig, 10 days old, from imported prize sow bred by Lord Clermont, Newry, Ireland, for \$100. To D. H. Marvel, Holt, Clay Co., Mo., Berkshire boar pig, 4 months old, \$110. To J. K. Fish, Lone Jack, Jackson Co., Mo., Berkshire boar pig, 4 months old, \$110. To T. J. Crowder, Springfield, Ill., Berkshire boar, 4 months old, \$125. To Chas. Snoad, Joliet, Ill., Berkshire boar St. Louis Victor, 4 months old, winner of the sweepstakes at St. Louis, 1871, for best Berkshire boar, also sweepstakes at Canton, for best boar, any breed, under 6 months. To Col. J. T. Crisp, Kansas City, Missouri, a pair of Berkshire pigs, \$550. To J. Hoyt, Michigan, and to John Boyd, Tullamore, Ontario, Cotswold ram lambs.

BET SUGAR IN MASSACHUSETTS.—A correspondent of the Country Gentleman says: The experiments in beet sugar at the agricultural college at Amherst, Mass., are beginning to reach practical results. They show that the dry, hardy, rich land of New England, does produce a sugar beet superior to the general average of the best beet sugar districts of France. It is farther a fact that beet sugar, as a whole, never has been abandoned on any site where it has been begun. A few locations do not produce the beet, and others have no permanent water; but no trials where the requisites of the culture have been found have ever fully been defeated. Hence this success on the agricultural farm in Amherst is of great value. I will not anticipate the final results which will in due time be published, and will only say that the Vermont beet is seen to be the best. The process is easy, and the machinery comparatively inexpensive.

ONTARIO VETERINARY COLLEGE. — The examination of candidates for diploma at the close of the winter term of this valuable institution, took place in the Veterinary College building, Temperance street, Toronto, on Thursday afternoon, December 21st. The examination was principally oral, and was conducted with much care and fairness, so as thoroughly to test the knowledge and requirements of the students, who acquitted themselves for the most part with great credit. The following gentlemen conducted the examination:— Drs. Barrett, Temple, and Thorburn, of Toronto; Messrs. Hayyard, V. S. Campbellcross; Sweetapple, V. S., Brooklin; Cowan, V. S., Galt, and Wilson, V. S., London. Several of the old graduates and other gentlemen were also present. The following are the names of the successful candidates:— Robert Charles Hutchings, William Colclough, Joseph Hawkins, John James Richardson, William Charles Kidd, James Gibson, John Speirs, Robert Young, William Cooper Fair. The school will reopen with the same efficient staff of Professors as heretofore, on the 3rd of January.

WINE GROWING IN CALIFORNIA.—In the December number of *The Overland Monthly*, in the course of an article with the above caption, gives the following facts: Each district is gradually confining itself to its own proper character of wine, and a few years hence it will be known to a certainty which district is best adapted for producing a certain class of wine, and that class will be the only one produced there. Thus are our vintners, step by step, emerging from the chaos of inexperience, and acquiring additional knowledge. Those who had set out vineyards with the sole intention of selling their grapes for table use—and these were the majority—found the markets overcrowded and the cost of transportation and commissions so high that they were not left a fair profit for their industry, and were forced to make wine to save themselves. Cellars had to be dug, houses erected, presses built and casks procured; everything had to be created, and almost without material. Coopers could not be had for love or money; neither could oak staves. Every available pipe, cask and barrel was made use of, and extravagant prices paid for them. There were not enough even at 12 and 14 cents per gallon for second-hand casks, and from 18 to 20 cents for new. The vintners became alarmed; meetings were held, and resolutions were offered with a view to induce the importation of coopers and material. Gradually, through the persistent efforts of these pioneer vintners, material became plenty and good coopers numerous; new casks, declined in price to eight and nine cents per gallon, became abundant, and at these prices within the reach of every one. Soon whole crops found sale at fixed rates, which left a very fair profit to the producer; nor has this change stopped here, for the increase in production has become so rapid that it is at this moment almost impossible to find any quantity of one year old wine in the hands of the producer unless they make a point of keeping it for ageing.

Miscellaneous.

Beet Root Sugar in California.

The cultivation of the sugar beet is carried on in California quite extensively, the crop this year reaching eight hundred tons, or about sixteen tons to the acre, the yield of sugar being quite satisfactory. Last year the sugar product was five hundred thousand pounds, and this year it will reach 1,125,000 pounds, which will occupy the Alvarado Company's mill about five months. Another concern, called the Sacramento Company, expects to realize about four hundred tons of beets this year. Thus the crop has become a reliable and permanent one in California, and may soon be expected to increase to the same extent as other crops do in that favoured region, as the available area of land for the culture is ample for the production of a great crop, and the sugar market along the whole west coast is an excellent one.

Should the crop increase rapidly, it is also probable that California enterprise will market the sugar extensively throughout the whole interior of the republic, as the demand for sugar is a great one, and expands indefinitely. The experience with all other commodities known to commerce, in any way available for transit by the Pacific Railroad, warns us that if this California beet root crop can acquire as much headway as its founders contemplate, the article will be placed in the markets of the Atlantic seaboard in competition with cane sugar. A large part of the drain upon our gold market in the United States is caused by the demand to pay for sugar imported from such countries as Cuba and Brazil, which take from us very little in the way of merchandise. Hence, if we can by any possible means produce at home sugar enough to supply our own people, it will be so much clear gain, and it will cut off so much of the heavy drain upon our gold product. To this end no amount of ingenuity or enterprise should be wanting. To show how the countries of Europe avoid this drain of treasure to pay for foreign sugar, we give a statement of the beet root sugar works there at the close of 1870; total number of factories, 1,507; of these France had 483; Germany, 310; Russia, 283; Austro-Hungary, 228; Belgium, 53; Poland, 42; Netherlands, 20; Sweden, 4; Italy, 1; British Isles, 1. All must see that the same advantages accruing to those countries must accrue to us. —*German town Telegraph.*

Good Walks for Winter.

There are too many farmers in all sections who are in the habit of neglecting matters and things about the dwellings and outbuildings, which may be called *small comforts*. In many cases they are overlooked, and are not considered of sufficient importance to deserve attention, at least any special attention. Among these there is nothing that adds more, not merely to the comfort and convenience, but to the health of the family,

than *good walks* about the house and premises. We have known these in many instances to be utterly neglected. They are regarded as good enough when the weather is dry, and when the weather is wet they cannot be made better. And thus year after year the members of the family are left to wade through mud in the cow stables, hog-pens, wood or coal shed, to the pump or springhouse, to the place of drying the wash, and so on. Now, the labour it would cost to make hard dry paths to all these points is not worth mentioning. About every place there are stones, old mortar, bricks, &c., which could be laid down in an excavation of six inches and covered with coal ashes. This would last for a dozen years, and would always be dry in five minutes after a rain. Or, in lieu of this, lay down board walks, which, if taken up in the spring after the weather is settled and carefully piled up, will last from eight to ten years.

Try it. It will save in shoe leather and doctors' bills four times as much as the cost, leaving out of the question the great convenience and comfort enjoyed.

Tenant Houses.

Tenant houses on the farm should be more common. Farm labourers, those we pick around or who come along looking for a job, and hired for a few months of the year, are very often of indifferent character. Married men, on the contrary, have responsibilities, hence are steadier. These latter are the ones to employ on long terms, and for such tenant houses are necessary. The mechanic, when his day's work is completed, goes to his own home, not that of his employer. The same we may say of other trades, all, except in cases of apprenticeship, leading a distinct and separate life. That charm of life, the privacy of the domestic circle, is not broken in upon, as it must unavoidably be where the help is under the same roof. Little family affairs, nothing in themselves, but annoying when made common, are thus left at home; and your man cannot hire out to your neighbour next year and complain of the poor living he had at farmer A's., for his living he makes to his taste.

One great end attained by the tenant system is the lightening of the work and cares of the housewife. When I call on my farmer friend and take the noon meal with him, while watching the troop of hungry helps stowing away great heaps of food, I glance at his overworked, delicate wife, and begin to calculate how many more seasons she will grace and serve his home. I fear that the machinery of the farm is not properly adjusted. Most of the men are married, he tells me, and to women of far stronger constitutions than the one his wife is blessed with. Put these men in tenant houses, and let their wives cook and wash and mend for them.

By furnishing his help with houses, the farmer is also enabled to supply them with provision with profit to both. Our towns-

man, Mr. Geddes, widely known for his writings on agriculture, and a practical and successful farmer, provides houses for his labourers, and considers it the best economy.

While writing about hired men I will just tell a little story and then close. Two seasons ago there was a sort of agency in New York city for supplying farmers with men. It seemed a good thing, and some farmers about here made application to the agency. Well, two men were sent to one farmer, and were put to work. A few weeks afterward I enquired of him how he liked his help. "Good for nothing, and worse than nothing," was the reply. "Being city men, you see they have city habits. As there is no saloon on the farm to spend the night hours in when the day's work is done, they start for the village tavern. Now, what are those men worth to me for work after a night's carousal? I must rid myself of them immediately." And they went.—*Cor. Germantown Telegraph.*

Non-Smoking Chimneys.

To build a chimney so that it will not smoke, the chief point is to make the throat not less than four inches broad and twelve long; then the chimney should be abruptly enlarged to double the size, and so continued for one foot or more, then it may be gradually tapered off as desired. But the inside of the chimney, throughout its whole length to the top, should be plastered very smooth with good mortar, which will harden with age. The area of a chimney should be at least half a square foot, and no flue less than sixty square inches. The best shape for a chimney is circular or many-sided, as giving less friction (brick is the best material, as it is a non-conductor), and the higher above the roof the better.—*Scientific American.*

What Rats will Do.

Farmers who have large amounts of corn do not realize what quantities rats will take away to their nests and storing places. Thousands of bushels are annually consumed by the pests, and as it is the small drainages usually which take off the profit of farming, the matter of securely storing corn should be attended to.

An exchange gives an account of the works of rats in a hardware store, from which something of an estimate can be made. Forty-five pounds of choice pop corn were left in a box on the floor in the centre of the store. Next morning the box was nearly empty, and upon examination it was found that during the night the rats conveyed off thirty-one and two-thirds pounds of the corn, and concealed it in three different parts of the building. About ten pounds were taken through a small hole in the door between the store and the warehouse, some of which was concealed under the stairs in that part of the building, while four pounds were carried up the stairs—composed of twelve steps—and hid away in a pile of paper rags lying on the floor of the second story of the warehouse. The rats evidently worked faithfully all night, and no doubt chucked hugely next day over the princely supply of corn laid away for the winter's use.

Rendering Wood Fire-proof.

The *Engineering and Mining Journal* says: We can scarcely expect that the building of wooden houses will hereafter in all cases be forbidden by law, and no fire-proof material has as yet been discovered which can take the place of wood, which now enters into the construction of both brick and stone houses. Iron beams and columns have proved entirely inadequate to withstand an intense heat. They are, under such circumstances but little, if at all, better than wooden ones. They twist and curl to such an extent that in Chicago, buildings, it is said, fell down owing to the heat from neighbouring fires. We can, however, with but little trouble and expense, render wood almost as passive with regard to fire as brick or stone; and we think that this precaution should be insisted on by municipal authorities.

The process to which we allude, and in which there exists no patent, so that any one who likes can try it, is as follows: The dried lumber is soaked for a short time in a solution of soluble glass, a silicate of soda or potash, and then immersed in a bath of lime-water. In this way the silicate of soda is decomposed, and a silicate of lime formed in the pores of the wood. This substance occurs in nature as a mineral known as Wollastonite, and is both fire proof and insoluble in water; so that wood once treated this way will never change its qualities. Soluble glass is largely manufactured in this country, and used for a variety of purposes.—*Prairie Farmer*

Dressing the Earth.

Mr. Ruskin has resolved to give £1,000 to the British public; and has had this sum invested in Consols, in the names of two men of honour. Mr. Ruskin thus describes his plan of dealing with the money; I will tell you a little more of what we are to do with this money as it increases. First, let whoever gives us any be clear in their minds that it is a gift. It is not an investment. It is a frank and simple gift to the British people; nothing of it is to come back to the giver. But, also, nothing of it is to be lost. This money is not to be spent in feeding Woolwich infants with gunpowder. It is to be spent in dressing the earth and keeping it—in feeding human lips, in clothing human bodies, in kindling human souls. First of all, I say, in dressing the earth. As soon as the fund reaches any sufficient amount, the trustees shall buy with it any kind of land offered them at just price in Britain. Rock, moor, marsh, or sea-shore—it matters not what, so it be in English ground, and secured to us. Then, we will ascertain the absolute best that can be made of every acre. We will first examine what flowers and herbs it naturally bears; every wholesome flower that it will grow shall be sown in its wild places, and every kind of fruit tree that can prosper; and arable and pasture land ex-

tended by every expedient of tillage, with humble and simple cottage dwellings under faultless sanitary regulations. Whatever piece of land we begin work upon, we shall treat thoroughly at once, putting unlimited manual labour on it, until we have every foot of it under as strict care as a flower garden, and the labourers shall be paid sufficient, unchanging wages; and their children educated compulsorily in agricultural schools inland, and naval schools by the sea, the indispensable first condition of such education being that the boys learn either to ride or to sail; the girls to spin, weave, and sew, and at a proper age to cook all ordinary food exquisitely; the youth of both sexes to be disciplined daily in the strictest practice of vocal music; and for morality, to be taught gentleness to all brute creatures, finished courtesy to each other, to speak truth with rigid care, and to obey orders with the precision of slaves. Then, as they get older, they are to learn the natural history of the place they live in; to know Latin, boys and girls both, and the history of five cities—Athens, Rome, Venice, Florence, and London. Now, to what extent I may be able to carry this plan into execution, I know not, but to some visible extent, with my own single hand, I can, and will, if I live.

Preserving Farm Tools.

Every farmer should have a can of linseed oil and a brush on hand, and whenever he buys a new tool he should soak it well with the oil, and dry it by the fire or in the sun before using. The wood by this treatment is toughened and strengthened, and rendered impervious to water. Wet a new hay-rake, and when it dries it will begin to be loose in the joints; but if well oiled, the wet will have but slight effect. Shovels and forks are preserved from checking and cracking in the top of the handle by oiling; the wood becomes as smooth as glass by use, and is far less liable to blister the hand where long used. Axe and hammer handles often break off where the wood enters the iron; this part particularly should be toughened with oil to secure durability. Oiling the wood in the eye of the axe will prevent its swelling and shrinking, and sometimes getting loose. The tools on a large farm cost a large sum of money; they should be of the most approved kinds. It is poor economy at the present extravagant price of labour to set men to work with ordinary old-fashioned implements. Labourers should be required to return their tools to the convenient places provided for them; after using they should be put away clean and bright. The mould-boards of ploughs are apt to get rusty from one season to another; even if sheltered, they should be brushed over with a few drops of oil when put away, and will then remain in good order till wanted.—*Farm Journal.*

RENEWING PAINT.—When paint has an old, dingy look, take a flannel cloth, dampen it and apply as much first quality Spanish whiting as will adhere to it, and rub the paint. But little rubbing will be required to remove all dirt and grease. Rinse thoroughly with pure water and then rub dry with a soft cloth. Paint thus cleansed looks like new, and does not receive such injury as from soap suds. This process of cleaning is a good one to perform before laying varnish over old paint.—*Ohio Farmer.*

SMOKE STACKS OF RAILROAD ENGINES.—A farmer writes to the *Detroit Press* his belief, from actual observation, that one of the chief causes of the recent destroying fires in the woods and the prairies, is to be found in our railways, and pertinently inquires "why are not some measures taken by railroad companies in order to prevent spread of sparks and cinders, causing so much damage to farmers as well as to themselves? Our steam threshers work with safety among barns and stacks, their smoke stacks being fully secured against out-passing sparks, and why cannot a like safeguard be applied on railroad smoke-stacks?"

THE BEET SUGAR CROP OF EUROPE.—If the following statement from the *American Grocer*, of December 9th, is correct, it appears that Great Britain is an exporter of sugar of its own production:—"The beet root sugar crop of Europe has become a potent influence in the sugar markets of the world; in fact, it is the 'balance of power'—for its yield determines the amount to be taken from the cane-producing countries. The immense production of the last year made Great Britain and the continent almost independent of outside sources of supply; indeed Great Britain was an exporter of sugars. During the past year considerable quantities of Scotch refined sugars have been exported from Glasgow to this country. In colour it is a handsome yellow C, and competes successfully with our refiners, although it has to pay a duty of 2½c."

BUTTERFLY PICTURES!—In the woods, near Stamford Bridge, *Arge Galathea* formerly abounded, but it has not been seen for some years; indeed, several of our most conspicuous butterflies (notably *Io*, *Paphia Rhanni* and *Galathea*), have lately become rare, or disappeared from the neighbourhood of York, Leeds and Sheffield, and this not from any "improvement" of the land, or so far as appears, any alteration of the former conditions of their existence, but simply from their merciless pursuit and wholesale slaughter by the makers of butterfly pictures. The numbers thus annually destroyed are almost incredible. I have known 250 peacocks used in the construction of an elephant, and upwards of 500 *Vanessa Urticae* in the figure of a crocodile three feet long! *Galathea* was an especial favourite with the tribe; a portrait of Lord Brougham in butterflies, the checked trousers depicted by *Galathea's* wings, is considered a very clever work of art!—E. BIRCHALL, in *Newman's Entomologist*.

FIRE CAMPAIGN!



JOURNAL OF THE NORTHWEST.

FOR COUNTRY AND TOWN! FOR OLD AND YOUNG

STILL AT THE FRONT!!

FROM THE PEOPLE.—"The farmers must support their paper, for it has supported the farmers."—John Vasey, Jacksonville, Ill. "We can't do without the dear Farmer."—C. Bateman, Fort Calhoun, Neb. "I value The Farmer more than any other agricultural journal in the United States."—L. D. Watkins, Manchester, Mich. "We farmers love The Prairie Farmer."—L. S. Eldred, Carrollton, Ill. "You have the esteem and confidence of the Great West."—N. C. Dudley, Nursery Hill, Neb. "You can't think how overjoyed we were to hear from our dear old Prairie Farmer."—Kittie R. Jordan, Rochester, Minn. "When I heard of the great fire my first thought was about my dear old Farmer."—Wm. Landell, Jerseyville, Ill.

FROM THE PRESS.—"The leading agricultural journal of the North-west."—*American Artisan*, New York. "We only hesitate about urging you to subscribe for fear the result of it would be that you would go West."—*Vermont*, Vergennes, Vt. "Richly deserves the liberal patronage of the farmers of the West."—*Platte Journal*, Columbus, Neb. "A Western institution, of which we are all proud."—*Chief*, Fort Atkinson, Wis. "The most popular farm and family paper in the West."—*Advertiser*, Tipton, Iowa. "The best of farm journals."—*Courier*, Findley, Ohio. "The best and most ably edited agricultural paper."—*Missourian*, Lamar, Mo. "We don't see how a man can pretend to farm without it."—*Index*, Wenona, Ill.

Though our convenient and well appointed Offices, together with their entire contents, were totally destroyed by the recent Great Fire, yet the reliable old PRAIRIE FARMER, which for more than THIRTY YEARS had wended its way, Winter and Summer, through storm and sunshine, without intermission, to the firesides of its thousands of readers—true to its record, never missed an issue, but has been mailed regularly, every week since the fire, to all its subscribers. It has put on an entire new dress, and goes forth as neat and attractive, as handsomely illustrated, and as replete with varied and instructive contents, as ever. But our loss has been very heavy, and years of hard labor and frugality can scarcely repay it; yet, with God's blessing and the help of our friends, we shall strive to earn prosperity, and win a greater measure of success for THE PRAIRIE FARMER than ever. The brethren of the press have unanimously uttered noble and cheering words of praise and encouragement, and our patrons everywhere—the old wheel-horses of Western agriculture, and the readers of but half a year's standing; the wives and mothers, the boys and girls—have spoken and acted words of sympathy and support far beyond what we could have expected or hoped for. And now, as the long winter evenings are upon us, we are casting about to see how it may come to pass that we can, to some extent, repay all this spontaneous outburst of generosity and ardent support that indeed proves the whole world kin. We hope to do this by sending to the fireside of each patron something that shall instruct, something that shall improve, something that shall amuse, something that shall suggest thought, something that shall stimulate to experiment, something that shall make better and nobler every member of the family. With the farmer we shall discuss the matters of the field, the orchard and the stable. With the farmer's wife we shall gossip over the topics of the kitchen, the dining room and the flower garden. With the children we shall chat about all the little and big affairs of the world, that we think will do them good and make them excellent citizens and members of society. With all we shall fairly and fearlessly discuss the Topics of the Day. For all we shall condense the News of the Week, as we gather it from all parts of the world, and for the farmers everywhere, we shall endeavor to maintain their rights, protect their interests and warn them against frauds and rascalities, of whatever name or nature. In brief, we shall endeavor in THE PRAIRIE FARMER to supply everything that we know how to supply, or that the reader can expect, in a farm and fireside journal.

EVERY PERSON

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AGENTS! FRIENDS! EVERYBODY!!

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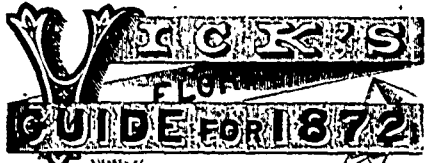
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Markets.

Toronto Markets.

"CANADA FARMER" Office, Jan. 12, 1872.

There have been during the past week slight signs of increased activity in the Produce Market, but, on the whole, the business does not have been inconsiderable. The visible supply of wheat at all the usually mentioned points in the United States and Canada at the close of the year, was 10,800,000 bushels, against 11,340,000 at the close of 1870.

In this city the wholesale prices are as follows:—

FLOUR AND MEAL.

Flour—Superfino, \$5 50; Spring Wheat, extra, \$5 55 to \$5 60; Fancy, \$5 60 to \$5 65; Extra, \$5 85 to \$5 90; Superior Extra, \$6 00.

Oatmeal—\$4 75 to \$4 80.

Cornmeal—\$3 40 to \$3 50.

Bran, in car lots, 17c to 18c.

GRAIN.

Wheat—Soules, \$1 28 to \$1 30; Treadwell, \$1 23 to \$1 25; Spring, \$1 23 to \$1 24; Do Midge Proof, \$1 13 to \$1 20.

Barley—No. 1, 68c. to 70c; No. 2, 60c. to 61c.

Oats—43c to 44c.

Peas—66c to 68c.

Rye—65c to 70c.

HAY AND STRAW.

Hay, in fair supply, at \$19 to \$24.

Straw, scarce, at \$9 to \$15.

PROVISIONS.

Beef, by the side, 5c to 6c.

Mutton, by the carcass, 4½c to 5c.

Apples, per bbl., \$1 50 to \$3 00.

Potatoes—per bag, 90c to \$1 00.

Poultry—Turkeys, 75c; Chickens, per pair, 25c to 40c; Ducks, per pair, 35c to 60c; Geese, 50c.

Pork—Mess, \$15.

Bacon—Cumberland Cut, 6½c to 7c; Canada, 6½c to 7c.

Hams—Salted, 8½c to 9½c; Smoked, 9½c to 10c.

Lard—9½c to 10c.

Butter—Dairy, choice, 18c to 19c.

Eggs—Packed, 20c to 22c.

Cheese—10c to 11½c; Reesor's Stilton, 18c; Royal, 17c.

Dried Apples—8½c to 9c.

Salt—Goderich, \$1 35; Liverpool, per bag, \$1 to \$1 10.

Dressed Hogs—\$5 00 to \$5 20.

Live Hogs—\$3 50 to \$4 12.

HIDES AND SKINS.

Hides—No. 1, cured and inspected, per lb. 9½c to 9½c; No. 1, inspected, green, 8½c; No. 2, inspected, green, 7½c to 8c.

Sheepskins—1st class, green, \$1 75 to \$2; Dry, 50c to \$2 00.

Pelts—6c.

Lambskins—\$1 50 to \$2.

Calfskins—Green, per lb, 12c.

Wool—Fleece, 40c to 43c; Pulled, 33c to 39c.

THE CATTLE MARKET.

Beves (live weight) \$3 00 to \$4 75 per cwt.

Sheep—\$4 50 to \$6 00.

Calves—Extra, \$10.

Lambs—\$4 to \$5.

New York.—Flour—Dull; receipts 5,000 barrels; sales 6,000 barrels; prices unchanged. Rye Flour—Dull and unchanged. Wheat—Dull, heavy, nominal; receipts 2,000 bush at \$1 54 to \$1 57 for No. 2 Spring, in store; \$1 59 to \$1 60 for No. 1 in store, \$1 63 to \$1 65 for winter red Western, \$1 70 to \$1 73 for amber Western; \$1 70 to \$1 73 for white do. Rye—Quiet at 98c to 92c for Western. Corn—Dull and lower, receipts 29,000 bush; sales 39,000 bush at 76c to 78c for new Western mixed assortment. Barley—Dull and unchanged. Oats—Lower; receipts 11,000 bush; sales 26,000 bush at 54c to 60½c for Western and Ohio. Park—Heavy at \$14 to \$14 25 for new mess; \$13 25 for old. Lard—Quiet at 9c to 9½c for steam; 9½c for kettle rendered. Butter—31c to 34c for new State and Western. Cheese—11c to 14c for common to prime. Petroleum—13c for crude, and 23½c for refined.

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THE CANADA FARMER is printed and published on the 15th of every month, by the GLOBE PRINTING COMPANY, at their Printing House, 26 and 28 King Street East, Toronto, Ontario, where all communications for the paper must be addressed. Subscription Price, \$1 per annum (POSTAGE FREE) payable in advance. THE CANADA FARMER is a first-class medium for agricultural advertising. Terms of advertising, 20 cents per line space. Twelve lines' space equals one inch. No advertisements taken for less than ten lines' space. Communications on Agricultural subjects are invited, addressed to "The Editor of the Canada Farmer," and all orders for the paper are to be sent to GEORGE BROWN, Managing Director.

1872 PROSPECTUS 1872

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SPECIAL CONTRIBUTORS—Professor BUCKLAND, E. L. CULL, Esq., J. A. CULL, Esq., C. E. WHITCOMBE, Esq., M.R.A.C., England.

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