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THE

# CANADA FARMER



VOL. III. No. 5.

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NEW SERIES.

## The Field.

### Turnips and their Cultivation

1.  
Turnip husbandry has been often called "the sheet anchor of British agriculture," and though our climate will ever prevent us growing them to the same extent as they do in Britain, where they can be fed off the ground by sheep in winter and spring, still they ought to be grown with profit, to a much greater extent than they have yet been done here. On no subject connected with agriculture has there been so much written during the last half century as on the subject of root culture, and principally in regard to turnips. It is a subject on which great diversity of opinion exists. It is not expected that anything new can be said on this topic. Nevertheless, it may not be unprofitable to review a subject of so much importance.

#### HISTORY.

The turnip (*Brassica rapa*), a well known biennial plant, with lyrate, lispid leaves, the upper part of the roots becoming, especially in cultivation, swollen and fleshy. It is a native of Europe, and the temperate parts of Asia. It is commonly regarded as a native of Britain, although in most cases of its being found wild there, it may be doubted if it has not derived its origin from cultivated varieties. It has been long cultivated, and is to be found in almost every garden of the temperate and cold parts of the world as a culinary esculent. It was cultivated in India long before it could have been introduced by Europeans, and is common there in gardens and about villages. It is rather remarkable that no turnips should have been raised in fields in Britain till towards the end of the 17th century, when it was lauded as a field root as long ago as the days of Columella, and in his time even the Gauls fed their cattle on them in winter. The Romans were so well acquainted with turnips that Pliny mentions having raised them 40 lbs. weight.

We believe it is impossible to say when they began the cultivation of turnips in England. Sir Richard Weston, who was Ambassador to the Elector Palatine and King of Bohemia in 1619, and who had the merit of being the first who introduced the "great clover" (as the red clover was then called) into English agriculture about 1645, is sometimes thought to have introduced turnips also. In the third edition of "Blythes' Improver Improved," published in 1662, turnips are recommended as an excellent cattle crop, the culture of which should be extended from the kitchen garden to the field. Sir Richard Weston must have cultivated turnips before this, for Blythes says "that Sir Richard affirmed to himself that he did feed his swine with them; they were first given boiled, but afterwards they came to eat them raw, and would run after the carts, and pull them forth as they gathered them," an expression that conveys the idea of their being grown in the fields.

In Houghton's "Collections on Husbandry and Trade," a periodical begun in 1681, we have the first notice of turnips being eaten by sheep. He says "that some in Essex have their fallow after turnips, which feed their sheep in winter; that sheep fatten very well on turnips, which prove an excellent nourishment for them in hard winters when fodder is scarce, and that by feeding the sheep the land is dunged as if it had been folded." But these early introductions made slow progress, having, no doubt, many prejudices to overcome, as turnips had been very little cultivated in the field until about 1730, at which time Lord Townshend, on his owing home from being ambassador to the States General, gave great attention to their culture—encouraging their growth upon his estates in Norfolk, for which good service he obtained from the wits of the day the nickname of "Turnip Townshend." His success, however, in the growth of turnips, encouraged others in various parts of the country to try them.

The introduction of turnips into Scottish agriculture took place at a somewhat later

period; but when once introduced, their cultivation spread more rapidly than they had done in England. From the "Select Transactions of the Society of Improvers in the Knowledge of Agriculture in Scotland," we learn that the Earl of Stair was among the first who cultivated turnips in the fields in that country. It is evident that the above named society had exerted itself in a very laudable manner, and apparently with considerable success, in introducing cultivated herbage and turnips, as well as improving the former method of culture. But there is reason to believe that the influence of the example of its numerous members did not extend to the common tenantry, who are always unwilling to adopt the practice of those who are placed in a higher rank than themselves, and who are supposed to cultivate land for pleasure rather than profit.

The cultivated varieties of the turnips are very numerous; but by far the most useful for our country is the Swedish turnip, or "Ruta Baga," which was introduced into Britain from the north of Europe more recently than the common turnip, and has proved of very great value to the farmer. It is regarded by some botanists as a variety of the *Brassica rapa*, but more commonly as a variety of the *Brassica campestris*, a species common in the corn fields and sides of ditches in the north of Europe, and occasionally in Britain. The history of this turnip, like that of other cultivated plants, is obscure. According to the name given it here, it is a native of Sweden; the Italian name for it, *Navonia de Laponia*, intimates an origin in Lapland; and the French names, *Chou de Lapone*, *Chou de Swede*, indicate an uncertain origin. There seems, however, no doubt that it was introduced into Britain from Sweden; but it appears doubtful whether they were first grown in East Lothian or Forfarshire; neither is the time certain when they were first cultivated, but it was somewhere between 1770 and 1780.

#### CULTIVATION.

In regard to the management of the turnip, I shall draw principally on my own ob-

servations and practice. My experience has been chiefly on a strong clay loam soil, rather too heavy and damp for a good turnip soil. I once heard a good farmer say that he could sum up turnip management in three words—clean, rich, fine—and it has been sometimes said that five things were essential to the successful cultivation of turnips: 1st, a dry soil; 2nd, a rich soil; 3rd, a deeply worked soil; 4th, a well pulverized soil; and 5th, good after culture. The crop will be abundant as these several requisites are present, and deficient in proportion as they are wanting. Though turnips can be grown without all these requisites, they are desirable when they can be attained.

It may likewise be premised that turnips are to be regarded as a fallow crop—one that ameliorates the soil, and that profit should be looked for fully as much from the succeeding crops as from the turnip crop alone; for after a good crop of turnips we always get a good crop of any kind of grain that may be sown after them. It is generally easy to distinguish the place where they grew for the two or three following crops.

#### PREPARATION OF THE SOIL.

In preparing ground for turnips, my practice has been to take a field that has been in some grain crop the previous season, and as soon after harvest as time will permit, give it a deep ploughing, taking care to open out all water furrows, that no water may be on the field during winter or spring. As soon as other crops are sown, and the ground becomes dry enough to work well, cross plough it, and give it the necessary harrowing. Should the land be clean (a rather rare occurrence), and not lumpy, nothing further is done to it until it is drilled up for manuring: should the land be weedy, it should be cleaned at this stage, destroying by repeated harrowings, cultivatings, rollings, and ploughings, if necessary, all quick grass, thistle, and other weeds that may be in the land; or should the land be cloddy or lumpy, from having been ploughed wet, or any other cause, it should be made as fine as possible, as this is essential to the successful growth of turnips.

#### MANURING.

Having made the land as clean and fine as can conveniently be done, the next step is to drill it up into drills from twenty-six to thirty inches wide, and dung it with farm yard manure, laying enough of dung in the middle drill to manure one drill on each side—that is, lay down the dung in heaps in every third drill, being careful to spread and cover up as soon after it is drawn out as possible by splitting the drills over the manure. Though this is mostly my own practice, and one to which I am a little partial, I have seen some good turnip growers, after they had the land properly cleaned, spread pretty well rotted manure on the surface, and then drill up and sow; while others, after spreading the

manure on, plough the ground over, and sow in drills on the level. On light land it is better to lay on the barn-yard manure in the fall, before ploughing, and then either sow the turnips without any further manure, or else, when drilling up the land, apply bone dust, super-phosphate of lime, plaster, salt, or salt and plaster mixed, any of which artificial manures helps to push forward the young turnips. It is desirable that dung for turnips be short, and not very strawy. If the field be at a distance from the barns, the dung may be drawn out during winter, or before the snow goes off; and if laid in a large heap, will be sufficiently heated and rotten before it is wanted for use; or it may be turned over in the barnyard two or three weeks before it is wanted, when it will be heated sufficiently to destroy all weeds, seeds, &c., that may be in it. The quantity of manure has to be regulated by the wants of the soil, or the quantity on hand for use. Turnip land can hardly be made too rich.

I have sometimes taken a piece of ground from which hay had been cut, or that had been pastured during summer, ploughed up before harvest, and harrowed; then left till some time in the fall, when if dung was to be applied, it was done then and cross-ploughed, and left thus till the spring, when just before time to sow turnips it was again ploughed and harrowed, and drilled up and sown. This is a good way for getting a crop of turnips, but in this case they cannot be looked upon as a fallow crop.

W. R., Cobourg.

#### Ridge and Furrow System of Fallowing

This system has been pursued for many years in Britain, and under many circumstances has found warm advocates. The fact of being able to go over nearly double the quantity of land in a day, is of itself a great inducement to try the plan. And again, when we consider that land is to a great degree fertilized from the action of the air, the largest possible surface to be exposed within certain areas is manifestly advisable. It will at once be seen that any field ridged and furrowed will afford nearly double its surface to the action of the elements, when measured into the furrows and over the ridges, than if measured on its absolute level area. It has often been found that the trenching alone of poor land has produced a very great amendment in its fertility. I had an old Irishman hired as a labourer for many years—in fact, until he died—and he always argued that “trenching the land in the fall would do double for a crop the succeeding year that simply ploughing it would give.” No doubt the increased drainage thus afforded helped immensely to accomplish this, but the chief value consists in the large surface you can thus expose to the action of the air. When summer begins and spring work slackens, the ridges can be as easily split as

originally formed and with the same despatch, as to quantity of work done. Three acres a day of such ploughing is an ordinary day's work, as it will readily be seen that scarcely more than half the land is to move, and after splitting, ridge and furrow is again the state of the surface of the field. Let any farmer give this plan a fair trial, and he will acknowledge its advantages.

I have heard intelligent farmers argue that the ridged state of potato ground helps the crop that succeeds to a very great degree. Certainly such land is always necessarily well drained. The system of surface draining wet lands where no outfall exists, is well worth attention. On my farm, I had a very wet piece of land, and from which the water could in no way be induced to run off. I had occasion to dig a large hole or pond in the centre to utilize some black muck, and the same land that had hitherto always lain wet and soggy, was drained two weeks sooner, and much more effectually, than heretofore. The water all drained into the centre pond, and was thus much more early exposed to the action of the air and sun than if protected by a quantity of muck and grass, as was the case with the piece of land alluded to before the pond was dug.

On the other hand, had the pond been enclosed by dense trees, the water would have gained in it rather than evaporated. As in some parts of England, ponds for cattle are kept up in this way, but in this dry climate directly water is exposed to the sun it becomes more or less warm, and evaporation takes place faster. So with the ridged and furrowed field; the furrows receive the surface water from the ridges, and the water is more readily dried up. This system of fall ridging will not answer so well where there are thistles, as no amount of covering up will hurt them; nothing will destroy them effectually but absolute exposure to the sun and wind, to dry the life out of them, combined with the fact of never touching them unless when full grown. C.

#### On Mangel-Wurzel

Mangel-wurzel, or more properly Mangold-würzell, is now grown over a very much larger area than formerly, and is deservedly regarded as an excellent root for the use of milk cows in winter. The late Dr. Lettson introduced this variety of esculent some 80 years ago into England as a field crop, and since that time it has been steadily gaining for itself confidence amongst the largest stock raisers.

Mangel-wurzel will suit itself to any land which is moderately moist, and although it will grow to great size even in wet lands, yet in such it becomes watery, hollow, and will rot quickly. The young plant is very easily killed by frost, and should not therefore appear above ground previous to the middle of May. Land should be ploughed deeply, and

if manured, I would advise the working of the manure in with the land, rather than manuring in drills in spring and splitting. The land should be ploughed early, and kept well stirred until ready for planting, for as we force forward the weeds and kill them off at an early date, so will our trouble be the less in keeping the after crop clean.

Doubtless the best plan of cultivation is by autumn ploughing and manuring. The manure is thus thoroughly incorporated in the soil, the spring work is lightened, and the action of the winter's frost followed by the cultivator and harrows in spring, will be certain to secure a thoroughly pulverized and clean seed bed. The plan very generally adopted in England answers well in our soil and climate. In the fall the land is ploughed and ridged up 26 inches apart, and the manure spread in the drills. These drills are then split before winter. In the spring all to be done is to again split the drills in which the manure has lain all winter, and we are ready to plant. These drills will work very fine, for the frost has thoroughly penetrated them, and we thus save a great deal of time in spring, our "thronging" season. A liberal supply of superphosphate of lime (but it must be genuine), will be amply repaid in crop.

The rows should be at least 26 (or in rich, well prepared land, 30 inches will be none too far), apart. The seed may be either drilled upon top of each row, or dibbled in at intervals of from 15 to 18 inches. Sow about the first week in May, thus escaping the frost; moreover, if sown too early, the root is apt to run to seed early in the fall. From 4 to 6 pounds per acre should be used, and if damped for three or four days previous to use, it will sprout far earlier. In Canada the dibble is too expensive a process; drilling and thinning becomes our only practical plan. The seed is very easily buried, and should not be covered by more than half an inch of earth. Two or three plants generally spring from each grain of seed, and great care has to be exercised in thinning that we leave our plant firmly rooted.

The after cultivation is such as applies to all root crops. Keep the land thoroughly clean, and wage perpetual war upon all weeds. They must be harvested early, before there is any chance of frost, for this root is very tender and easily frozen. Many growers recommend that the mangold be not tailed when taken up; and when the land is light and the bulb pulls up, clean tailing is an unnecessary addition to the trouble of harvesting. The chief drawbacks, then, to the cultivation of the Mangold are that more labour is required in the thinning, and that they are extremely susceptible to the effect of frost. It may assist us in making a comparison of the two principal root crops, to place side by side the peculiar advantages possessed by each—Mangolds and Swedes—as practical field crops:—

THE MANGOLD WURZEL.

1. Is neither liable to "fly" nor to "wire-worm."
2. Produces a greater weight of root per acre.
3. Does not taste the better when fed to milk cows, and is a better and stronger food in late winter and spring.
4. Will grow on *stiff* land with more certainty than the turnip.

THE SWEDE.

1. The "thinning out" is less expensive.
2. Can be planted later.
3. Is less liable to be hurt by frost.

C. E. W.

Soils.

Doubtless the real value of any particular course of cropping depends greatly upon the manner in which the rotations are practically carried out; but, at the same time, the nature of the soil should be carefully considered before the farmer commits himself to the raising of a large proportion of any specific product, as different varieties of soil are specially adapted to the growth of particular crops.

The following table, comprising an analysis of the component parts of different soils and their adaptation to special crops, is compiled by Thaeer from the results of many years careful examination:—

	Clay, per cent	Sand, per cent	Lime, per cent	Vegetable Mould per cent.
1st class wheat lands..	51 to 40	64 to 22	to 4	5 to 4
Good do.....	58 to 58	36 to 30	2 to 12	4 to 2
Passable do.....	60 to 68	38 to 30	..	2 to 2
1st class barley land..	20 to 38	67 to 61	..	2 to 2
Ordinary barley land..	33 to 28	65 to 70	..	2 to 2
Good oat land.....	23 to 18	75 to 80	..	1 to 1

Thus, best wheat lands are those with a large proportion of clay, when mixed with, and thus rendered more mellow by, a large supply of vegetable mould. Lime must be added where it does not exist.

Best barley lands are those which contain a large proportion of sand, mixed with sufficient clay to give it retentive powers.

CLAY.

The most special characteristic of soils that come under this head is their power of retaining water. It is this faculty which forms the chief difficulty to the farmer, and which makes it obligatory upon his part to

work such land with much care and caution. Clay must not be trod upon by horses nor touched with implements when wet. We may plough our lighter lands in a moist state with comparative impunity; but with clay an immensity of actual harm will result from such a course, and the land will be left in a state from which it will take many months to recover.

There is a great diversity of opinion as to the proper manner of ploughing heavy land. There are many who advocate narrow lands set up high in the crest. The advantages of this system are two-fold; more surface is exposed to the weather, and there being a greater number of furrows in the field, the water gets away with more rapidity. On the other hand, if the lands be wider and more gradually rounded, the water has a tendency to percolate the surface soil, and after a heavy rain is not apt to rush off in a sudden flood, doing no good to the soil, and digging deep trenches in every water furrow. This is a point on the consideration of which each farmer will do well to ponder, endeavouring to strike a happy medium—to have his ridges sufficiently rounded to prevent water stagnating, and at the same time to give the shower sufficient foothold to percolate through the surface before reaching the furrow and rushing away.

No farmer of the present day doubts the efficacy of under-draining, even though he may not have put it in actual operation. There is no need to enter into this question here, but I would say that the advantages of drainage to clays are almost unlimited. No plant will thrive in land that retains superfluous or stagnant moisture, for the instant water becomes stagnant it ceases to be of any value, and indeed becomes positively injurious.

Clays rest upon very different sub-soils; some rest on gravel. In such, stagnant water may be very materially reduced by opening holes in spots where rain collects in pools, deep enough to reach the gravel, and filling them up with gravel.

Drainage gives warmth to the land and to the air above it, and thus ripens the crop early and perfectly.

The next most important aim of the cultivator of clay is to counteract the tendency which such soil has to run together. The first means by which to attain this desirable result is by deep ploughing. Each step taken by the furrow horse in ploughing increases the hardness of the sub-soil. Now, after ploughing a piece of land year after year, and turning up each time the same depth of soil, we are each year increasing the compactness of this pan, and making it so close and hard that it becomes perfectly impervious not only to water but to the tender rootlets of the growing plant. If, however, we plough deeply in the Fall, and shallow in the Spring, we are adding soil to our seed bed, and protecting this naturally hard pan.

If we have an unfavourable Spring in Canada, thousands of dollars' worth of damage ensues to the farming community by the heaving out of the Fall wheat plant. I consider that this "heaving out" is chiefly due to a neglect of deep ploughing.

A few inches forms the arable superstratum of the ordinary wheat field; the tap root of the wheat plant meets with such resistance from this hard pan beneath that it is unable to push through and take a fair anchorage, and in consequence the heaving effect of the frost "coming out" in the spring throws the plant bodily out of that soil in which it possesses such a slight hold.

The deeper the staple the more manageable it is upon all occasions; it receives all rains into itself, and not merely on its surface; the water sinks gradually through it, and even when unable to penetrate, the undisturbed pan is yet so far below the surface of the field that it will gradually ooze over the pan to the lower part of the lands, before it has lain so long as to render the seed-bed cold and sour.

Another means by which to improve clay is to incorporate with it any kind of friable earth, such as sand marl, lime, and manures of all kinds.

Many soils are made clays by bad cultivation, and may be converted into a loam by turning up with deep ploughing that sub-soil which is not naturally a clay, and which has not been made one by a constant system of half ploughed cultivation. It would indeed be a great undertaking to incorporate sand with a clay soil by drawing and ploughing in, though I doubt not it would amply repay the expense to a man of large capital, who could afford to await some years for the accruing benefit.

Every farmer in this country has a wood yard near the house, in which yearly large accumulations of chips are formed. Indeed, I have seen heaps of chips that have been accumulating for many years. Such, hauled out, spread upon, and ploughed in with clay, have the mechanical effect of disintegrating the soil and rendering it more friable.

We often have heaps of rough straw, for which we can find no ordinary use. Plough that in; or, better, spread it on your fall wheat in winter, and let it work in with the soil; it will thus do double duty—protecting the wheat in the spring, and loosening the soil when afterwards ploughed in.

Green clover, rye and buckwheat, ploughed in, are of great value to clays.

Plough heavy lands *roughly* in the fall, thus exposing the greatest amount of surface to the disintegrating action of the frost. Put on the teams in the fall; plough then all you want to sow with spring grain.

The general character of clay lands is that the crops are very abundant, but are cultivated at a great annual expense, more cultivation required, heavier teams, stronger implements, and more wear and tear to man,

beast and tools. Moreover, as we cannot get on this land as early in spring, nor as often during the season, the clay farmer's teams stand idle more often.

Summer fallowing I look upon as a method of cultivation to be carefully avoided if possible, but upon clay lands it often becomes unavoidable. The soil is so retentive that when it becomes foul, a thorough fallowing becomes the only method of cleaning.

I have seen no land in Canada, which if properly worked, with the aid of our cold winter and hot summer, cannot be kept in good order by winter fallows. When we get such land as the blue clays of Gloucestershire, England, through which a plough cannot be drawn by less than four heavy horses, we may begin to think of summer fallowing; but if in Canada we take care not to let our land get foul, we shall find that fall ploughing will keep our soil friable and clean, and give us a good seed-bed.

C. E. W.

### Best Root and Best Root Sugar.

NO. XV.

Each month that passes, and each practical experiment that is made, clears away some mist or exposes some fallacy, which has hitherto assisted in enveloping this subject in darkness or obscurity, and which has had the effect of confining the manufacture to France and Germany, and the countries bordering on those nations. The English farmer, with all his push and dogged resolution, has been prevented from raising the sugar beet as a general crop, and even our energetic cousins across the lakes have by these mists and fallacies been prevented from adding to their failing agriculture the crop which, above all others, would restore prosperity to the farmer and fertility to the land.

The fallacy last exposed is with respect to the keeping of beets during the winter season. On this subject we were met by the positive assertion that the least degree of frost destroyed entirely the sugar producing qualities of the root, and the consequence has been the housing and storing of the roots in such warm and drying warehouses that the root, if it has not fermented more or less, has grown, and if not grown has shrivelled up to two-thirds of its weight. Now, the frost business has been a complete bugbear to all Canadians, and any person proposing the manufacture has been met by the statement that the expense of housing the roots in winter, and the space necessary, would be destructive to the enterprise. One fact will rather destroy this assertion.

A week or two since, just at the breaking up of the winter, the writer met with an old countryman who had pitted a lot of beets in his garden; he did not know the power of the frost, and had only put about 6 or 8 inches of earth over the heap, covering the

heap in the first place over with the leaves of the beets and some old pieces of wood. When he came to find that Canadian frost penetrated the ground two feet at least, he considered his beets as lost. The writer saw the man open the pit and throw out his beets. They must have all been more or less frozen, and thawed again *under the ground*, but they were quite sound, and the writer got a quantity of them for trial. He rasped them down, expressed the juice, defecated it, and evaporated it down into syrup in the usual way. *It was not injured at all.* It was of the full strength by the instrument for ascertaining the specific gravity. The beets were perfectly sound and juicy, quite as much so as if they had been just removed from the ground in which they grew. They grated down well and easily, and had lost neither colour nor flavor. They had been more exposed to frost than any prudent man or good farmer would have allowed his crop to be, and yet they were uninjured. At the same time the writer obtained some roots for experiments from a gentleman who had imported some of the best seed that can be obtained from the continent, and who had grown beets experimentally in various parts of the province, to test the quality of the land of different locations for the production of sugar, and who had the roots most carefully pitted and preserved in the German fashion. These roots were in good order as to preservation (except in one point, which will be mentioned hereafter), but they did not grate down so well as the roots first spoken of.

Another fallacy is the supposed necessity of cutting off the crown of the root when harvested, to prevent growth. The roots first spoken of had the leaves *twisted* off without injury to the crown; they were all perfectly sound, and not a rotten spot about them. The roots preserved in the usual way had the crown all cut off, and almost every root had a decayed spot, extending down to an inch or two in depth to the heart. Besides this, every spot of these latter roots which had been wounded by the fork in digging was more or less decayed; whilst the roots preserved out of doors, as first mentioned, were not in the least rotten where the fork touched them; the latter roots were well ripened.

This experiment (so far as it goes) is conclusive as to the exaggeration which has been made use of in statements of the injury done by frost.

But this fact is of far greater significance than would first appear: The roots in question were grown in the season of 1870, and harvested and pitted late in that year, having been well ripened. It was a mixed sample of seed, and we counted at least five distinct sorts, besides some nondescripts, so that there could never be a fairer experiment; and notwithstanding the variety of sort and colour, *none were rotten or injured except two or three at the very top of the heap.* If

this should prove on further experiment to be the fact in other cases of ordinary grown beets, it gives us from September (the beginning of the grinding season) to the following April as the sugar season, during which the roots remain of full saccharine quality and in workable condition, thus securing the entire fall and winter, and two months into spring, during which the sugar factory can be advantageously worked.

This being the case (and the fact as here stated may be depended on), the great mass of the crop of beet root can be stored in the field. When dug, they should be piled in heaps two roots wide, with the leaves on, the leaves being of course on the outside, where they will form a kind of roof or thatch to assist in throwing off the water, which may percolate through the covering of earth, and they would also prove enough protection until the time came for covering up the heaps with earth, just before the frost. As soon as the season is sufficiently advanced towards winter, a trench should be dug along each side of the heaps, and the earth piled up on the roots until sufficiently covered; but in no case, I should say, of less than one foot thick. The heaps or rows should not be more than the length of two roots broad, and not too high, as they may heat; and care must be taken that the side ditches are well drained and freed from stagnant water. Arrangements should be made to cover a large bulk of the crop in such a way that the roots could be obtained all the winter for working, and as a matter of course those to be first worked will be housed; but in no case should the crowns be cut off or the roots bruised in knocking off the earth, nor should the roots be trimmed before washing; the washing in the rolling cage will be quite sufficient to remove the superfluous fibres and superfluous earth. The leaves should be removed, and possibly the crown cut off before washing, that, however, is a matter of judgment.

This may seem a little matter to write about, but it is an experiment that, unless observed in the way it was twice observed, would have taken one year to try, and but few people would be found to run the risk of any roots being spoiled, after all the warnings as to frost that have been showered on us through the books published on the subject.

I may here hazard a personal opinion—but it is only a personal one, and I do not wish any one to act on it—I doubt if frost destroys sugar at all, even when the roots are badly frozen, unless the roots thaw and have time to ferment; then, owing to the breaking up of the cells containing the sugar, and the mixture of that portion of the juice with the natural ferment of the root, destruction of sugar commences; but so long as the roots remain frozen without thawing, I do not believe the sugar is injured.

VECTIS.

## NO. XVI.

### MACERATION AND DIFFUSION.

The trouble and expense of pressing the beet root, even when ground, to extract the juice, has always been a great drawback to the manufacturer; and for the purpose of getting rid of all the machinery and hand labour necessary for that process, the attention of the more ingenious of the manufacturers has been turned into other channels, and it is now definitely settled that the expense and trouble of pressing, and even of fine grating of the root, is not only unnecessary but hurtful. The plan adopted in its place is called by some "maceration," and by others "diffusion;" and it is simply as follows: Instead of grating or rasping the roots, they are cut up into thin pieces, not exactly slices, but of this shape:



The knives in the cutter shave the entire root into pieces of this shape, and of the length of the diameter of the root. The purpose of so cutting them is to make as many spaces between the slices as possible. These slices are filled into vessels, and water is then added at such a heat as to bring the mixture to the heat of 122 degrees Fahrenheit. The vessel is covered to keep in the heat, and at the end of from two to three hours the liquor is drawn off, more clear water is added, and the soak is continued for a further length of time, but not so long as at first; it is then drawn off and a third water added, which is finally drawn off, and by that time all the sugar is out of the root within such a trifle that it is of no consequence. There are a series of these vessels in one way of working, and in order to keep the liquor as strong as possible, and thus save evaporation, the first liquor drawn off is put on fresh root slices, and that, when drawn off, is again put on fresh slices—the other liquor being always added to the partly extracted slices, until the liquor finally attains very nearly the strength of the pure juice. The root slices then go to the cattle. Not only by this means is the pressing of the roots saved, but the liquor obtained is far purer; and while it contains all the sugar of the root, is much freer from other matters which are inimical. The liquor, when it finally attains the strength required, goes into the defecating pans, and is heated with lime in the manner before described, and skimmed; and the clear liquor, after having been carbonated to get rid of the lime, is evaporated down either into "concrete" for the refinery, or it is made into sugar with the sucrate of lime process, or some other of the various processes of purification already mentioned.

One thing, however, cannot be dispensed with by the person who goes into the manufacture, and that is a thoroughly good and

reliable "Carbonator." This may be composed of anything—either water bellows, a good blacksmith's bellows, or such pistons and cylinders as are used by the fowlers to force the air into their furnaces; but in this case you do not force air into the liquor, but "carbonic acid gas." To obtain this, make a clear fire of charcoal or hard anthracite coal in a stove, put a sufficient length of tight stove-pipe to the stove—all which should fit well together so as to be tight; let the pipe be of common sheet iron, and of such a length that all the heat will be expended and lost before it comes to the bellows; from 40 to 50 feet may be necessary; then attach the end of the stove-pipe by a flexible joint to the air-hole of the bellows, into which the air is usually drawn; make all close; then, in working the bellows, instead of drawing air, they draw carbonic acid gas from the burning charcoal, and this gas is forced from the nozzle of the bellows into the liquor, in the defecating pans, which have been cleared from scum with lime. If the pans are not large enough to keep in the froth which ensues, a separate and larger vessel must be used, and the blowing the gas into the limed liquor is continued until all the causticity of the lime is gone. The lime is by this process turned into simple chalk, and the liquor is greatly purified. The vessel should have the means of forcing steam into it, as well as gas, so as to keep up the proper heat, which should be nearly boiling. After the strength of the lime is thoroughly exhausted by the gas, the liquor is filtered through bone charcoal, or fine bone-black may have been boiled with it, and the whole is then filtered through close felt or woollen filters, or any kind of filters that will run freely, and yet keep back the impurities which the gas and lime have set free. Some add more lime and boil again, and again blow the liquor up with gas from the bellows, and steam; at all events, it is done until the liquor is brought to as pure a state as possible; it is then filtered and evaporated very carefully, to prevent burning, until it is as thick as treacle, when it is set by in a warm place, and in five or six days the sugar crystallises. The whole mass of sugar and molasses is then strained, and the molasses may be again purified and made into sucrate of lime, and so purified. Beet root molasses has always a strong, disagreeable flavour, and cannot be consumed by men. Cattle do well on small quantities of it added to their ordinary food, or it is fermented and distilled into spirits; but as cattle always pay well when judiciously fed with very small quantities of it at a time, no farmer will of course think of distilling it. This plan of diffusion is now being extensively adopted all through France, Germany, and Austria. The large factories have a self-acting concern, which takes less trouble than the before mentioned vessels, and is done as follows:—

In these large factories the diffusing vessel

is from ten to eleven feet in depth, open at the top, filled (to begin with) with the roots sliced into the small pieces before described; it is of a diameter correspondent with the size of the works and the quantity required to be done per day. When filled with root slices, water at the proper heat is added, and they remain soaking in it for about three or four hours; the liquor is then drawn off, and water is let on by sprinkling over the whole of the upper surface, until the entire sugar is extracted from the upper layer of sliced roots. They then begin feeding sliced roots from below by forcing them into the bottom of the vessel, and the entire contents of the diffusion vessel is made to rise slowly and gradually, always being sprinkled with water at the top, and which water is allowed to run off at the bottom as slowly as it is received at the top, so as to keep the root slices always soaked and always rising. As they come to the top the overplus is swept off by a valve moved by the machinery, into the cattle trough, and the work becomes continuous, the beet always rising in the vessel, always washed as it rises, until everything valuable for sugar is washed out of it. The liquor runs off from the bottom of the vessel in a continuous stream, always of nearly the full strength of the natural juice. From the diffusing vessel it proceeds to the defecating pans, is cleansed with lime, scummed and carbonated as before, and then goes through the ordinary processes of evaporation. This makes a thorough business of the work, but it is of course only fit for a manufactory working night and day during the season. For a farmer or small manufacturer it would be unattainable; they must confine themselves to more simple means.

In using the carbonating machinery, the fumes must be conducted into a chimney, and carried off, as they are very hurtful to health, and produce headache and most distressing feelings even by a few minutes' inhalation. VECTIS.

### The Roller.

Of all the implements used upon the farm there is none more necessary than the Roller. The first and principal office of the roller is to press the soil around the roots of the growing plants, thus making firm the seed-bed and securing what moisture is in the ground to the rootlets.

When used upon grass in the spring, it levels all inequalities in the sod; and if stones and other obstacles to the progress of the mower be removed, many breakages of that machine will be avoided in hay-time.

When used upon newly sowed land, it packs and prevents the escape of certain valuable gases.

California is expected to produce a very heavy wheat crop this year, the breadth of land sown being fully twenty-five per cent. more than last year.

### Talks with Farmers.

A few days since I met with a Garafraxa man; he was a Scotchman, and of course more advanced in agriculture than the generality of Canadians. He had just been paying for his land; and as I knew the progress of the man, I rather wondered at it.

'How do you manage to get so much money together these hard times?' I said.

The answer was—'My cattle turned out well.'

'How many did you fatten?'

The reply was—'Six good ones.'

'What had you for them?'

'Oh, just turnips and grain.'

'How many acres of turnips?'

'Seven, and all were good.'

'But seven acres were a great many to house?'

'Ah, but I pitted most of them, and only took in my root-house full at a time.'

'What is the root-house made of?'

'Mine is made of logs, but most of my neighbours have stone root-houses.'

'How many cattle do you generally reckon an acre of turnips will fatten?'

'Just about one, besides keeping all the rest of my stock, and I have a good many; but I do not feed all turnips; that would be too cold for them. I give, besides, peas and oats. I feed all the peas and oats I grow to the cattle, and also all the hay, and that gives me good manure; but with all, it does not give me enough.'

'Do you grow wheat?'

'Yes, but not much; a little fall wheat and a little spring, but no more than I can help, as it does not pay.'

'Do you grow barley?'

'No; peas and oats pay better, as I feed all to the cattle, and get the manure; if I grew barley, I should be forced to sell it off the place, and then the farm would suffer.'

'Seven acres is a good deal for man to do. How do you manage about hoeing and manuring?'

'Well, I manure the fall previous, and plough it in; then it is well rotten in the ground next year when I sow my turnips; and besides that, the ground is so moist that I never have any trouble in getting them up. If I manured in the spring, I should be obliged to manure in the drill, and then the ground is too light and spongy, and dries up, and the young plant either misses, or when it does come up, withers away; whereas, when the manure has been in the ground all the winter, the whole of the soil feels it, and the plants grow right away. I sow the turnips in drills, of course. I sow with the hand barrow, with two rollers—one before the seed and one after it—so that the ground is always fine and well pressed down; I make the rows from thirty inches to three feet apart, and I calculate to leave the turnips at eighteen inches apart in the drills. I hoe them with the horse-hoe be-

tween the rows, and then single them with the hand hoe. If the season is dry, the horse-hoe kills everything that is not in the row with two hoeings; but if it is wet, we have to go over it again several times, as it is required. Our horse-hoe widens as necessary, and the knives overlap, so that it makes clean work; and as we can do with a horse from two to three acres a day, we don't spare the hoeing when it is wanted.'

'What about hand hoeing?'

'We go over the rows twice; once to cut out generally, and the second time to single the plants. We always calculate to cut close round, so as to make the plant fall down. In the old country we always made every turnip plant fall over, one way or the other, and thought they came on all the better.'

'How do you harvest them?'

'We go along the rows with the hoe, and nick off all the green, then turn them out with the plough, and so get them out of the ground.'

'When you pit them in the field, how much earth do you put on them?'

'Not more than four inches in the solid, and we never make the heaps large; we are always afraid of heating and rotting.'

'Well, but the turnips must freeze in the winter.'

'They don't freeze much, and if they do they are better to freeze than to heat. If they are cold for the cattle, the grain warms them.'

'How do you manage the turnips in the root-house?'

'We pile them so that there is a good draught all round and through them, and take care to make the floor of rails and poles, so as to have a good ventilation. Then we keep the house well aired and open, except in the very hardest weather, when we close it. We are always careful to keep the turnips as clear from dirt as we can, so that they never choke and heat in the heap in the house.'

'Do you raise the cattle, or buy them?'

'We raise all we can, and buy the rest.'

'What do you consider a purchased beast ought to produce before you sell him?'

'Well, whatever we give for him, we take care that he doubles it at least before we sell him; if he won't do that the profit is not worth having.'

'Do you find that your farm gets enough manure?'

'Not so much as I could wish, but we are very careful to get all we can. We always have enough for a good crop of roots, and something over.'

'Except, then, what wheat you raise for your own use, and a little to sell, everything the farm makes is consumed on it?'

'Yes; if it was not for that the land would be getting poorer; as it is, the whole place is getting better every year.'

'How came you to pay so much attention to turnips?'

“Oh, we were just driven to it. The wheat failed, so that we were getting worse every year, instead of better. Now we are doing well.”

“Did you ever grow mangels or beets?”

“Yes, and they did well; but I gave them up, as they require more hand work than turnips, as we have to single them all by hand, and the turnips do so well that I do not care to be looking for anything else.”

“How do you like broadcast turnips?”

“They do better than any other in new ground, when sown thinly; but we do not get on at all with broadcast in the old land.”

“I suppose you, as an old countryman, were surprised when you came here to see our light steel tools, hoes and forks, &c., of the American pattern?”

“Yes, indeed. I was, and well pleased too. When I went to the old country, two years ago, I found them all still working with the old heavy hoes and forks, made of iron, and each a load of itself for a man, and I could hardly get them to believe that we in the new world were better off for tools than they were in the old.”

“Well, but they are better off than they used to be in that respect.”

“No—not a bit. I found the same tools I left there twenty years before, and no improvement. We are greatly ahead of the old country in Canada with all our farm implements and tools.”

Now, if any one wants a better essay than this on turnip growing and successful Canadian farming, they must be hard to please. This is real practical knowledge, and practical knowledge crowned with success.

VECTIS.

### Farm Negligencies

I live in a part of the country that, when I first moved in, was what is called “a new country.” I have long been convinced that we all are, in some respects, more or less negligent in many essentials about our farm homesteads, including the general management of the farm, live stock, and tools. Some of us neglect one branch and some another. We have each some pet negligence, so to speak. As an instance, my neighbour, he, probably, has everything particularly snug about the horses, harness, waggon, driving shed, buffalo robes, stables, and everything trim and in fact in apple-pie order so far as the stable and its appurtenances are concerned. But go to his pig-stye, cow house, or barn yard, and you will probably see the pigs wallowing about in a pond of slush; the cows wading through the yard half up to their knees in manure; gates off their hinges here; fences down there; and in short many things neglected; and one, the more special hobby, well attended to, and taken good care of. He will probably tell you the hogs like filth, and go into it of their own accord; but we all know they like a clean bed, and dry stye, and will occupy it

if provided for them, unless during the intense heat of summer. So it is with many things about Canadian farms. Some things are well and carefully done, and thoroughly attended to; whilst others—not so well liked perhaps—are altogether or partially neglected. For my own part, I may say I have a hobby also; and if I could choose what I would spend money and time in, on the farm, it would be neat and good fences, and gates well hung, and in good order; and clean, well kept garden and grounds about the homestead, with plenty of trees, walks and lawn. About the farm especially I hate pond holes and old brush and log heaps; and I have often spent time clearing up the unsightly nuisances, when, perhaps, I ought to have felt more inclined to attend to other things. I am free to confess that I am much better pleased in sweeping and clearing up around the house, and putting a tidy face on all around the farm generally, than in even the important and profitable work of haying or harvest, not to mention that of ploughing and sowing, with the full expectation of thereby getting a good crop. To my view there is a real gratification in inspecting a newly cleared, burnt, and neatly fenced fallow, all clean and tidy, with every chip and log gone, and burnt, no lying log heaps to be seen, but all harrowed smoothly over after wheat or some grain is sown. It seems to me such a triumph of order over disorder and wild savage vegetation. Yet I like a handsome piece of hardwood bush as well as any man. The comparison after clearing is however great. Still we ought to feel that all these points are for our especial consideration and care, and we must not allow one kind of labour, or interest, to make too much demand on our time and means, to the detriment and neglect of others, equally important perhaps, but not quite so agreeable. A farmer's mind must grasp all points of interest and profit, no matter of what kind soever; all must be of interest alike to him, and all must be equally well attended to, or the farm will suffer. So much for these instances. I could lengthen this article, *ad infinitum*, but will refer to it at some future time. I have not half exhausted the subject, as all will allow when they think over the facts.

C.

“BOONIA” POTATOES.—We have had the pleasure of inspecting three sample potatoes named “Boonia,” imported this season from Mr. Patterson, of Dundee, by Messrs. J. A. Bruce & Co., seedsmen, of Hamilton. These three potatoes weighed respectively 2½ lbs., 2½ lbs., and 2¾ lbs. The originator of the root claims that they have yielded at the rate of 30 tons to the acre under very excellent culture in Scotland. The Messrs. Bruce propose to plant these on their own seed farm at Hamilton, and we hope to report their success next fall for the benefit of our readers.

### What Seed to Sow.

“How many acres of oats do you intend putting in this spring?”

“Well, oats have been a big price all the winter; I shall sow forty acres.”

“What, sow oats in that field?”

“Well, they pay well, you know, at 55 and 60 cents a bushel.”

Now, there are more men than you are probably aware of, Mr. Editor, who go upon this principle, viz., that they will raise such crops as they think will hold the best market price, taking their measure of a future price by the standard of the figure which ruled after the last crop.

If your readers will carefully consider the market prices for some years past, they will observe that if barley be a high figure in the year A, it will fall in the year B; and so with all our cereals. This fluctuation, I do believe, is greatly owing to the system amongst our farmers of going with a rush into certain grains and certain stock.

Years ago there was a great demand for merino wool, and an immense number of these sheep were in the country; then, during the American civil war there came a cry for long wool to take the place of cotton goods, and in a short time there was hardly a short-wooled flock left in the Province.

The rule should be: Suit your crops to your land, and not to a possible future market. If you have to sow sixty out of a hundred acres to grain, and it is all more suitable to barley, put it all in if possible with barley. It is this principle that makes mixed husbandry the most profitable. We can use the properties of our soil to great advantage, suiting each different crop to the peculiar state in which we have at a given time our respective fields; and, moreover, we cannot be taken aback by the sudden fall in the market price of some peculiar variety of produce.

C. E. W.

### Locust for Fence Posts.

I am very much of opinion that if any business is to be done well it must be the pleasure of the owner's life to follow out its details. I often derive much experience and many very useful practical hints by talking with farmers. There is an old saying “that cadgers will always be talking about cart saddles,” and it is certainly a true one. I find that every farmer, however taciturn or disinclined to talk on other subjects, can talk well and clearly on some points of interest in agriculture.

The special subject of investigation happened on one occasion to be that of growing some fence timber that would in future replace our fast wasting natural forests—especially cedar posts. My farming acquaintance told me that he had lately had his attention drawn to the growing of *Acacia* or Locust for posts. He said that he planted



about five years since a small grove of Locust. They were thrifty, tall saplings, and great care was taken not to allow of any injury to the young sprouts, and especially the leaders. These leaders grew with great rapidity; and the trees that were planted five years since, when only about the size of rake handles, would now make two posts each of 4 or 5 inches diameter. Some were smaller at the second cut, but he was told they would not decay, and were more enduring than cedar, whilst they certainly held nails much better. Under the circumstances, he considered the experiment a great success. The trees grew quite close—less than four feet from each other every way—and were tall and straight. But the most valuable fact remains yet to be told: Last year, from about one square rod, there were cut twenty good posts, small, but quite strong enough to support a fence, provided the fact of their resisting decay may be found correct. This year there is a perfect grove or thicket of young sprouts. There are scores of sprouts on this rod, some of them six feet high, and very straight, and apparently going to do wonders in future. My friend has been advised to allow them to grow as thick as they will stand, and this will probably coax them upwards, causing them to rise up tall and straight. When about an inch in diameter he will cut every one that does not promise to produce two posts, and as the land was well and thoroughly covered with manure (about 4 or 6 inches deep) after the posts were cut, very little grass has made its appearance, and this was quite smothered by the Locust foliage.

I have myself had some experience in the growth of Locust, and I believe nothing will grow so fast and so thrifty, and at the same time resist decay so well. The great tendency to sucker from the parent stools or roots is an excellent trait in the Locust habit. Last year I cut down an old locust tree, and there are now or were twenty thrifty sprouts upwards of five feet high. We cut out some for other purposes, because they were not wanted. But I am sure four acres of Acacia would furnish plenty of posts for a 500 acre farm, if they do only half as well as the foregoing.

C.

#### On Fork Prongs.

There has been a strong difference of opinion amongst farmers in regard to the best shape for a Fork Prong; and small as the matter may be supposed to be, it is one of consequence to those who do a great deal of work with a fork. To such a pitch of excellence have our own makers attained, that I have been informed that our Canadian manufacturers have an excellent market opened to them in Britain, and that too with the difficulties of importing the steel from home first, and exporting the manufactured article afterwards to England. This British demand is due entirely to the ease with which

our forks work in comparison with English manufactures. Some good judges have held that there is yet a great improvement to be made in the formation of the prongs. Some advocate round shape, but they are apt to break, not being stiff enough; some advocate oval, and that shape does away with one difficulty, but entails another, namely,—the oval shape, from having a comparatively sharp edge at the top, proves hard of delivery, the straw being bent sharply over the edge so formed, and hence is subjected to more friction in the act of leaving the prong. To meet all these objections and at the same time retain the requisite stiffness in the prong, I would suggest that the shape be made like that of a balloon, round at the top where the weight is greatest, and edge or oval shape underneath, where no friction can influence the free delivery.

I have done a great deal of work with both round and oval prongs, and have seen the difficulties here complained of in their use; but it strikes me that the balloon shape will entirely meet the difficulties complained of. The depth will certainly make it stiff and strong; the circle at the top will quite do away with the friction of delivery, or it will afford no more than a round prong, and if it can be as easily made, there is certainly apparently no reasonable objections to its use. However, manufacturers will soon decide this point; and when harvest comes we may, I hope, have some opportunity of testing its excellence. Manufacturers in Canada readily take hints, and may in this case derive some benefit from the communication of

A FARMER.

**SOW MANGOLDS EARLY.**—Farmers not unfrequently make a mistake in sowing mangolds too late, even in this climate of Canada, where the spring season is often so backward, and so liable to untimely frost. A correspondent of the *Farmer* (Scottish) makes the following statement in reference to this point:—On a Scotch farm, at an altitude of about 500 feet, or near the upper limits of wheat cultivation, we have seen an excellent crop of mangold wurtzel which was sown on the 22nd of March; while a month later, sowing made there, both in that and other seasons, could only be characterized as failures. Mangold wurtzel seeds, unlike those of turnips, do not vegetate readily at low temperatures; hence, although sown in November, or at other periods, throughout the winter and early spring, the young plants do not appear till both soil and weather have attained a sufficient warmth. Nor are they so susceptible of injury from slight frosts as plants of turnips. The garden beet is only a finer and more delicate variety of mangold or field beet, yet gardeners do not hesitate to sow it in the beginning of March, at the same time with carrot, parsnip, onion, and other seeds which require the full length of the growing season to bring them to maturity.

#### Putting up Fences by Machinery.

Whilst passing a few spare days with a friend in the west, I was much amused at a novel way of putting up fence posts. The land was rather low than otherwise, and although soft enough in the fall, would have been very hard in dry summer weather.

The implement employed to facilitate this business was none other than a "pile-driver," made as ordinarily used, with about twelve feet drop for the ram, but constructed of much lighter materials. The scantling was only 2 x 6 and 3 x 3 inches, with the exception of the sills, which were stronger, and made of hard wood, to facilitate moving about—an operation which was performed by the same oxen that raised the ram. The ram itself was composed of the butt of an oak log, six feet long, banded with iron at its lower end, to prevent splitting, and about sixteen inches in diameter. Grooves were ploughed in it on each side, so as to admit of its moving readily in the guides. It was hoisted up by a yoke of cattle attached to a rope, passing under one wheel at bottom and over another at top, and the plan answered well for pulling the ram rapidly up to its elevation, from which it descended with a tremendous "thud" on the cedar post, which was pointed and held upright, and immediately under the ram. About three blows drove the post nearly four feet into the earth, and almost all went quite straight. A few—one here and there—were crooked, but these, I was told, would be pulled straight with the cattle, or dug out at the foot, so as to allow of their being pressed over, until they all came in direct line. I was informed that this course was a great saving of labour, and when quickly handled, the time that each post required to be driven was only a few minutes. More time, however, was required to move and adjust the machine to its exact place, than in doing the work.

On the whole, it was considered a great success, and worked to perfection, and I was told saved an immense deal of labour, and besides it suited my friend's ideas, and others would agree with him, that "it was better for the oxen to work at the fixing the posts than himself."

C.

**SEED WHEAT.**—The fault in America is not in the seed, but in the practice, common also in this country, of exhausting the land by repeated cropping without returning any of the fertilizing elements which the crops take away. The seed is right, but the farming wrong. In saying this, we do not mean to allege that all soil is capable of producing a healthy wheat plant, because experience has proved that some soils require an occasional change of seed, and none demand it more imperatively than those black soils that are so highly esteemed by the farmers of this country. In effecting any such changes it is desirable to bear in mind the British maxim—"Get your seed from poorer land than your own."—*Mark Lane Express.*

## Our Roads

V.

BY ALAN MACDOUGALL, C. E.

When a clay road has been once properly graded and cared for, and careful consideration has been given to getting the water led away from the surface of the road or the beds of the side ditches, it will form a good solid foundation to work upon, either in gravelling or macadamizing the roads. For clay roads it is not necessary to pay particular attention to the form of the surface of the road, for, although it is highly desirable to keep the surface of such a shape as will most easily cast off water, yet from the action of the cart wheels this form would soon be destroyed. But when the road is to be covered with a coating of some hard substance, such as stone or gravel, it becomes imperative that some shape be given to the surface of the "sub grade" to receive the metal.

The experience of the best British roads shows that the centre should be higher than the sides; and Telford, Macadam, and other eminent engineers, always carried this principle out in their practice. The usual rule is to give the sub grade a curved form, rising in the centre and falling in proper proportion to the sides. Thus, on a width of 25 feet, the centre or crown should be nine inches higher than the sides, and for a distance of five feet on each side the surface should slope about two inches, and so on till a proper form of road be obtained. Telford was very particular and careful in the laying out of his roads, and described the exact proportions of the curved surface, and how the drains were to be laid, and the manner in which the metal was to be laid on, also the depth and size of the stones.

When a road is being gravelled or metalled, after the sub-grade has been brought to the proper form, the first coating of metal it should receive should be of rough gravel or stone. The gravel should be screened, and this would take no time at all; a large frame of wood, with bars 2½ or 3 inches apart placed in the gravel pit, would screen out the material sufficiently. From the screenings the very large stones should be taken out, for no stones much larger than a man's fist should be allowed to go into any gravel or macadamized road, and these stones being spread over the surface of the sub-grade, form the best materials for the road-way. A layer of this rough material to the depth of nine inches having been spread over the surface it is intended to gravel, should then be followed by another coating of finer material, in which no stone should be larger than a hen's egg. If the material be gravel altogether, no more needs to be done, for the sand of the gravel will be mixed with the rougher parts, and thus form a good "blinding." In Britain, and also in several countries of Europe, the metal used for roads consists of broken stone, marl, or other hard substance, and after the road has received the

full quantity of metal it is then "blinded" with fine gravel. These undoubtedly make the best roads: they are costly, perhaps too costly for many districts of this country as yet, but they are the only materials that will make really good roads. Gravel laid on a road without being screened or cleaned out so that some hard substance can be got down on the sub-grade, will always cut through until it gets consolidated, thereby causing a good deal of waste.

It is not necessary to metal a road to the full width of its sub-grade—20 or 22 feet will be ample—and the top metal should taper off towards the sides, where the traffic is not so great, and a strip of turf placed along the edge of each side will assist the edge of the slope in keeping its shape, and form a roadway for pedestrians. When it can be accomplished, the metal as it is laid on the sub-grade should be rolled over with a heavy roller; this causes it to pack and makes it solid, and makes a good bed for the second coat.

## Spring Wheat.

Our teeth for some years has certainly been shaken in the successful cultivation of spring wheat; but as many causes do sometimes continue to prevent the farmer sowing his required amount of fall wheat, it is sometimes essential to make spring wheat take the place of the winter variety. After potatoes, it does better than winter wheat.

Early sowing, thorough pulverization of the soil, and a careful selection of seed, are all the requirements in the cultivation of this grain.

The quantity of the seed must be larger than that commonly employed in autumn. I do not think that we sow our spring grain thick enough.

Very frequently, in Canada, we experience more or less drought about seeding time; and unless our seed be very extra, a very large proportion of the kernels, having the germ of vitality strongly developed, a great part of that seed will never sprout.

The preparation of seed is a matter much neglected in Canada. First change your seed, obtain that which has been grown upon different soil from your own. To judge correctly of the sample of seed, retain it a minute or two in the closed hand; it should be to the feel plump, hard, dry and smooth. It should smell sweet, and weigh well. If it smells musty, there is danger that it has been heated. Beware of smut and rust.

"Shield the young harvest from devouring blight,  
The smut's dark poison and the mildew's white"

Steeping destroys the larvæ of insects and the germ of smut and other diseases to which spring wheat is liable. Make a brine of salt and water, sufficiently strong to float an egg; steep the grain in it, stir it well, and skim off the light grains that come to the surface; leave it soaking for six hours, draw off the liquor, spread the wheat on the barn floor, and sprinkle slightly with plaster of paris.

## Farming Without Manure.

A recent visit, after a month of frost, to a Thames-side farm, below Barking, to see a thousand tons of mangold wurtzel in a single heap, deserves a record. I had seen these mangolds soon after they had been harvested, covering a square surface of ground, nine or ten feet thick, banked up at the sides one or two feet high with earth, and thereafter with straw and chaff from the threshing floor, in a wall some two feet thick, and covered over the flat level top of the mass with a mere shattering of half rotten straw, and, thinking that if they had stood the winter of 1870-71 thus almost unsheltered, it was worth letting mangold growers know, I went down to have a second look at them. They were then in course of sale. A considerable extent of mangold growing land is here cultivated—in many instances, year after year, with the same crop—and the large quantities thus grown are carted together close by the river side, and in early spring they go off, a barge-load at a time, to the cow-keepers of London and its suburbs. About one-third of the quantity had been already quarried out and were gone. The open side I found carefully closed with a thick, well-trodden wall of half-rotten straw, and on opening it the roots appeared large, and sound from the bottom to the top. Even at the very top no rotten roots occurred; and standing there one could kick open what covering existed, so slight was the depth of it. There appeared, however, to have been an additional quantity laid upon them after my first visit, and it lay from 4 to 6 inches thick. The frost had been so unusually prolonged and sharp, that Mr. Mitchell, who manages this property for Mr. Hall Dare, had thought the usual quantity insufficient. It had, however, proved enough up to the time when it was supplemented by an addition to its thickness, for no harm had been done up till then.

The farm at East Hall, near Rainham, on which these mangolds were grown, is interesting, especially for the illustration which it gives of the extraordinary store of fertility which lies almost locked up—at any rate expressing itself but meanly in an annual sward of middling grass—beneath the surface of the Thames-side marsh and in that neighbourhood. There are some 800 acres, of which 300 are arable, and 500 are grass land, let yearly for from £4 to £5 an acre, out of which rent and taxes, and repairs of fences, ditches, and roads, have to be met. The arable land, so far as that part of it (the greater portion) which has been broken up out of the grass land is concerned, is cultivated without manure. The land has been broken up for 15 years, and it has received no dung or dressing of any kind whatever all these years. It is double-ploughed out of the old turf—a skim plough, taking off 1½ inch, being followed by another which covers this turf with five or six inches of the

C. E. W.

lower soil, and leaves the field apparently thoroughly well tilled—broken up and shattered, without a blade of grass uncovered. It is then put to mangold wurtzel—perhaps ribbled in, in the first instance—after being harrowed and clod-crushed. Holes are dibbled, plants are planted in them, and these are watered, for 30s. an acre. The watering is done from a hose in the end of a water-cart, two rows being watered at once, by a man walking behind the cart as it is drawn forward over the planted ground. Mangold wurtzel has been taken five or six years in succession, without any manure, from this newly-broken up land, without any apparent failure, except, perhaps, the increasing ill effect of imperfect drainage in the flatter and lower parts of the fields, which cannot be well water furrowed into the ditches. Mr. Mitchell is now having the land deeply drained to a low-tide outfall, and this fault will be remedied.

The 300 acres of arable land were last year 120 of them in wheat, 30 in beans, 100 in mangold wurtzel, 30 in oats, and about 20 in barley. Twelve horses do the work, including some considerable carriage work to London, and about 100 acres are steam cultivated every autumn, chiefly for the mangold wurtzel crop of the succeeding year.

There is very little attention to crop rotation, but each is grown where it is thought most likely to succeed. Rivett's wheat may be taken after the short-strawed rough chaff sort, and then possibly beans, followed by mangold wurtzel; or the mangold crop and wheat may be taken, time about, for a number of years; or mangolds may be taken for many years together after manfolds. The barley is taken chiefly on the lighter gravelly land above and beyond the marsh land, and it is then taken after catch garden crops, on which whatever dung may be collected in the yards is used.

Great crops of all kinds are grown. Sixty tons of mangolds have been had per acre of these large fields; 7 and 8 qrs. of wheat are often grown per acre. There is a good deal of rough-looking management, nevertheless: as, for example, when wheat is drilled over the land just after the mangolds have been taken and the leaves spread abroad, and is ploughed under with a shallow furrow. But the harvest justifies everything—even the practice of taking heavy crops of straw and grain roots right off the land, and restoring nothing.

There are two styles of management to be seen in operation, almost in adjoining fields, down here. In the one, Mr. Circuit puts enormous dressings of town and yard manure upon a gravelly, dry, and easily-worked soil, repeating this at short intervals, and taking cabbages and broccolt, and onions and cucumbers; thus utilising what he thus applies. In the other, Mr. Mitchell is at work on a deep, somewhat heavy, fat alluvium, covering, at 3 to 5 feet deep, a bed of peat. He

is bringing nothing to the lands but tools and seeds, or plants. He takes away, by cart and barge and waggon, immense stores of grain and straw and roots—nearly 3,000 tons of mangold have thus been sold from off less than 100 acres annually. And, comparing 1870-71 with 1854 or 1855, when he first came to it, there is a wonderful apparent improvement in the estate, notwithstanding this great draught upon its resources.

It is fair, however, to notice that at the outset of his management for Mr. Hall Dare, on this estate, the land was waterlogged. His first step was to put a drain through the embankment, 10 feet below the surface of the land, so as to permit drainage to that depth at low water. Thereafter he deepened and straitened all the ditches, and thus obtained a certain amount of drainage. He is now draining to this 10 feet cill the whole of this alluvial flat, the drains being 80 feet apart, and from 7 to 4 feet deep. In this way he expects that the productiveness of the fields will be made more uniformly good, and the tillage operations of the early spring, on which fertility so much depends, will not be prevented and delayed by patches in unfit condition. Hitherto, however, the increase of fertility has been obtained only by improvement in the means adopted for extracting it and exhibiting it. Better, deeper, tillage has been possible; and better, more profitable, plants have been cultivated. The time, doubtless, will come at length when the system of depletion will need to be changed for one of "give as well as take." Even the alluvial flats by the lower reaches of the Thames, which may be considered to be the sewage in the concrete of 20 past generations of Londoners, have not inexhaustible fertility; and either annual dressings from London stables, or frequent dressings through the sewers from London houses, will be necessary one day for the maintenance, perhaps the restoration, of their productiveness. — *F. C. M., in Agricultural Gazette.*

Varieties of Potato

To the Editor

SIR,—Having planted several varieties of potatoes last year, with a view to test their productiveness and adaptability to field culture, I thought the results might perhaps be of interest to your numerous readers. The soil selected was of a dark sandy nature, on high ground lying to the west. Although the ground was high, yet it was somewhat "springy," and seldom lacks moisture in the driest weather. The ground had been cropped for years, and but lightly manured, and yielded only light crops, whereas with heavy manuring it would be very productive.

Early in the spring I spread over it a light coating of manure which was not very well rotted. It was then ploughed some six or eight inches deep, and harrowed smooth. I then made drills 3 inches deep and 2½ feet

apart. I then cut twenty-five eyes or sets from twenty varieties, the sets being as nearly equal in strength as possible. These I planted in the drills, one foot apart, making twenty rows of twenty-five sets each, covering the sets about three inches deep. They were all planted on the 10th of May.

The following were the varieties planted:

AMERICAN VARIETIES.—Early Rose, Early Goodrich, Climax, Breese's Prolific No. 2, Breese's King of the Earlies, Harrison, Vandervere, and Garnet Chili.

ENGLISH VARIETIES.—English Fluke, Royal Ashleaf, Cotter's Early Kidney, Wheeler's Milky White, Early Race-horse, and English Ashleaf.

SCOTCH VARIETIES.—Patterson's Victoria, Baron's Perfection, King of Potatoes.

IRISH VARIETIES—White Rock.

CANADIAN VARIETIES—Early Shaw, Bennis' White.

They were well cultivated, and no weeds allowed to grow, and the following table gives the number of potatoes and weight of each variety:—

	Potatoes.	lbs
Early Rose	122	29
Early Goodrich	145	29
Climax	195	40
Breese's Prolific No. 2	151	26
" King of the Earlies	101	13½
Harrison	230	52
Vandervere	90	26½
Garnet Chili	80	26
Patterson's Victoria	112	15
Baron's Perfection	80	6
King of Potatoes	122	7
English Fluke	122	21
Royal Ashleaf	108	4
Cotter's Early Kidney	78	4
Wheeler's Milky White	151	12½
Early Racehorse	150	13
English Ashleaf	72	4
White Rock	150	23½
Early Shaw	115	17½
Bennis' White	74	16

From the above results I arrive at the following conclusions: For poor land and ordinary culture the American varieties are far the most profitable potatoes to grow; that all the European varieties require land heavily manured and good culture, especially those of the ashleaf or Kidney family, of which are Cotters' Early Kidney, Royal Ashleaf, English Ashleaf, Patterson's Victoria, Baron's Perfection, King of Potatoes, Early Race-horse. These are calculated more expressly for garden culture, and require for being in order to yield largely. I find also that nearly all the European and Canadian varieties can be grown on heavily manured rich land, and still be dry and mealy when cooked; in fact, many of them do not show their good qualities unless grown in very rich soil, while on the other hand most of the American varieties are almost spoiled for table use by growing in rich or heavily manured soil. The King of the Earlies is an exception, however, to this rule; like the European varieties, requires a rich soil, and is far better adapted to garden than field culture. As it would be occupying too much space to give my judgment of the qualities of the different varieties, I will let that pass.

J. H. THOMAS.

Planting Forest Trees.

D. C. Scofield, of Elgin, Ill., in a valuable article in the *West on Rural*, on planting forest trees, lays it down as a vital principle that no tree, whose timber is only third class in value, should ever occupy space and soil; for this reason, he would not plant a cottonwood, a Lombardy poplar, nor a white willow, for timber. He gives the following average measurements from trees of twelve years growth, the plants from six to twelve inches high when set out in rows in timber belts, alternating Larch, Norway Spruce, Black Walnut, Silver Maple, White Pine, White Ash, and Scotch Pine, as well as several plantations with trees separately. All did well, except that black walnut was destructive to maple standing near:—

	Diam in	Height ft
European Larch	8 to 12	30
White Ash	1 to 5	16
Silver (or Soft) Maple	4 to 6	25
Sugar Maple	2 to 4	12
Black Walnut	2 to 4	14
Chestnut (common)	3 to 4	10
Tamarack (or American Larch)	4 to 6	25
American Elm	3 to 4	16
Scotch Elm	3 to 4	16
European Birch	4 to 6	14
European Beech	2 to 4	10
White Pine	6 to 10	35
Norway Spruce	5 to 8	20
Scotch Pine	4 to 8	20
Black Austrian Pine	5 to 7	16
European Silver Fir	2 to 4	7
American Silver Fir	4 to 6	16

It will be seen that the European Larch outgrew everything else; and that next to this was White Pine. Hence these are recommended as the best trees for artificial forests and belts for the west.—*Count y Gentleman.*

CHARLOCK—A most pestilent weed to eradicate. Our correspondent's plan—repeated ploughing, cultivating, and harrowing, following by root crops, that allow of hoeing and weeding, is perhaps as good as any. "Eternal vigilance" is necessary in dealing with this weed.

MACCARONI WHEAT.—The *Central Californian*, of March 8th, says:—"S. Baker, who lives about four miles above Hollister, brought to our office, the other day, a sample of wheat he called macaroni wheat. The grains were about three times the size of those of the common wheat. In France this kind of wheat is ground into flour; here in California, and other parts of the United States, it is used for macaroni soup. Mr. B. informs us that he has about thirty acres of this grain sown on his place, and that its yield is much greater than that of common wheat. A Mr. Nash, a year or two ago, sowed fifty pounds of this grain somewhere in Santa Clara Valley, and it yielded him fifty sacks. If the thirty acres which Mr. Baker has in does well, it is his intention to sow more next year. There is a mill in San Francisco preparing it for use."

Stock Department.

How Well-Bred Hogs Pay

Since I commenced farming nothing has done so well with me as hogs. I always kept the best that could be got; and I have generally kept a carefully checked account of the disbursements and receipts, and found that the amount to the credit of profit and loss is much more than in any other branch of farm stock, especially when outlay of capital is taken into consideration, and losses and casual injuries are allowed for. Hogs seem to be freer from these than almost any class of farm stock in Canada. In the United States it seems otherwise.

Last year one of our Berkshire sows had ten young ones. They were pigged about the 1st of May, much later than was advisable, but it could not be avoided. The mother did not seem with heat early; or if she did, she was so fat and phlegmatic that it was not observed; consequently the young ones came too late to reach the size we should have desired before fall. The stock here alluded to were not prize hogs, but well-bred, good ones.

We sold four at two months old at \$4 each; one sow was kept for future breeding purposes; the remaining five were fatted and killed, making, when slaughtered, 750 lbs of excellent pork. The food consumed in fattening, after leaving the stubbles, was only 15 bushels of peas, worth about 70 cents per bushel. There had been previously about 3 bushels of peas fed out amongst these six during the summer. There was also some mash, but not much, as there were many others to share it. In addition to the above, there was an abundant supply of the best clover, Broad and Alsike, and an excellent warm house.

The account would stand thus:—

Cost of keeping sow through winter, 1869 at 1/2 pint of peas daily and some wash, 4 bushels at 70c.....	\$ 2 00
Cost of summer feeding 6 pigs, with clover 3 bushels at 70c.....	2 10
Cost of fattening, after stable feeding, 15 bushels at 70c.....	10 50
750 barrels of excellent pork at 6c.....	\$15 40
1 s.w.....	\$35 00
4 young ones sold.....	8 00
	16 00
	-----
	\$69 00

The above can be done by any farmer who will carefully attend to and care for the young ones, and, above all, get a first-class Berkshire breed, with long curly hair. I greatly prefer them. They are much harder, and quite as easily kept. But to do this either on a large or small scale will require a clover patch, of course sufficient for the number of hogs kept; and in addition there must be a warm house, well supplied with straw even in summer. Clover forming the principal portion of food given, necessitates a

warm lodging during rain storms, and also at night. Nothing else will do. Hogs will crowd together even in summer in a fence corner; but give them a house, and they will sleep in it during the hottest weather. In addition to clover, for food, there should be about half a pint of peas given to each daily. The easiest way to do this is to sow them broad-cast about the yard, a few at a time, well scattered, and always soaked in water until they are softened. Of course, if made into very thin pea-soup, and given twice a day as drink, more benefit will be derived than the cost of so preparing the food. I have carefully tried this, and am fully prepared to show that this pea-soup, with clover and a warm house, will make pork faster and cheaper than any food that I ever tried. Half a pint of peas will make half a bucket-full of palatable drink—that is, if the peas are thoroughly boiled. Half a gallon of this in the morning, and half a gallon at night, provided they have an abundant supply of clover, will be about what would be required for each hog, to keep them growing and in first-rate condition. When fattening time comes, and it must come before cold weather sets in, every bushel of peas, or better still, every pint of thick pea-soup, will make a wonderful increase.

C.

How Much Will Keep a Horse?

A correspondent in *Hearth and Home* says in reply to some enquires on the cost of keeping a horse:—"A horse weighing from ten to twelve hundred pounds will eat about six tons of hay, or its equivalent, in a year. And we suppose the real point to get at is, whether one can keep his horses cheaper on some other product than hay. This is an exceedingly difficult question to answer—it depends so much on circumstances. We shall not attempt to answer it fully at this time, but will merely say that, in our opinion, three and a half tons of corn stalks and two and a half tons of corn would keep a horse a year in fully as good condition as six tons of good hay.

"We may estimate, also, that it will take three and a half tons of oat straw, and two and a half tons of oats to keep a horse a year. A bushel of oats weighs thirty-two pounds, so that it will take over 155 bushels and three and a half tons of straw to keep a horse a year. It would take about two acres of good land to produce this amount.

"For the present purpose, we may assume that five tons of rutabagas is equivalent to one ton of good hay; so that a horse would require thirty tons in a year! As this statement may stagger our young friend, it may be well to say that Stephens, in his *Book of the Farm*, says: 'An ox will eat about a ton (2240 lbs.) of turnips every week. A two year old short-horn ox will consume twenty-six tons, and a three-year old thirty tons of turnips in 180 days.'"

### The Care of Horses in a Nutshell.

Handle the colt from the time it is foaled. By not working the dam too hard, and by generous food, keep her in good flow of milk. Feed well from the day of foaling, never let it stop growing. Halter-break the first winter.

Begin to work him very lightly when two years old. Don't put him to heavy work until five years old. Feed him regularly, evenly and generously, whether at work or idle. Keep his stable clean, warm, well ventilated and light. Clean him every day, morning and night. Take off harness when brought to the stable sweated from work. Don't let working hours encroach five minutes on feeding times. Always put a lighter load than that which you think the horse could pull at his best. Never check his head up before a load. Keep your fences good, and your colt will not learn to breach. Don't let shoes go until they fall off. Go ten miles to a good horse-shoer rather than one mile to a botch. If your horse is sick, and you are sure of the nature of the ailment, attend to him at once; if the attack is beyond your knowledge, send to an experienced surgeon. Never let a quack into your stable. Ninety-nine out of every hundred colics, colicries, heaves, blindnesses, strains, spasms, cuts, and other diseases and accidents to a horse, are caused by gross neglect.

C. E. W.

### The Texas Cattle Trade

If railroad kings rule in Wall Street, cattle kings rule in portions of Texas. A recent letter from south-western Texas gives very interesting information in regard to this vast trade, the extent of which is known to comparatively few in more densely populated States. It is estimated there are 4,000,000 head of cattle in Texas at present, one-fourth of which are ready for market and have already been started across the country for Kansas and Nebraska, for shipment east and to California. The plains over which these cattle range until they are three or four years of age, contain 142,000,000 acres of rich pasture.

The following are a few of the ranchmen, with their respective herds:—Richard King has a farm on the Santa Catrutes River, of \$4,132 acres, on which he keeps 65,000 cattle, 20,000 horses, 7,000 sheep, and 8,000 goats, and employs 300 Mexicans to attend them. He sells 10,000 beeves annually. Mr. O Connor owns a little pasture field on the San Antonio River, where he grazes 40,000 head of cattle, and sells \$75,000 worth each year. He commenced the business in 1852 with 1,500 head, and his present enormous herd are the result of natural increase. Another man named Robideaux has a ranch of 142 \$40 acres near the mouth of the Rio Grand. It is surrounded on three sides by

water, and to enclose the fourth required thirty one miles of fence. He has 30,000 head of cattle, besides an immense amount of other stock. John Hitson, whose farm lies on the Brazos River, has only 50,000 cattle, and drives to market 10,000 or so annually.

It is a significant fact that it required 111 cars per day during the shipping season last year to remove the Texas cattle from Abilene, Kansas, and that a single bank in Kansas city handled during the short season over \$3,000,000 of cattle money. This trade has increased in extent rapidly from the time the first shipments were made to the East, a few years since, to the present time, and from the high price which beef commands at the present time there is every reason to believe that it will be largely increased in the future.—*Milwaukee Sentinel.*

### How Little Land will Keep a Cow.

On the first day of June last I commenced cutting clover for one cow confined in a yard inclosed by a high tight board fence, with a stable attached in which she has been fed. She had no feed but freshly cut clover from the first of June to the fifteenth of October, and all taken from one-fourth of an acre of ground. She has averaged eighteen quarts of strained milk per day, from which my wife has made eight pounds of butter per week, during the four and a half months. The cow is five years old, and a cross of the Ayrshire and Durham. She has given more milk, more butter, and of a better quality, than she has ever done on pasture. On one-eighth of an acre I have raised 150 bushels of sugar beets and carrots, which with the two tons of hay will keep her handsomely the balance of the year. The labour of cutting clover for the cow is less than driving her three fourths of a mile to pasture: besides, the manure saved is quite an item. In the dairy districts, the usual estimate is four acres to the cow, on the hay and pasture system, whereas by soiling and raising roots five-eighths of an acre is found to be sufficient. I will state further, what I believe from nearly thirty years' experience is, that that there is no crop so valuable for soiling as clover, no crop so many pounds of which, and of equal value for milk and butter, can be produced from an acre of ground. Sweet corn is a good crop for late feeding, where clover will not grow, but not profitable for winter feeding.—*Exchange.*

The sale of Mr. Richard Stratton's short-horns was conducted by Mr. Thornton, on March 15th. No very high prices were realized, as the average on 44 cows and heifers was only about 31 guineas—on 11 bulls, a little over 36 guineas each. The only sales above 50 gs. were the cows Frivolity for 71, Golden Drop for 68, and Matchless 10th and Liuda for 52 gs. each.

### Hints on Draught Horses and Harness.

Whenever a horse is employed for the purpose of drawing any vehicle or load, it is of the utmost importance that he should be able to employ all his strength to advantage. Every one who considers at all must acknowledge that if a horse has to do his work in a cramped and confined condition, or when he is inconveniently placed as regards the load, he cannot exert his full power, which is so much loss to his master; or, if forced to perform a certain amount, then he is obliged to waste a great deal more of his strength than is required, to his own great pain and injury.

The act of pulling is performed by leaning forward with the weight of the body against the resistance of the opposing force, and then, by strong movements of the limbs, keeping up and increasing the pressure, the weight of the body being of the utmost importance. Muscular movements exhaust the strength, whereas the body weight is easily employed without consuming the vital energies.

First, and unfortunately, in too many cases, the collar is quite unfit for the animal. A horse collar is, we are sorry to say, frequently looked upon merely as a ring for the neck, to which the traces are affixed; whereas there is no part of the harness which is so important, and which ought to fit so accurately.

Second. The horse is often prevented from throwing his weight into the collar by a check-rein—a useless and painful encumbrance, introduced by vanity and retained by thoughtlessness amounting to cruelty. Ask horse keepers why they use it, and hardly any two will give the same answer, although it is generally supposed by them to be a safeguard in case of stumbling. The real object with which it was introduced, was to make every horse to which it was applied, however weak, or old, or poor, assume the lofty carriage of the thorough-bred horse. Fortunately, this vitiated taste is going out of fashion as better information is diffused.—*Rural Carolinian.*

### Salt for Stock

There seem to be a few points well settled in regard to supplying salt to domestic animals, among which are:—

1. It is required by horses, cattle, sheep, and hogs, promoting digestion, and hence increasing the appetite, and generally contributing to the health of the animals.

2. It should not be administered as food, in considerable quantities at stated times, but only as a condiment, to which the stock may have access whenever prompted to partake of it.

3. The best mode of supplying it is to place lumps of rock salt in the pastures, pens, stable, &c., so that they may be sheltered from rain, and yet be accessible at all times to the stock.

**Sudden Death of a Calf.**

I have just taken notice of the correspondence by "Inquirer," in a recent issue of your journal, in which the writer wishes to know the reason of "the sudden death of a weakly calf, to which we gave every morning a pailful of skimmed milk, which it drank very greedily?"

Now, if a calf be fed properly, he could not drink greedily a pailful of skimmed milk at one feeding. This stated fact "of the calf drinking greedily a pailful of skimmed milk is *prima facie* evidence to my mind that he was not fed often enough.

Calves should be fed at least *three* times a day, and at regular stated hours. If a calf be fed as I state, he has a capacity of aldermanic dimensions if he succeed in finishing a pailful of skimmed milk at one go. These little fellows are naturally very greedy, and if their gluttony be provoked by long periods of fasting and weak, thin blue milk, when the meal time comes round, how can we be surprised at their feeding with such greed as to choke themselves? My calves are fed three times a day; they have skimmed milk from the day they are twelve days old, but in it is mixed about a handful of linseed; it is as much as they can do to get through half of a patent pail, and they never choke themselves. (C. E. W.)

**Periods of Gestation and Incubation.**

	Shortest period, Days.	Usual period, Days.	Longest period, Days.
Mare .....	322	347	410
Cow .....	240	283	321
Ewe .....	146	154	161
Sow .....	109	115	143
Goat .....	150	166	103
Bitch .....	55	60	63
Cat .....	48	50	56
Turkey sitting on } Hen Eggs	17	24	28
	24	27	30
	24	26	30
Hen sitting on } Duck do	26	30	34
	19	21	24
	28	30	32
Duck .....	27	30	33
Pigeon .....	16	18	23

Many farmers, for an extra dollar or two, sell their best calves to the butcher, and raise such as are not so valuable, and think they gain by the practice; but the few dollars they think they made, would in many cases amount at the milking age of the stock, if the best had been kept, to more than thirty dollars, instead of a dollar or two.

The oldest horse in the State of Ohio, owned by a farmer of Fremont, died during February. The animal, "Old Ned," was about thirty-six years of age, and last summer seemed good for several years more of his life. The winter, however, proved too severe for him; for, towards the end of January, he appeared unwell, and after lingering for a few days, he died without a struggle. —*Am. Ex.*

**NEW IMPORTATIONS.**—Mr. Long has again returned from England with a fresh importation of valuable stock. Among them he brings a promising, clean limbed, and powerfully built colt, of the agricultural or heavy draught class. He was sired by Oxford from a Yorkshire mare. He stands 16 hands 1 inch, and though not quite two years old weighs 1,650 lbs. He will doubtless prove a useful acquisition. Mr. Long has also brought over six very fine Leicester yearling rams, two of which he has already sold—one to Mr. Lawrie, of Scarborough, and the other to Mr. Waldrick, of Thornhill. As will be seen by advertisement, these fine animals are offered for sale

**AVERAGE PRICES OF YOUNG SHORTHORN BULLS IN NORTH BRITAIN.**—The following are the average prices realized for the principal lots of young shorthorn bulls sold by public auction in the north since August last. The bulls were, with very few exceptions, calved in 1870, and the Keithmore, Gordon Castle, and Uppermill bulls were sold in autumn, while the others were several months older, the sales being later in the season. At Sittytton, Straloch, on the 16th inst. thirty-eight bulls, bred by the Messrs. Cruickshank, realized an average of £46 6s. a head. At Forres, on the 14th ult., three bulls, bred by Mr. Bruce, Newton of Struthers, Morayshire, brought £44 a head. At Huntly, on the 9th inst., eleven bulls, bred by Mr. Scott, Glendronach, brought over £34 a head. At Kinnellar, on the 15th inst., seventeen bulls, bred by Mr. Campbell, realized £32 10s. each. At Huntly, on the 9th inst., nine bulls from Broadland, bred by Mr. Bruce, realized £30 a head. At Little Haddo, Foveran, on the 16th ult., fourteen bulls, bred by Mr. Cochrane, realized close on £30 each. At Forres, on the 14th ult., eight bulls from Orbliston, bred by Mr. Geddes, averaged over £29 a head. At the same time, seven bulls, bred by Mr. Lawson, Brae-Lossie, Elgin, averaged about £30 each. At Rettie, on the 2nd inst., ten bulls averaged £29 each. At Uppermill, Tarves, in October last, twenty bulls, bred by Mr. Marr, averaged about £26 each. At Kinaldie, on the 23rd ult., a dozen bulls averaged £25 1s. each. At Keithmore, Dufftown, on the 13th October last, five bulls, bred by Mr. Cantie, realized an average of £24 11s. each. At Gordon Castle, in September last, twelve bulls, bred by the Duke of Richmond, realized £22 odd a head. At Petty, Fyvie, last month, Mr. Mackie averaged £29 for eight bulls. At Forries, six bulls, bred by Mr. H. Marris, Earnhill, averaged £26. At Nairnside, last week, nine bulls averaged £23. At Ellon, in October, nine bulls, bred by Mr. Marr, Cairnbridge, averaged £23. At Ellon, in December; thirty-four bulls, belonging to Messrs. Davidson, Cairnbridge; Thomson, Newseat; Campbell, Blairten; Mitchell, Haddo, and others, averaged £24.—*Farmer, (Scottish.)*

**LIVE AND DRESSED WEIGHT OF HOGS.**—Joseph Harris, in the *American Agriculturist* gives an account of the growth of a litter of five cross-bred Essex and Berkshire pigs. They were killed the day they were a year old. Their live weight averaged 416 lbs., their dressed weight 364 lbs. Percentage of dressed to live weight, 87 4/8. He argues that this is an excellent showing, and thinks that butchers could well afford to pay three cents a pound extra for such pigs.

At the exhibition of stallions, in connection with the Hope Agricultural Society in Port Hope, there were ten entries of general purpose stallions, and two entries of blood stallions. The price of \$75, for the best blood stallion, was awarded to Mr. James White, of Trafalgar, for "Touchstone." The prize of \$75 for the best general purpose stallion, was awarded to "Performer," owned by Mr. Hall, of Orono.

Mr. Cochrane has sold to Col. Kingscote, of Gloucestershire, England, his young shorthorn bull Duke of Hillhurst, which Mr. Simon Beatie takes with him across the Atlantic. We understand that the same successful Canadian breeder has been offered by another prominent stock raiser 1,500 guineas for a last December's Duchess heifer calf.

**HOW TO FIT A COLLAR TO A HORSE.**—The plan adopted in the West, which we are assured by men who have been long in the collar business, does not injure the collar in the least, is to dip it in water until the leather is thoroughly wet, then put it on the horse, securing the hames firmly, keeping it there until it becomes dry. It is all the better if heavy loads are to be drawn, as that causes the collar to be more evenly fitted to the neck and shoulder. If possible, the collar should be kept on from four to five hours, when it will be perfectly dry, and retain the same shape ever afterward; and as it is exactly fitted to the form of the neck, will not produce chafes nor sores on the horse's neck. —*Horsess and Carriage Journal.*

**DRESSED BLACK HOGS.**—A correspondent of the *Michigan Farmer* says:—The principal objection to the Essex and Berkshire breed of hogs I find to be their colour. Now, as Youatt justly observes, this is not even "skin deep." The colouring matter will be found to be secreted between the true skin and the epidermis, or outer skin. If care is taken in scalding black hogs, they can be dressed as white as any white hogs. It is a well known principle that all black substances absorb heat. Hence, in dressing black hogs, the water should not be so hot as in scalding white ones. If this simple rule is observed, there will be no difficulty in dressing black hogs. Instead of this colour being an objection, I regard it as an advantage, for the skin of a black hog will always be found to be smooth and glossy, free from cutaneous eruptions, and always clean.

## Veterinary Department.

### Ontario Veterinary College.

#### ANNUAL EXAMINATION.

It is gratifying to learn that the Veterinary College, established ten years ago under the auspices of the Board of Agriculture, continues to make most satisfactory progress, both as regards the increased number of students that are availing themselves of the opportunity thus afforded of gaining a thorough knowledge of the profession, and the efficiency of those who have already completed their course of instruction, and are doing good service in various parts of the Province.

The lectures are delivered in a commodious and well arranged building on Temperance Street, especially erected for a college by Dr. Smith a couple of years ago. The following is the staff of professors, with the subjects on which they lecture:—Dr. Smith, "Anatomy and Diseases," Professor Buckland, "The Breeding and Rearing of Farm Animals;" Dr. Thorburn, "Materia Medica;" Dr. Barratt, "Physiology;" and Professor Croft, "Chemistry." The session commences in October, and continues until the 1st of April in each year.

A clause of the new Agricultural Act, passed at the last session of the Legislature of Ontario, makes it illegal for any person to assume the title of "veterinary surgeon," or any portion thereof, without being a graduate of some recognized school. This will tend to elevate the profession to its proper position.

The closing examinations of the session 1870-71 took place on the 14th of April, in the Agricultural Hall, corner of Queen and Yonge Streets, the Board of Examiners being—Mr. Cowan, V.S., Galt; Mr. McKenzie, V.S., Kingston; Mr. Wilson, V.S., London; Mr. Thomas, V.S., Guelph; Mr. Wells, V.S., King; Dr. Thorburn, Dr. Rowell, and Dr. Richardson; Mr. Coleman, V.S., Ottawa; Mr. Davidson, V.S., Whitby; Mr. Sweetapple, V.S., Brooklin. A number of the former graduates of the institution, among whom were Mr. Cesar, V.S., Caledon East; Mr. Sanderson, V.S., Richmond Hill; and several agriculturists, were also present.

The following gentlemen obtained diplomas:—Messrs. John Elliott, Sandhill, Josephus Bailey, King; James Cesar, Waterloo, Iowa; Thomas Churchill, Clinton; Robert Evans, Charleston; J. Churchill Clinton; Arthur Thompson, Sandhill.

The following gentlemen passed a primary examination in anatomy and physiology:—Messrs. Joseph Hawkins, Tilsonburg; J. C. Hutchings, Ottawa; Wm. Colclough, Mount Forest; W. Fair, Blenheim; Robt. Young, Province of Quebec; W. A. Robinson, Milton; James Gibson, Teeswater; W. C. Kidd,

Listowel; John Speirs, Glenallan; and John J. Richards, Orangeville.

Messrs. Gibson and Evans were highly complimented by the examiners on their proficiency in anatomy and physiology.

In the evening, the Principal of the College, Dr. Smith, entertained, according to custom, the professors, the students, and several friends, to the number of about seventy, at an excellent supper, spread in the Lecture Room of the institution.

#### Worms in Horses

Intestinal worms are parasites which develop themselves in all the domestic animals, each, however, possessing its own varieties. The presence of worms in the digestive tube is marked at first by an increased appetite, but the animal, notwithstanding the quantity of food which he consumes, falls off in condition; his coat is rough, and is not shed at the ordinary time; there is an annoying itching, which causes the horse to rub his upper lip against the manger or on the wall; sometimes there is considerable itching about the rectum, which is indicated by the horse's rubbing his tail or rump against anything within reach. The symptoms mentioned are such as would cause one to suspect the existence of worms, but it is only when these appear among the dung voided by the horse, that we can speak with certainty on the nature of the disease. At a later period, and especially when the worms have developed in great numbers, the symptoms are very much aggravated, and the horse becomes emaciated and suffers occasionally from colicky pains; the flank is tucked up; the inside of the eyelids is pale; he walks with difficulty, and a fatal termination will sometimes ensue. A dose of aloes (four or six drachms) may be given, which has often the effect of expelling worms without having recourse to further treatment. If this fails, divide six ounces of iron filings among twelve balls, and give one every morning until they are finished, and then give a dose of aloes, which will cause the expulsion of any worms which remain in the horse's intestines.

#### The Diarrhoea in Young Animals.

The diarrhoea or dysentery (*Dysenteria mcoratorum*) of sucklings is a disease which befalls the young animals, colts, calves, and also pigs and lambs, at any age, from the very day they are born until they have been weaned and accustomed to solid food; and generally it is acute and dangerous in a high degree, as long as the sucklings are very young, say less than two weeks old. In some districts this dysentery seems to be quite frequent, proves to be very fatal, and causes a great many losses. It is, however, one of those diseases of which we know the cause, and therefore, as we are almost always able to remove the same, the preventive generally is within our power.

The *Symptoms* are so well known, that a description of them is superfluous.

*The Cause.*—The immediate cause is too much acid in the stomach and intestines, which, instead of supporting the digestion, prevents it, decomposes the food, milk, etc., and irritates the mucous coat of the digestive canal frequently to such a degree as to cause inflammation. Now, the question is—How does that acid come there? Let us see. Very many, but principally our dairymen, know that milk when shut up for an unusual long time in the bag of a cow (and also of any other milking animal), when at the same time the animal heat and respectively the physiological exchange of organic material, is increased (either by uncommon muscular exercise, by high feeding, or by fever of excitement), it becomes changed, sour, and even coagulated in a similar way, and perhaps more and sooner, than it does when kept in a vessel exposed to a temperature of between 100 and 150 degrees Fahrenheit, after it has been milked out. Still this change or acidification is yet a somewhat different one, where the milk under such circumstances is confined in the bag of the animal, and is secreted and kept under the influence of the increased physiological, or, in some instances even, pathological, exchange of material—organic waste and repair—which not only favours fermentation or makes the milk more apt to ferment, but also increases the amount of some of its constituent parts; that is, of casein and milk-sugar.

In an animal which is fed with heavy food, especially large quantities of grain, and such food in general as contains a great deal of nitrogenous substances, or in an animal which has severe muscular exercise, or is feverish or excited, the milk always is richer in casein and milk-sugar. Therefore as milk-sugar is changed by fermentation into lactic acid, such milk has to be considered as the source of the abnormal acidity of the gastric juice in the stomach of the sucklings, and consequently as the cause of dysentery.

As soon, however, as we know the cause of a disease, and if at the same time we are able to avoid these conditions which constitute the same, the prevention is quite easy.

First, we have to feed no more grain, or such food in general, which is very nourishing or rich in nitrogenous substances, to our brood animals, than can be easily digested and assimilated, and agrees with their condition. Secondly, we must never give our brood animals any too severe or too long continued muscular exercise. Thirdly, we have to give the young ones a frequent opportunity—during the first month at least every two or three hours—to suck their dams, in order to prevent too great an accumulation of milk in the bag of the latter. Where this cannot be done, or where the dam produces more milk than the young is able to consume, we have to milk out a suf-

sufficient quantity before the latter is permitted to suck. Last, but not least, we have to prevent as much as possible our brood animals from becoming unnecessarily excited and irritated, or exposed to such noxious influences, which might cause fever and disease; and we must never allow the young to suck its dam when she is suffering from fever or disease, nor must we feed it with the milk from a feverish or diseased animal. If we comply with the above, we scarcely ever shall have cause to complain of diarrhoea in our colts, calves, and lambs.

*Treatment.*—The object of a rational treatment must be, first, to remove the immediate cause, the morbid acidity of the gastric juice, and secondly, to stimulate the digestive power, and to mitigate the pain and the morbid irritation in the mucous membrane of the digestive canal.

The following compound answers the above demands; at least, it has been found to be very useful and reliable, where the disease had not already advanced so far as to make a recovery impossible:—Five grains of powdered opium, two drams of powdered rhubarb (best quality), two scruples of carbonate of magnesia, and two drams of powdered marsh-mallow root, made with a little water into ten small round pills, five of which to be given in the morning and five in the evening. The above is intended for a colt, ten to fourteen days old. For a younger one, the doses, of course, would be a little less, and for an older one a little larger. For a calf of about the same age the prescription would be as follows:—Five grains of powdered opium, two drams of powdered rhubarb, two scruples of carbonate of magnesia, mixed with and suspended in five or six ounces of chamomile tea, to be given as a drench, half of it in the morning and half in the evening. To lambs and other young animals the same medicines may be given in proportionate doses.—*Western Rural.*

### Parturient Apoplexy.

*To the Editor.*

SIR,—Your opinion on the following case would be gladly received.—

I had a very valuable cow die the other day. She calved at three o'clock a.m., was to appearance strong and healthy, cleaned her calf, and gave three gallons of milk, which the servant allowed her to drink; she had, besides, a pailful of warm bran mash.

At noon the cow only gave one quart of milk; whereas at other times she would have given from one to two gallons. When I went to feed her in the evening she was lying down, and could not get up. She was drawing her breath rather hard, but did not seem to be in much pain; but when she tried to rise she had lost the use of her hind-quarters. I at once gave her all the opening medicine I had in the house, and then started to the chemist's, and got about a

quart of raw linseed oil, to which he added some croton oil, but did not tell me how much; he said it would go through her in one or two hours. As soon as I got home I gave the dose; and immediately it was down the cow was in fearful agony, and in one hour and a quarter she was dead.

The cow was very fat; but this is her seventh calf, and she has always been in the same condition, and to all appearance calved just as usual, as I had an opportunity of observing, for I had generally been with her at the time. The calf is strong and healthy.

On examination, the stomach contained a substance very much resembling a coat of leather, which had apparently dried up and obstructed all passage. The lungs were very slightly touched with inflammation, and the rest of the inside was as healthy looking as could be.

D. S.

REPLY.—Your cow was affected with a disease called parturient apoplexy, the causes, symptoms, and treatment of which were described in the CANADA FARMER of the 15th April. The remedies you gave may have had an injurious effect. Croton oil is a drug that must be used with great caution, and the chemist must have been mistaken when he said that the drench would cause purgation in the short space of two hours.

### Dislocation of the Patella

*To the Editor.*

SIR,—Can you tell me what to do for a young horse, coming five, whose stifle comes out occasionally in one or both hind legs. Before a year old it first occurred, and was not again noticed till he came to be broken and kept in stable. Since then, at intervals more or less frequent, the stifle will be found out in the morning, with a great tendency to repetition during the same day. The animal is otherwise sound and valuable. Is the difficulty incurable? Will it be likely to develop into any other defect? One leg, especially immediately after the stifle being out, gives the slightest indication of spring-halt in its action. Benefit has been found in bathing with burnt alum solution, but without permanent relief. L., Quebec.

REPLY.—Dislocation of the patella, as noticed in the above case, shows a weakness of the ligaments and muscles in connection with the stifle joint, and is an ailment which, if long continued, may end in a permanent disease of the outer prominence on the lower extremity of the large bone. We would advise complete rest for six or eight weeks, the horse to be kept in a roomy and level box, and the joint to be blistered every two weeks with cantharidine ointment in the proportion of one part of powdered cantharides to four parts of lard, and about one ounce of the ointment to be applied at each blistering, which must be well rubbed into the parts

for ten minutes. During the course of treatment the horse must be allowed a generous diet. After the treatment has been continued for the time mentioned, very moderate and regular exercise should be given, and on no account should the horse be exercised or driven without shoes, as wearing down the hoofs in such cases is generally productive of harm.

### Digestive Organs of the Ox.

The digestive apparatus consists of a membranous tube extending from the mouth to the anus, and is known as the alimentary canal, and may be considered under two classes—the preparatory, and the essential. The former consists of the mouth, the pharynx, and the oesophagus or gullet, and their accessories the teeth, and the glands (salivary) which secrete the saliva.

The first process of digestion is prehension, or taking in of the food, which, in the ox, is chiefly performed by the tongue, an organ possessed of great mobility, also very rough, and having the muscles largely developed in comparison with the tongue of the horse. The lips are also very thick and rigid, and on the middle of the upper lip there is a considerable portion devoid of hair, and this is always moist when an animal is in a healthy condition; hence the opposite condition, or a dry muzzle, is a symptom of fever concomitant with many diseases. The secretion of the lips keeps them clean and free from the attack of insects and the accumulation of dirt. The cheeks are formed of powerful muscles, and the inner or mucous membrane presents many large and long conical processes called papillae, all of which are directed backwards, and they are of great use in preventing the return of the food from the mouth during the process of mastication. These processes are sometimes barbarously removed by people ignorant of the structure of the mouth. The upper part of the mouth, or hard palate, is attached to the bony walls by small processes penetrating these bones, and on the front part is a large cartilaginous pad, taking the place of the teeth. This portion is more elastic than the back part; and in prehension, when the animal is grazing, the grass is collected and rolled together by means of the tongue, it is firmly held between the pad and incisor teeth, and by a sudden motion the grass is either pulled or cut through.

At the back part of the mouth there is a moveable curtain called the soft palate, which is formed of two layers of mucous membrane, enclosing a number of muscles; it does not completely close the opening between the mouth and the pharynx, as in the horse, but is always open as in man, thus allowing the ox to breathe through his mouth, and also favouring the upward passage of the food during the process of rumination.



### Thrush in Horse's Foot.

The occurrence of thrush in the stable is not particularly creditable to the care or cleanliness of the groom. It indicates either irregularity in the feeding or want of cleanliness in the stable. If the horse is in the stable, and can be kept moderately comfortable, give him a dose of physic. Along with the dry hard food on which he has probably been living, give him a few slices of mangold or Swedes once or twice a week; allow him some scalded bran; he may have besides, on the Saturday night, an ounce of nitre in the mash. Carefully pare away the ragged portions of the faulty fulsome frog, but rigorously avoid cutting deep into it. Dress over the cleansed surface every morning for four or five days with calomel, taking care that the powder gets well into the cracks and wherever the swelling discharge issues. If the horse goes to work, or the feet are extensively diseased, the frog and sole had better be kept dry and clean by slipping a leather sole under the shoe, and packing between it and the foot a little tow soaked in tar oil. As the foot requires to be cleaned and dressed daily, the leather sole must not be nailed on permanently. — *North British Agriculturist.*

**RETAINED PLACENTA.**—A subscriber, writing from Norwich, asks.—“Can you tell me of a remedy for cows that do not clean after calving?” A mild dose of laxative medicine, as—Epsom salts, four ounces, dissolved in a quart of water, and given in one dose, will sometimes, through its action on the bowels, tend to the removal of the placenta. In all cases where it is retained after the eighth day, it should be removed by the hand, which can be easily accomplished without any danger to the cow.

**OBSTRUCTION OF THE TEATS.**—A correspondent from the “Backwoods” writes:—“Three of our cows have become affected with some affection of their teats. The only thing I can see wrong is a small hard lump internally at the head of the teat.” The teats are either obstructed from warts, or from a stricture of the duct close to the gland. The only effectual remedy is the use of the syphon, or teatbistoury, by which to divide the stricture. In some cases passing a probe up the teat is attended with benefit.

**WARTS.**—A correspondent writes:—“I have a valuable buggy mare, which has some dozen small warts upon the shoulder, under the collar. They are about the size of a horse bean, flat, and so close as to appear to be two or three joined in one. These warts have not been long on the beast, and do not appear to be sore, yet I think they are growing. Please tell me what I had best do to destroy these unwelcome things.” Remove the warts with a knife, then touch the parts daily, for six or eight days, with carbolic acid lotion, about one part of the acid to twelve of water.

**HORSERADISH FOR ANIMALS.**—An exchange says:—Horseradish is an excellent condiment to mix with the food of cows to give them an appetite, and make them sleek and thrifty. It should be fed freely to all animals that are not well, and it will be of great service to working oxen troubled with heat. If given to cows in doses of a pint a day, mixed with potatoes or bran, it will prevent or relieve cows of the disease called cake in the bag. Few animals will refuse to eat it, and some will eat of it greedily, as much as half a peck at a time.

**THE FOOT AND MOUTH DISEASE.**—“It seems,” says the *Prairie Farmer*, “that this disease is far from being extinct in the Eastern States. In fact, there appears to be as much cause for alarm now as at any previous time. The Cattle Commissioners of the State of Rhode Island have adopted resolutions prohibiting the bringing of cattle into that State from the cattle yards at Albany, N.Y., on account of the liability of their being contaminated with the disease. It is expected that Massachusetts and Connecticut will adopt a similar measure. At present Albany seems to be the great distributing point of the malady. The Canadians do not yet admit that they have it in their herds, but there is no doubt that it prevails in parts of New York, Massachusetts, Connecticut and Rhode Island.”

**CATTLE DYING IN CALIFORNIA.**—The *Sacramento Union* says. The numerous droughts affect the stock cattle more injuriously than any other interest. The loss of a crop of wheat in one year does not affect that of the next, but the cow not only gives no increase in the year of drought, but often dies, and cannot be replaced until after a lapse of three years. It was reported in 1856 that 70,000 cows had died in Los Angeles County alone that year; and in 1863 and 1864 the loss in that State was estimated from 200,000 to 300,000. In Santa Barbara Co. the number assessed in 1863 was 97,000, and in 1865, 12,000, indicating a loss of 85,000. In many ranches of the southern coast 75 per cent. died. The surveyor-general reported 436,000 in 1866, after having found 648,000 in the beginning of 1863.

**INFLAMED UDDER.**—J. H., of Maidstone, sends an account of the ailment of one of his cows, and asks what treatment should be pursued. One of the quarters of the udder is inflamed, and from the time the inflammatory action has existed it is probable the functions of the part are destroyed. The udder should be well rubbed several times a day with tincture of camphor and water, and a dose of laxative medicine should be given, as half a pound of Epsom salts dissolved in two quarts of water. After the bowels begin to act freely, give one drachm of the Iodide of Potassium, morning and night, and continue for eight or ten days. The cow must be kept in a comfortable and well bedded stable.

## The Dairy.

### Factory and Dairy Butter.

There is much in the following article from the *Western Rural* that is applicable to the dairies of Canada. Bad butter, unfit to eat, continues to be the character of the supply in our principal towns, and until some radical change has been made, there seems no hope of any improvement. The introduction of the factory system, which has been so successful in raising the quality of Canadian cheese, offers the most feasible means of effecting a like reform in this other product of the dairy; and we hope to see some butter factories started by the dairymen of Ontario which will reverse the bad reputation now too generally attaching to Canadian butter.

A Chicago correspondent of our Western contemporary says.—

If any one has any doubts as to the inefficiency of the present mode of manufacture of butter by the dairies of the West, he has only to visit the various commission houses in Chicago, or any other western butter market where “Prime Dairy Butter” is kept, to convince him that some change is absolutely necessary for the success of the butter department of the dairy interest of the Northwest. Undoubtedly much good butter is made; but it mostly goes directly from the manufacturer to the consumer, while the great bulk that is thrown on the market ranges at the present time all the way from ten to thirty cents per pound for dairy, and thirty-eight to forty cents for factory, the lower grades being largely in excess in quantities. This depreciation in price on the lower grades, when computed on all the butter sold in our markets, amounts to a vast sum, which is a total loss to the farmers of the West every year. Most of this loss can be traced to a radical error in its manufacture, the rest in packing and shipping.

As long as the present system continues—adopted by the dairies—we shall continue to have poor butter.

In the first place, the almost indispensable, cool, pure springs are not so abundantly distributed among the Western prairie farms as in the celebrated butter districts of New York or New England. The milk is set in most cases in ill-ventilated cellars or in crowded kitchens or pantries; and the cream from a few cows perhaps will have to be kept a week, and sometimes longer, before a sufficient quantity can be obtained for a single churning. By this time the cream will be in various stages of acidity, from quite sour, and perhaps quite out of flavour, to perfect sweetness. The result is, a portion of the cream will be converted into butter much sooner than the rest. The yield will be less and the quality much inferior, possessing very much the “mixed” quality

of the cream of which it is composed, though every other requirement for good butter-making be adopted.

It may seem strange to the uninitiated, how so many varieties and qualities of butter can be produced from milk that is, when first drawn, very similar in quality; but the wonder will cease when one sees the different modes of manufacture.

The new system of combined dairies or factory mode of manufacturing butter is destined to accomplish a complete revolution in the art of butter-making in the West, in those sections where a cool and abundant spring can be obtained in a central or favourable location in a good dairy region. Its advantages over the old system are very obvious. The milk is set in cold spring water until a proper time for skimming, each milking producing sufficient cream for a large churning. The butter is all alike in quality, of a peculiar, sweet, fine, and delicate flavour.

The mode of manufacture now generally adopted in factories is as follows:—As soon as the milk arrives at the factory (which should be twice per day), it is immediately strained into tin pails or sitters, usually about eight inches in diameter, and nineteen inches high, or deep. These are put into vats of cool spring water, which are about eight by sixteen feet in size, and twenty-two inches deep, and allowed to stand from twelve to twenty-four hours. About one-fifth of the top is taken off by means of a conical shaped skimmer, or dipper, which is put into other sitters or pails, and returned to the vat of spring water, where it is allowed to stand about twenty-four hours longer. It is then taken out and churned, in large barrel churns (holding from sixty to eighty gallons), by means of steam power. This requires about one hour. The butter is then taken out, and worked until the butter-milk is nearly expelled by means of a large butter-worker, made for the purpose, when it is salted, about one ounce to a pound of butter, and put in vessels, and returned to the spring, where it remains about twenty-four hours longer. It is then taken out, re-worked, and packed ready for market.

The skim milk and butter-milk, both of which are perfectly sweet, are together made into cheese, which produces an article well adapted to the demands of a southern climate.

It is highly necessary, for perfect success, to have a bountiful supply of good spring water to pass continually through the water vats, in order to keep the milk at an even temperature, and other purposes. A spring of this kind can usually be found somewhere in a favourable position in nearly every dairy district in the West. Such a course, properly carried out, will save the farmers of the West large amounts annually, and supply the markets of the West, and large shipments to the East also, with a high grade of butter.

### Cheddar Cheese.

In reply to an enquiry by a correspondent respecting the manufacture of Cheddar Cheese, we re-publish a brief article which was originally extracted from *Bell's Messenger*:—

Unlike the Gloucester cheese, it is made only once a day. The morning and evening milk, unskimmed, is put together at a temperature of about 80° Fahrenheit, when the rennet is added. In about one hour it is fit to break; a portion of the whey is then taken off, and heated sufficiently to raise the whole mass to about 100°; this is called the scalding. The whole of the whey is then drawn off, leaving the curd to dry and harden at the bottom of the tub. It is then passed through a curd mill, (which supersedes the breaking it into small particles by the hand) and sufficiently salted. It is then removed to the press, where each morning it gets a clean cloth, and the third day it is taken to the cheese-room, where it is kept in laced bandages for a few weeks, and in as many months becomes ripe and good, gracing the tables of the aristocracy. The labour and waste of making are much reduced since the invention by Cockey & Sons, of Frome, of a cheese-making apparatus, which is rapidly getting into general use. It consists of a copper tub furnished with an additional bottom or chamber, which is connected by pipes to a boiler and a cold-water cistern in an adjoining room. The evening's milk being placed in a tub at night, is cooled by a supply of cold water from the cistern, filling the chamber and escaping through a stop-cock. While the morning's milk is being added to the night's, the chamber is filled with hot water from the boiler, which raises the milk to the desired temperature in a few minutes. When the cheese is broken, instead of removing the whey in a vessel to the boiler, the chamber is again filled with hot water, and the process of breaking and scalding is performed under one operation. All the utensils are made of tin except the vats, which are made of oak staves. The vat is made to open at the side, so as to liberate the cheese easily. The cheeses are made thick, ranging from 50 to 100 pounds and upwards, and by the best makers, at all times of the year successfully; though in the majority of instances makers would benefit themselves, and save the cheese-factories from annoyance and much loss, if they skimmed part of the milk, and reduced the size of the cheese in the spring, and especially in the autumn months. It is a mistake to suppose that new milk causes the cheese to heave during the months of March and April, which the cows are constantly calving in; after the first milking the milk is put into the cheese tub, when, in the hands of a skilful maker, the cheese is made thick as at other times. "Fermentation is the natural consequence of the mingling together of milk and rennet; if

there be more fermentable properties or powers in new milk than old, it matters little, as during the process of making, fermentation *must* be destroyed to ensure a good cheese."

### Cows About to Calve.

Many farmers consider that if they commence feeding their cows *after* they have calved, they do all that ought to be done. A very intelligent farmer (a Yorkshire man), to whom I happened to be speaking of this a few days since, said he considered that one pailful of food given *before* calving was worth, for the cow's present and future welfare, two pailfuls given afterwards. His argument was: That almost all cows are poorly wintered, and were thereby generally weak towards the spring, and when warm weather came they felt the enervating effect of it, just as we do, and consequently needed more and better food to gather strength to enable them to go through the ordeal of calving, so as to have an almost certain chance of doing well afterwards. To be equal to this effort, the cow should be liberally fed for some time before she has her calf, and instead of suffering a depreciation of strength towards spring, she will thus have an accession. We all know that unless health and strength are the rule instead of the exception, no cow will be at her best until plenty of grass has recuperated her low condition consequent on the winter neglect; and hence, under such treatment, the full yield of milk will take place some weeks sooner than it otherwise would. For many years I have had great experience in cow keeping, and I have, with few exceptions, been fortunate in having no sick or weak cows. I attribute this altogether to giving plenty of food some time before calving. Another reason for so doing is, that if you wait until afterwards, the stimulating effect of more and better food causes too much reaction, and hence it is frequently seen that the poor man's cows dies sooner than the well-to-do farmer's. The poor man takes plenty of care of his cow when she is milking and valuable, but before that time any food will do for her; "she is dry," they say, and therefore cannot want much food—a great mistake, as they very soon find out to their cost. Horned cattle want food in spring, more even than horses. I have often seen the difference between the work that a well fed yoke of oxen will do in hot weather, when compared, even though both are fed alike at the time of working, with that of straw wintered, half-starved, lean beasts. It is of little or no use to feed just as hot weather and hard work begins. Feed sooner, and get your oxen into good heart, and then, when work pushes, they will be equal to it.

### Coloured Cheese.

The *Utica Herald* has the following timely hint:—

"Now that the factories are beginning to turn out cheese, we wish to remind them of the growing disfavour, both at home and abroad, of high coloured cheese. Probably the reported sickness, in a few instances, of persons eating coloured cheese, where the poisoning was laid to annatto, has much to do with this prejudice at home; but even the London market, which has generally called for high colouring, now wants some of the pale cheese. Hay-made cheese may be lightly coloured, but, as a general thing, full fed on grass, with proper manipulation, will turn out cheese well suited both for the home and foreign market."

The requirements of the market have hitherto been the rather illogical plea of those who advocate the deleterious practice of colouring cheese. "People want poison," they say, "and we must supply it."

"SKIPPERS."—N. A. Willard thinks the best way to keep skippers from cheese is to use "elbow grease" freely—that is, keep the surface of the cheese and the tables, or "setters" on which the cheese rest, well rubbed daily. Cheese that is well made and well cared for while curing, will have little or no trouble from skippers. Cheese, while curing, should be turned daily, and the surface well rubbed to destroy all deposit made by the cheese fly. The rubbing may be done with the bare hand, or with a cloth; the latter, of course, will be required for cleansing the tables or "setters" as the cheese is turned.

SIXTH ANNUAL REPORT OF THE AMERICAN DAIRYMEN'S ASSOCIATION.—We have received a copy of the last report published by the American Dairymen's Association, including the transactions of the past year and the proceedings of the Convention in Utica at the commencement of the present year. The essays read at that meeting, and which are here given in full, make the publication one of great value to all engaged in dairy operations; indeed, it may be said, to every farmer. Such papers as those by Professor Caldwell, on cheese-making in Europe; by D. G. Mitchell, on the relations of science to farm practice; on fattening cattle, by Joseph Harris; and the report on butter-making, by the committee appointed for that object—will be read with interest and advantage by all engaged in agricultural pursuits. The report contains also a full account of the transactions of the last annual meeting, besides a few factory reports from establishments in the State of New York. The volume, like all its predecessors, is a valuable contribution to that most important branch of husbandry which the Association has done so much to develop.

### Poultry Yard.

#### White Dorking F.wls.

There is so much said of late about poultry, that any one might suppose that there is an increasing interest in breeding the feathered tribe, which is not far from the fact. But it is by no means settled that the light Brahmas are the only variety or breed that is worthy of the attention of old or new beginners in this profitable and interesting work, suited not only to the strong farmer, and men of means and leisure, but invalids may find in it diversion, and furnish many comforts for the family, as well as change for the pocket.

Each amateur may start with the favourite of some older breeder, and still he is not sure of perfect success, nor even arrive at the object of his aim in getting the best, all things considered. And then comes the question, What kind is best? After considerable trial of barn-yards, Shanghai's, Light Brahmas (and a mixture of the Dark Brahmas), Cochins, Malays, Frizzled, Black Spanish, Rumples, White Bantam, Polands, and crosses of different kinds, and what I have seen of the French Crevecours, LaFleche, Houdans, etc., to say little about Silver Pheasants, Golden Pheasants, which perhaps would be better described by calling them Polands (gold and silver, spangled), I find none that I feel like taking in the place of the English White Dorking, and I notice that many writers in the books, when they wish to make a good comparison of points, in the favourite fowl, bring in the Dorking, as if they were better known to possess merit than perhaps any other kind that have stood the trial of many generations.

Wright says, in his work on poultry, of the Dorkings:—"This is a pre-eminently English breed of fowls, and is, as it always will be, a general favourite, especially with lady fanciers." And why? Because of beauty and unrivaled quality as table birds, which is always a matter of interest to the ladies, who are good judges in taste and looks. White Dorkings seem to be pure, strong stock of its own characteristics, from which the Grey and others come by crossing with some other coloured fowls, with strength sufficient to carry the fifth toe, and hence the greys or Coloured Dorkings. White Dorkings are large enough for table use; and for laying, I do not expect to find better (except some varieties called "nonsetters"); good mothers; very hardy; and if fresh blood is put in each year, as it should be, with any good breed, and with good surroundings and care, are as free from disease as any that I know of. They may weigh about five pounds in the hen, and eight pounds in the cocks, to say nothing of larger fowls reported; Wright says eight and a half to ten pounds, and that cocks have been shown that weighed four-

teen pounds. What is truly said in I. K. Felch's prize essay, in regard to pedigree, will apply to the Dorking and to all pure stock according to their relative value, equally with the Brahmas, and it is well worth the careful perusal of every hen fancier, whether amateur or one who breeds for profit.—*Can. Western Rural*.

#### An Industrious Hen.

A month or two ago the *Ottawa Free Trader* contained the following account of a very busy hen: "Sam Parr is going out to fight the world, armed only with a setting hen! She can beat that other hen that sat four years on a couple of billiard balls and an ivory door knob. Since the first of March she has hatched out four lots of chickens. She hatched eleven in April, and raised eight; in June she turned out thirteen, and raised ten; in August she produced thirteen, and raised eleven; and in October she got out thirteen, and has ten lively little chicks running around her at present, making in all thirty-nine chickens raised, or nearly so, and fifty hatched this season. She laid the eggs herself, fixed up her own nest in a hay-mow, out of the reach of other hens, and conducted the transaction to suit herself. She is evidently a strong-minded female of the hen persuasion."

POULTRY ON A LARGE SCALE.—In that excellent manual, "Wright's Poultry Book," there is an elaborate description, with illustrations, taken from a French source, of an extensive establishment for keeping poultry. It now turns out, according to the *London Field*, that this, like other famous establishments of the kind, is not only a failure, but pure fiction—there being no such place as that assigned in the description to this gigantic "hennery," and nothing whatever of the kind except in the imagination of the French writer.

FEEDING POULTRY.—The habit of giving poultry much food in a short space of time is a bad one. If you will notice their habits you will perceive that the process of picking up their food under ordinary or what may be called the natural condition, is a very slow one. Grain by grain does the meal get taken, and with the aggregate no small amount of sand, small pebbles and the like, all of which, passing into the crop, assist digestion greatly. But in the "henwife's" mode of feeding poultry, a great heap is thrown down and the birds are allowed to peg away at such a rate that their crop is filled too rapidly and the process of assimilation is slow, painful and incomplete. No wonder that so many cases of choked crops are met with under this treatment. Many other diseases which affect chickens might be obviated by amateur breeders, were a little precaution taken in so simple a thing as feeding. Regularity in feeding is also essential.

## Correspondence.

### Farm Accounts.

To the Editor.

SIR,—Most people neglect, and some condemn, keeping of farm accounts. They contend that a balance sheet is deceptive if all be included, and that by keeping accurate statements of the outgoings and incomings of the farm, the balance sheet at the year's end would generally show to a great disadvantage, unless, as in a merchant's business, the stock, live and dead, be regularly taken, and if stock be so taken, many articles, and such as have cost much money, when set down at their cost and present value, would swell the total to such an unreal amount as to mislead by its apparent prosperous figures, and thereby encourage extravagance and want of thrift.

If, when a farmer is reckoning his assets and stock as a guide for the next year's expenditure, he includes everything on the farm and also the farm itself, he will find the amount run up to a very large sum, and when calling himself worth say \$5,000, all told, will perhaps feel inclined to be less careful than he should be in the contemplated outgoings. And yet no one ought to be blamed, he would argue, in doing so, as all he has included cost so much money, and is worth so much to buy if again wanted.

The fact is that against all these items of value must be reckoned the *living*, the articles enumerated are in reality wanted, not to sell, but to be used and finally worn out in the service of making a living.

Without such an expenditure in implements, no proper cultivation could go on, or be conducted to advantage. So, in reality, a farmer in keeping his accounts must not take into consideration the live and dead stock as articles of value to be disposed of, similar to a merchant's stock in trade; but rather balance as against the use of them his living and that of his family.

There is no doubt that this makes the stock account, when put on paper, look very much like a losing speculation, but we must not undervalue the living before mentioned. Those who have everything to buy well know what it costs, while those who produce all the necessaries of life hardly feel their value.

Apart from allowances, farm accounts and yearly balances would show poorly in comparison with a merchant's mode of ascertaining his position, and the amount sold from the farm would bear a poor comparison to what many think a fair remuneration for their labours. Now, of course, if the value of the farm itself were taken into account, with the annual improvements, the case would assume a more promising aspect; but it is not so—the farm cannot be reckoned in any other way than as classed with all the other dead and living stock, namely, just as

one of the requirements and means of living, and not to be valued annually or otherwise as a stock asset, unless, on the other hand, all the uses are valued also.

People who live in towns or cities cannot keep even a cow without its costing them at least \$100 a year, nor a horse for less than \$130 or \$140. Whereas, if a farmer was told to believe that each horse or cow that he kept cost him \$100 to \$140, he would never attempt to live by dairying or farming, when we all well know that the gross product per cow from any cheese factory in Canada does not average more than \$40, and generally \$35 a year would be nearer the mark.

The fact is, farmers in Canada do not know how much value to place on the product of their farms as a means of living; and it is only some dim vision of the probable cost of living *without* them that enables the farmers to say and feel that their farms are worth as much as they often get for them. But this value, commercially reckoned, must not be taken as so much stock on the one hand, without on the other reckoning the cost of living elsewhere.

If farmers generally derived the comfort and benefit that merchants obtain when stock-taking day comes round, and the statement is satisfactory, there would be no difficulty, nine times out of ten, in inducing them to be more particular in keeping the accounts of the farm. But the great value consists in the children being made to keep them, and certainly nothing would conduce so much to their welfare. The act of so doing would give each son or daughter in turn some practical lessons in writing, book-keeping, arithmetic; and also habits of order, calculation and economy. Thus would be laid the foundation for their future well-doing, which nothing could deprive them of.

Farmers, try it, and see the advantage of the course. Open a debtor and creditor account for every field, charging every day's work to it that is expended thereon, and you will soon find work enough to fill your books, as well as to employ a considerable amount of time, for your children in the evening.

Divide the task among the family. Have a book for the dairy, another for the hogs, another for the horned cattle, and a fourth for horses, and let each member of the family keep one, and see that all the entries are well and regularly made, and you will derive a real benefit, and enable the children to practically apply what they have learned at school. C.

### Marshy Land.

J. M., of Bridgewater, Ont., writes for information as to "what would be the most suitable crop for marsh ground cleared last fall, black muck on sandy bottom; has heretofore produced a plentiful crop of catstail and flag, was covered with tamarac, and gets

perfectly dry in summer." Also wishes to know "would underdraining be of benefit."

In such land as our correspondent describes almost any crop would ripen. Open ditches and water-furrows would be the best plan of draining; underdrains would, until the land has been worked a few years, be difficult to lay. Let the water off early in spring, that the land may get warm.

We should advise a good dressing of lime before the land be ploughed, to correct that acidity which exists in all such soils

If oats be sown, choose a strong strawed variety, such as "Tartarian." Barley or spring wheat we would not advise the first year.

Corn would probably do well if the land be in a sunny position.

We should advise, if grass be required to seed upon the oats in spring, a mixture of such grasses as red top, timothy, white and Alsike clover.

### Birds vs. Insects.

To the Editor.

SIR,—I beg to call the attention of farmers and others interested in the material prosperity of our country, to the wholesale manner in which multitudes of our most valuable insectivorous birds are annually destroyed.

In the vicinity of Yorkville, on Good Friday last, hundreds of juvenile jacksnaps in trousers, were shooting vast numbers of our most useful birds. Is there no remedy? Does a law exist to prevent these Nimrods from utterly ruining the country? If so, who are the powers that be to enforce the law?

Noxious insects and larva which grub in the soil, are not killed by severe frost, as some affirm; they remain near the surface in mild weather, and descend to greater depths as the cold becomes more intense.

We must look to the birds alone to protect our crops from, probably, total annihilation.

The Canadian robin is, perhaps, our most useful unpaid *employee*; his musical talent is considerable, and though a first-rate connoisseur of choice strawberries, it is only by way of dessert.

Two or three years ago a pair of robins built their nest in a low spruce tree in my garden; the nest was only five feet from the ground, and thus afforded every facility for observing their articles of diet. Every morning Master Bob carried five or six slugs (*Limax agrestis*, the gardener's most bitter enemy) to his black-eyed darling as she sat on the nest. After having provided her with breakfast, he would fly to a neighbouring oak, and sing most lustily for half an hour, to clear his throat for another feast of fat grubs, slugs &c. In due time the eggs were gone and a handful of fluff in their place; but a gyration motion of the finger and thumb

made five large yellow mouths start up from the pile of fluff, all ready-made insect traps of the best possible description.

In conclusion, sir, I would, in common with every intelligent agriculturist, beg you to use your all-powerful influence in the proper quarter to rid us of our Good Friday plague in question. J. P.

Chestnut Park, April 10

### Agriculture in Australia

To the Editor.

SIR,—Thinking some account of Agricultural pursuits in Australia would be acceptable to your readers, I forward you a statement of the quantity of land under wheat crop in the fine colonies of Australia, New Zealand and Van Dieman's Land, in 1870, viz: New South Wales, 165,000 acres; Victoria, 265,000 acres; Queensland, 4,000 acres; South Australia, 540,000 acres; Western Australia, 32,000 acres; Van Dieman's Land, 63,000 acres; New Zealand, 71,000 acres. Total, 1,139,000 acres. The greatest wheat producing colony is South Australia, which in 1870 (in the 34th year of its age) had 540,000 acres under wheat, or nearly half of the whole quantity of land under wheat in the Australian group. South Australia has 150,000 tons of the last season's growth, being 5,600,000 bushels. Allow 1½ bushels per acre for seed on the same acreage (225,000 bushels), and two bushels per head for home consumption for a population of 180,000, gives 1,405,000 bushels for seed and feed, and leaves 4,195,000 bushels for export of the growth of 1870. South Australia is capable of producing wheat of the finest quality, which is proved by its having three times taken the prize at the World's Show (twice in London and once in Paris). I see the Californians are fearing competition with this favoured Province. The last prize wheat exhibited in Adelaide weighed 69 lb. 10 oz., per Imperial bushel. The writer of this article saw the first crop of wheat reaped in South Australia in 1839; it was a paddock of five acres, and the experiment was held to be so doubtful that certain failure was predicted, and that the colony would not produce wheat. The fallacy of this has been proved by the fact that from five acres in 1839 the quantity under wheat in 1870 was 540,000 acres! Previous to the established success related, the Sydney Government had to keep twelve months' supply of wheat in store for the whole population of New South Wales, as that Province was subject to famine from drought. The wheat was stored in siloes, receptacles similar in construction to tile kilns, and the wheat was shot in at the top until it was full; it was then cemented over and left untouched till wanted. The last siloe opened had been filled twenty years before, and the grain was in excellent order; most of it was used for seed.

The droughts which visit the Australian colonies cause great fluctuation in the price

of cereals. In 1854 the 200 lb. bag of flour was thirty shillings; in 1855 it was eight guineas. Potatoes in 1855 were twenty-eight shillings per cwt.; in 1856, five shillings per cwt. In the early part of 1864 meal was nine pence per lb.; in the latter part of the year it was three pence per lb., and of better quality; and so of all other productions. And some years red rust and take-all invade the crops, destroying many thousand acres of them. Potato blight is unknown there, and that useful tuber is of excellent quality. Barley, oats and maize are too uncertain in their yield to be much sown. Clover and grasses cannot be sown on account of the intense heat. The native grasses all disappear in summer time, and the country is browned with heat from October to mid-April; the thermometer frequently standing at 100° in the shade, and I have known it at 114° in the shade for several days together. Of course all farm operations are suspended, indeed quite as much so as they are in Canada in mid-winter; and under such a temperature as I have named, extreme prostration of man and beast is produced.

It may be readily understood, with such severe heat, root crops can be only sparingly grown. Mangold does pretty well in the hill districts, where deep alluvial deposits are found, but turnips cannot be grown as a crop to fold on, for the heat, which lasts from the middle of October to the end of March, would kill them, and they would become as dry as cork. I have seen crops of melons burnt up in one day so that the leaves could be rubbed to powder in the hand, and fruit will be sun-scalded as it hangs.

These things occur when the hot winds from the north prevail. Onions will roast in the ground, and all green crops will come to a finish. It is fortunate these visitations happen when the grain crops are past the time when they could be injured, or general destruction would follow.

The mode of taking off the crops in Australia is by reaping machine drawn by four horses. No other way of securing them would answer, as the immense acreage compared to the number of labourers would extend harvest operations to a time when the grain would, from extreme dryness in the ear, be all shaken out. A reaping machine will take off seven acres per diem, and as the ears are caught by a comb in front, and received into beaters, the crop is thrashed as the machine travels along, and when it is necessary to empty the box it is drawn to a heap, cleaned, and bagged ready for market. The present price of wheat in South Australia is 4s. 6d. per bushel; freight to London or Liverpool, 2s. 6d., so that it is landed at 7s. per bushel in British ports. I do not know how many bushels of Canadian wheat are required to make 2,000 lbs. of flour, but it requires 44 of Australian to make that quantity of superfine.

I am aware that Canada exports cereals to a much greater extent than Australia, but Canada has had a century start of it, so that it would be unfair to compare the two countries as to quantity; but as to quality, the Australian is much in advance of Canadian wheat; but I fear the varieties are too tender to be grown here, as they have been tried in England, and under most careful treatment have not produced paying results.

EDWARD GILES.

### Crop and Weather Notes

To the Editor.

SIR,—“The spring comes slowly up this way,” is indeed literally true this season. We have had mingling of spring and winter, days in March that were balmy and warm as in June, and succeeding these, snow-storms enough for sleighing on a small scale, of which due advantage was taken to draw out plaster and other work of a kindred character. It seems to me that this heavy food for plants could best be drawn direct from the mill to the field where wanted, in the winter and spring, by having large boxes prepared for its reception, covered, raised from the ground, and otherwise protected. The sowing of it as early as is the practice of some, I do not advocate. I think when the ground is frozen, and the plant still not growing, a great deal of loss is sustained. Better to sow when the plant is hungry rather than when asleep.

The great breadth of fall ploughing done will lessen the labour of spring work materially, though I am afraid the other extreme will be resorted to—careless cultivation—in order to hasten the work. Land fall-ploughed very late does not, I think, if loamy and porous, require ploughing again, especially sod or stubble; but heavy, tenacious clays are not in a suitable condition for crops without re-ploughing.

It is gratifying to note the progress of agriculture, as shown by such indications as the following. More clover grown; the division of homesteads among the members of the family, a practice which has led to better farming and more thrift; the gradual cleansing of the land from the noxious weeds, the use of improved machinery, &c. When agricultural knowledge shall be introduced in the curriculum of studies in our common schools, a great step towards the training of farmers will be taken. We must look to the infusion of another spirit in some of our teachers, who will not, by their example and teaching, bring their pupils to despise as ignoble and mean, “the most honourable of all professions.” A short lecture upon a flower in the genial spring time, plucked by the teacher, showing its structure, functions, &c.; an insect, by the aid of a microscope, and the proper explanations, would lead them to enquire and investigate, and distinguish between friend and foe, poison and

medicine, life and death; and these talks need not be dressed in technical garb. The child kills the insectivorous bird without knowing it to be a friend, and that there may be less wheat or grain because he did kill it. The gaudy butterfly is captured for mere wanton sport, the child knowing nothing of its wondrous transformations; and the poisonous berry or mushroom may be eaten without knowing its pernicious effects. A teacher should teach from nature as well as from books. Book lore is good, if it be made the means and not the end of education.

Ploughing is begun; stock wintered well; no scarcity of fodder; fall wheat looks very well, and the clover at this date is not killed; a good prospect for a fruitful season.

JOHN LEBOUTILLIER.

Sydney, April.

### The Huckleberry.

To the Editor.

SIR,—I was glad to see in a recent issue of your journal a recommendation in favour of the huckleberry. I know of three distinct varieties. When a boy, I used to gather large quantities from high bushes, say six feet high; they were the largest I have met with, of a blue-black colour with a beautiful bloom, and excellent flavour. They grew in sand and water, in Aburgh, State of Vermont. I fell in with another sort in Riviere du Loup, Quebec. There were some ten thousand acres of this beautiful berry, as large as the cherry currant; they grow on low bushes, in a marsh, from six to ten inches high, colour deep blue, with a bloom, and had a pleasant flavour, sweet and juicy. Another variety I found in Thamesville, near Chatham, growing on the drifting sands; they were smaller, of a mahogany colour, not so full of pulp nor so sweet as the above, yet well worthy of cultivation. I took up some roots of them, which I planted in my garden, but it was out of season, and they perished.

A. B. BROWNSON.

NOTE BY EDITOR.—Of the whortleberry family, which comprehends many closely allied plants, and includes the common fruits known as huckleberries, cranberries, bilberries, blueberries, &c., there are in the North American continent at least fifteen different species, and a still greater number of well marked varieties. There is such a general similarity in appearance and habit amongst the whole tribe, that it is not easy for any but a botanist or close observer to distinguish and correctly identify them. The species our correspondent refers to were probably—the first, Blue Tangle, or Dangleberry (*Gnylussacia frondosa*), which is found in low copses in New England, and southward as far as Kentucky; the second, the common Huckleberry of the North (*G. resinosa*), a swamp plant; and the third, the Dwarf Huckleberry (*G. dumosa*), which grows chiefly on sandy soil.

### Queries.

A correspondent sends the following queries, to each of which we append a brief reply:—

1st. Whether will it pay better, at present prices, to feed linseed cake or pea and barley meal, to fattening cattle, and what is the price of oil cake per ton?

Barley costs 1½c. per lb.; pea meal, 1¼c. per lb.; oil cake, 2c. per lb. The oil cake has the most concentrated nutriment. As a rule, a variety of food is most wholesome, and in the end most economical.

2nd. What kind of Indian corn is considered best for field culture in Canada?

Eight-rowed yellow for grain; Ohio Bucktooth for green crops.

3rd. Is the manufacture of skim-milk cheese ever tried in Canada, and with what success?

It has not been tried, we believe, to any extent in Canada, though there is a considerable manufacture and demand in the States, where it has proved successful.

4th. Can you give a description of a good ring to prevent hogs from rooting?

A horse-shoe nail, with the head straightened, and the point sharpened so that the nail has the shape of the letter T, answers very well. After it is inserted, the point is curled round to prevent its return.

## The Canada Farmer.

TORONTO, CANADA, MAY 15, 1871.

### Corn Exchange, or Selling by Samples

The present plan by which farmers have to sell their grain is most unfair. The buyer has all the advantage and the seller none. The farmer drives eight, or perhaps ten miles into market; when there, he must either sell his grain at the price ruling that day, or drive back his load; the latter he will not do for the sake of a few cents per bushel, and consequently he sells his grain at a sacrifice.

Again, there comes on a heavy rain. The buyers say among themselves: "two or three cents per bushel less for this rain;" the farmers will sooner sell even at a reduced figure than get drenched to the skin.

In the barley season, such matters as these particularly affect the daily variation of prices. It is a notorious fact, that when there are only a few teams on the market, a larger price is offered to draw the farmers, and that when on the succeeding days the latter put in a strong attendance, the inevitable fall in price takes place.

Now these are only so many ways in which the sharp buyer gets the advantage of the farmers. The plan that would nullify these, and place the buyer and seller upon the same footing, is that adopted in Great Britain and

in many of the larger markets of the United States, namely, selling by samples in a building usually known as the Corn Exchange.

Let us briefly review the advantages which would accrue from the adoption of this system—first putting before our readers a short sketch of the working of this plan.

The rent of a large room is the only requisite and only expense. To this the farmer, who has a hundred or more bushels of grain, comes with his sample, fairly taken from his bin. The buyer is there, and on the faith of the sample, part of which he may retain if he choose, buys the grain. He gives the farmer a ticket, which is the authority for the latter to deliver his grain by a certain date. The advantages of this system to the farmer are not a few. He is not placed in that unfair position in which towards evening the buyers say to him, "Either take my price or draw your load of forty bushels home again;" that home may be ten or twenty miles away. No advantage can be taken of wet weather to beat down the price of grain. There will be no longer a necessity for every load of grain that we bring into the market to stand there waiting and wasting many an hour. We can sell our bulk of grain in a lump, deliver it at once, and thus save much valuable time to the operations of the farm. If we do not get the price we think our due, or that we set upon our grain, we have no load to haul back, but can wait and bring down our samples again.

It is very questionable if buyers would support the scheme; but, at the same time, we have no hesitation in asserting that their business would be greatly benefited by the system. Suppose that those farmers who by subscription have become members of this Corn Exchange, upon entering with their samples, register their names in a book for the purpose; the buyer by glancing over that book, would know who were in and those from whom he was likely to get a good sample of grain. Buyers talk about being taken in by samples—that a man would bring a sample and afterwards deliver an inferior article. But there is really not the slightest force in this objection. How does the buyer purchase now, if not by sample? he examines one bag of the farmer's load, offers his price, and gives a ticket with quality specified upon it. If the rest of the load turn out at the elevator inferior to that quality marked upon the ticket, the buyer has his remedy, and the law will see that he is not cheated. A farmer might do this in the open market-place; but in a Corn Exchange of which he was a member, if he attempted such a trick, he would be well known, and would be a marked man, shunned by the buyers and contemned by his fellow-farmers. The buyers might have full security in the honesty of the members of a Corn Exchange, even if they had no other check, from the fact that every member will be personally known to them. Such a combination among our farmers, would,

most assuredly, draw the best buyers to us, and would, undoubtedly, secure us against many of those petty advantages, which are too often taken of weather, and other peculiar and unforeseen circumstances, to beat down the price of our produce.

### Two Ways to Make a Farm Pay.

Farming in Canada can be made to pay in two different ways. The first is that usually practised by the hard-working labourer. Take as an example of this class the Irishman, who often arrives in Canada with small means, and having all his life been accustomed to work hard and have few luxuries, he takes the same lot here without repining. After working for some time for others, his great ambition is to have a farm of his own, and he often moves on land so scantily furnished with means that he and his family can almost carry all they possess except their stove and a few of the more cumbersome articles. These are all his worldly possessions, and probably in addition \$100 of hard earned and saved money for future exigencies. From that time hard work and want of luxuries, and almost necessities, is his daily lot; and not until he can raise more stock or grain than he will know what to do with, is there any relaxation in this particular. Indeed, so determined are some of the sons of Erin to save, that they often continue this course after they are well able to do otherwise. In a few years stock grows up, and there is a surplus to sell, and a sale to some drover in one lump sum is often effected. This money is rarely "broken," as they term it, but is religiously put away, and very soon is paid on account of their land, probably not half the debt due, but at all events so much is wiped off. A similar amount from the same source is probably again spasmodically collected, in two or three years, by the sale of another batch of cattle, to be again paid away for the same object. And this is how the poor hard-working Irishman or German makes the farm pay in Canada. These men live hard and work hard, and have always before them the hope of one day making the farm their own—and they do it in hundreds of cases.

The type of the other class of persons who make a farm pay in Canada is the more intelligent business man, but of somewhat more expensive habits. He never could do as the class of emigrants already described do; he must and will live better. He did not come to Canada to be half starved and want necessities; he came here to better his position, and he means to do it. These men often possess considerable enterprise, and mental as well as bodily activity. When they see an expenditure, even if made on credit, that has good prospect of profit, they do not hesitate to act. They argue that if one cow under good management can be made to pay \$30 or \$40 a year, when the

means to do so lies within their own reach, ten cows, by increased activity, will probably pay ten times as much; and that if there is a profit to be made of say \$15 to \$20 by keeping a thorough-bred sow, they had better buy such even on credit than be without. These men bring thought and calculation into play; they do not sit down content with one poor cow, or one old miserable sow, whose progeny costs more to fatten than they are worth; but they at once reason out the facts, and, when convinced that it will pay, they soon obtain the animal or implement; for any one is willing to trust this active, careful, pains-taking man. His character for punctuality and push precedes him, and he derives the benefit of it in a hundred ways not offered to a less enterprising man. He soon gets forehanded, and then buys cheaper than ever; all good bargains are offered to him because he is known to be a man who has always money, or who will shortly have it.

This class of men may be traced very often as coming from Yorkshire, or Scotland, or the North of Ireland, and one way or other they will always make things pay. The same principle applies to business of all kinds as well as the farm. There is money in many a transaction when it is handled by some enterprising man that a drone could not make a cent out of. The case is quite different with those young gentlemen farmers who have always been accustomed to have their fathers to provide for their wants, or at least have been accustomed to rely on help from that source if absolutely requisite. They have never been accustomed to feel that they must "work or want," and hence hardly ever keep up with others in the great race of life. Your mild tempered man, or one who cannot live and work like the Irishman, and cannot or will not act like the Yorkshire man, or Scotchman, is sure to go down in Canada, unless he has an independent income from home or elsewhere; and we believe his case and its inevitable results will apply to every other place as well as Canada.

### Beet-Root Sugar.

Every person is aware that the manufacture of sugar from beet-root has been carried on to a great extent on the continent of Europe, especially in France and Germany. It is estimated that in 1870 as much as nine hundred and twenty thousand tons of this sugar were produced in Europe, of which more than the half was made in the two countries we have mentioned. It now appears likely that the manufacture is to be successfully established in Britain. It is an enterprise which, to secure the largest profit, may be gone into on a pretty large scale. This has, it seems, been done by Mr. Dun-

can, of Lavenham, in Suffolk, who has made many tons of the sugar during the past year. He began some four years ago, and has done better every year, so that now he regards the enterprise as a success. It seems that from chemical analysis it is found that English roots give quite as good a yield of sugar as those of the Continent, while the expense attending the manufacture is by the aid of the latest improvements considerably reduced.

The farmers in the neighbourhood of Lavenham are quite willing to grow beets for Mr. Duncan's use. They can raise from 14 to 30 tons per acre of clean roots which they sell for about \$4 per ton. After the saccharine matter has been extracted they repurchase the pulp for \$2.50 a ton; and Dr. Voelcker, F. R. S., from whose paper on the subject read before the Society of Arts the facts are taken, thinks a ton of pulp equal in nourishing qualities to more than two tons of beets. The beet is found to be much less exhausting than the potato, for a large part comes back in the shape of pulp, so that where on the continent beet root has been cultivated for sugar, instead of hindering it has helped the growth of wheat and the rearing of cattle. Mr. Duncan has about \$60,000 embarked, and last year his net profits were 15 per cent. after writing off as much for interest and depreciation.

We have repeatedly remarked upon the adaptability of Ontario for carrying on such a manufacture on a large scale and with great success. It would be a new source of wealth to our farmers and a great advantage to the whole community. The supply of cane sugar is not keeping pace with the demand, and the deficiency is likely to be felt more severely every year. It would be a great matter in a country like this, where beets are produced in such perfection, if such a manufacture could be successfully introduced, and that without interfering with either the growth of cereals or the fattening of sheep and cattle.

STEAM CULTIVATION IN THE NORTH OF ENGLAND.—The success of steam cultivation in Northumberland has given rise to the formation of a company for working the County of Durham and the North Riding of Yorkshire, on what may be called the Northumberland principle.

Any farmer desirous of obtaining a small quantity of Sugar Beet Seed for experiment, can have the same free of cost, with directions for cultivating, by applying to S. G. Harvey, at 36 Colborne street, Toronto, personally or by letter.

### Cruelty to Animals.

The society for the prevention of cruelty to animals in Massachusetts has just published the report of its third year's proceedings in *Dumb Animals*, the society's paper.

The report claims a growth of popular sentiment favourable to the cause and less disposition to ridicule the efforts to enforce the law, or to oppose it. The society has entered, during the year, 87 prosecutions, and has been successful in 67; three others are pending. The fines imposed amount to \$595. The reasons for the prosecutions were various. Beating horses with clubs and stones, driving disabled horses, over-driving, failing to shelter, kicking, poisoning and scalding dogs, and cock and rat fights were among the number. The society would have been able to double the number of prosecutions if they had considered that the best means of obtaining their ends. There are now nineteen hundred societies in the States and two in Canada, the latter in Montreal and Quebec. Five other societies are in progress, and humane laws have been passed in New Hampshire and New Jersey; Vermont has been unsuccessful in attempts to pass the law, and Connecticut has not moved in the matter.

The society has made a strenuous effort in concert with the other societies to ameliorate the condition of cattle during transportation, and although not successful in obtaining the passage of a Bill through Congress they met with gratifying encouragement. The report enforces the necessity for action in this matter by the following arguments, addressed to the pockets rather than to the sentimental feelings of the public:—

"It appears that cattle lose an average of 200 pounds each in transportation from the West to market. To corroborate this by a special case, it has been ascertained that Brigham Young's cattle lost an average of 210 pounds last November in their passage from Utah to Chicago. Our investigation shows that between 200 and 500 car-loads of cattle arrive weekly at Albany, averaging from 16 to 24 animals each. To approximate the results of this loss, let us estimate a weekly arrival of 300 cars with 20 cattle each, which shows a loss of 1,200,000 pounds, which at 10 cents per pound is \$120,000 per week, or \$6,000,000 per annum; but to allow a wide margin for errors and exaggerations let us call it \$3,000,000 per annum on cattle arriving at Albany alone, saying nothing of 100 car-loads weekly of hogs and sheep. Add to this the arrivals at all other points, and we see an astounding result, not appreciated by the people, nor even by parties interested. This sum would go far towards paying all the extra cost of delay in unloading and reloading cattle for rest and refreshment, or providing comfortable cars in which they could have proper food and rest. When the sanitary considerations have been properly presented by our State Board of Health or other like organizations, and people understand the diseased condition of the cattle after the many days of suffering for want of food, water and rest, added to the excitement necessarily incident to transportation by rail, and the bruising and beating to which they are subjected, then the people will demand a remedy, if in the mean time

the interests of the drovers shall not have forced the corporations to adopt it."

The other matters touched on are: The condition of horses on street car routes, the practice of bleeding calves to produce white veal, the suppression of rat pits and pigeon shooting matches. The report goes on to acknowledge several handsome bequests and the services of energetic friends, and winds up as follows:—

"It is often said 'that animals cannot speak for themselves,' which is true if we add 'in our language.' They can and do understand our words directed to them, and their own language directed to each other. And there is their mute appeal to us, that ought to be more expressive than words, for it is only an appeal and cannot irritate. If we had a better appreciation of their messages and pleading looks directed to us, we should be more thoughtful and more merciful. If it be said that we cannot understand their appeals, let it be asked, 'suppose they refuse to listen to ours, seeming not to understand, and instead of willingly exerting their power for us should direct it against us? We should soon learn how dependent we are upon their forbearance and their devotion, and they have a right to depend upon us for protection and kindness. When we think of their fidelity, gratitude and love, which forgets or forgives our abuse and neglect of them; of their knowledge, which we call instinct, but which is often superior to ours, and of their many attractive qualities, our love of justice alone ought to induce us to increase our efforts in the cause in which we are engaged."

We are happy to be able to add that, as a rule, the owners of dumb animals in Ontario are passably considerate. However, there are exceptional cases occurring now and then which would justify the formation of such a society in our midst, and we should like to see some of our humanitarians take up the question.

### Notes on the Weather.

Field work has been commenced several weeks earlier than usual, with a very favourable season for spring ploughing and sowing, but the general low temperature, and especially the cold nights, have kept back germination and growth, so that crops have not made any rapid advance. This is probably no disadvantage, as the risk of late frosts, and consequent damage to tender field and garden plants, will be diminished.

We hear from all quarters very favourable reports of the condition of fall wheat, which has for the most part escaped winter killing, and having attained an unusual growth last fall, presents now a very promising appearance. All things look well so far for a prosperous season.

From the records of the Toronto Observatory we have the following report:—

The month of April has been marked by a temperature differing little from the average, although the number of days' rain has been larger, and the quantity considerably exceeds the usual deposit; it is hardly a subject of regret, for the moderate

radiation would, as it were, by preventing a rapid evaporation, allow the ground to retain a good supply of the moisture necessary to lay the foundation of a good crop for the coming season.

The mean temperature was 41°.5, being 0.4 warmer than the average, but 3°.1 colder than last year. The highest temperature was 72°.8, on the 5th; and the lowest 26°.4, on the 5th. The warmest day was the 5th, with a mean temperature 58°.2; the coldest day was the 5th, the mean being 32°.2. The minimum temperature fell short of the freezing point by a small quantity on nine mornings.

Rain has fallen on 17 days, amounting to 3.31 inches; snow on 2 days, 1.3 inch. Rain has exceeded the average by 0.90, and snow fallen short by 1.1.

There were 12 cloudy days, 2 clear, and 16 partially clouded; thunder storms occurring on 3 days.

The most prevalent winds have been E and W, with little variation, and a velocity a little greater than usual.

A little damage seems to have been experienced by the fruit trees in some portions of the west by the frosts of the 17th and 23rd. If fruit growers would make a smudge of their trash on such nights in early spring when frost might be looked for, the depression of the surrounding temperature might be so far counteracted as to save the fruit blossoms.

### Important from Washington.

We learn from Washington that the Secretary of the United States Treasury has decided that cattle for breeding purposes may be imported from Canada into the United States free of duty—and that the Customs officers along the lines have been so instructed. This will be agreeable news for the breeders of thoroughbred stock throughout Canada, whose traffic with Brother Jonathan will no doubt be largely increased by this decision.

SEEDS.—We have much pleasure in acknowledging a very liberal supply of garden seeds from Hon. Horace Capron, the U. S. Commissioner of Agriculture. The seeds, it is stated, were grown in France, expressly for the Department at Washington, and the package sent to this office contained twenty varieties of flower seeds, and twenty-three varieties of vegetable seeds.

The failure of J. T. Alexander, the most celebrated stock raiser, and owner of the largest farm in Illinois, is reported by the *Practical Farmer*. The amount of his liabilities is placed at \$1,000,000, against assets to a still larger amount, but not immediately available. His failure is attributed, not to his farming operations, but to his enormous speculations in beef at the South.



**THE AMERICAN AGRICULTURAL ANNUAL.**  
—It is now many years since the proprietor of the *Country Gentleman* issued a small manual, the articles in which were culled principally from those that had previously appeared in the weekly journal. This unpretending little compilation was styled the "Annual Register of Rural Affairs," and has been followed up each year by a similar publication offered at a very low price, and forming altogether quite an agricultural and rural library—a country gentleman's *mutuum in parvo*—which has become very popular. Other journalists have followed its example, the *Prairie Farmer* having its "Annual," and among the rest, the enterprising publishers of the *American Agriculturist*, Orange, Judd & Co., New York, have issued a similar cheap, attractive, and useful little work, at the low price of 50 cents. The volume for 1871 is, we believe, the fifth of the series, and is in every way equal to any of its predecessors, and worthy of the publishing house from which it emanates.

**THE AMERICAN HORTICULTURAL ANNUAL.**  
—This is another manual of a similar character to the "annuals" published in connection with the leading agricultural journals—but, as its name implies, its scope is limited to the subject of horticulture. It forms a compact and comprehensive hand-book for the amateur gardener, containing some useful information on almost everything connected with his special department. The practical and reliable character of the articles may be inferred from the fact that among the principal contributors are such men as Thomas Meehan, Josiah Hoopes, Charles Downing, F. R. Elliott, A. S. Fuller, Peter Henderson, and other prominent horticulturists. This excellent little work is published by Orange, Judd & Co., New York, for 50 cents.

**THE PEOPLE'S PRACTICAL POULTRY BOOK.**  
—We have been looking for some time for the appearance of this new work on poultry, by W. M. Lewis, published by D. D. T. Moore, of the *Rural New Yorker*, from whom we have received an early copy. We have examined its contents, and have much pleasure in recommending it to poultry fanciers on this continent, as supplementing, or indeed, if their pockets will not bear the double expense, as superseding, for the use of Americans, the excellent manuals on the same subject from the other side of the Atlantic. The work is very comprehensive, treating in a practical manner of the general management of poultry, and the characteristics of the various breeds. There are also excellent descriptions of poultry houses in all styles, as well as illustrated notices of everything needful in poultry appliances. Considerable space is devoted to the subject of artificial incubation; directions are given for caponizing fowls, and useful hints on marketing the produce of the poultry yard. An appendix contains the English standard of excellence; in a subsequent edition we may look for the publication of the American standard of excellence, now being discussed by the Poultry Convention. The work is profusely illustrated throughout. The price is, we believe, \$1 50, Am. currency.

## Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

### What Varieties of Apple Trees to Plant.

In selecting trees for profit we have a large number of requirements to fulfil.

- 1st. The trees should be hardy.
- 2nd. They should be good, strong growers.
- 3rd They should average good crops of fruit.
- 4th. The fruit should be of large size.
- 5th. Its quality should be good.
- 6th. It should be uniform in size, to save sorting.
- 7th. It should not be specially liable to disease or cracking.
- 8th. It should ripen evenly, and at the proper period, for profitable sale.
- 9th. It should bear transportation well.
- 10th. It should have a reputation in the markets.

It is evident that a profitable market apple must combine nearly all of the above requirements to a considerable degree.

No one apple with which I am acquainted stands at the head of the list in all these requirements.

I propose to give a list of trees suitable to favourable localities in the eastern portions of Ontario. As I wish to speak mostly from personal knowledge, some leading varieties will be omitted. In most localities, summer and autumn apples, however good good, are not profitable.

In the following list, the figures following each variety refer to the above-mentioned requirements. The absence of any number from 1 to 10 will indicate that the corresponding quality of tree or fruit is to some extent absent:—

Earley Harvest .....	3	5	6	7	8	9	
Early Joe.....	3	5	6	8	10		
Sweet Bough .....		4	5	6	7	8	10
Red Astrachan .....	1	2	3	4	6	7	8 9 10
Early Strawberry .....	2	3	5	7			
Snow or Fameuse.....	1	2	3	5	6	7	9 10
St. Lawrence.....	1	2	3	4	5	6	10
Colvert.....	1	2	3	4	6	7	
Fall Pippin.....	1	2	3	4	5	6	8 9 10
Fall Janetting .....	2	3	4	5			
English Golden Russet .....	1	2	3	4	5	6	7 8 9 10
set .....	1	2	3	5	6	7	8 9 10
Pomme Grise Russet...1	2	3	5	8	9	10	
R. I. Greening .....	2	3	4	5	6	7	8 9
Spitzenburgh .....	3	5	6	7	8	9	10
Northern Spy.....	1	2	4	5	7	8	10
Tallman Sweet .....	1	2	5	6	7	8	9
Ribston Pippin .....	1	2	3	5	6	7	8 9 10
Rambo.....	1	2	3	5	7	9	
Red Canada .....	2	3	6	7	8	9	

Those not marked 1 seem shorter lived than the others, though not in every case tender.

In addition to the above, I may mention as very promising apples the Primate, Holland Pippin, Duchess of Oldenburg, Wagner, King of Tompkins Co., and Westfield Seek-no-further. These are all excellent apples, and, if they prove suitable to this climate and soil, will be very profitable. The Wagner promises to stand at the head of the list for profit. The Hawley is a beautiful apple, but liable to dry rot.

In this part of Ontario (County of Hastings) the Baldwin does not succeed well. I have purposely omitted from my list apples which have only size or good looks to recommend them; such, for instance, as Cabashea, Cayuga, Red Streak, or 20 oz. Maiden's Blush, and Alexander. The English Golden Russet in my list is the Golden Russet of Western New York, known by its light coloured speckled twigs. In the report of the Fruit Growers' Association for 1869, it is almost constantly spoken of as the American Golden Russet, which is erroneous. The American Golden Russet or Bullock's Pippin is described by Thomas, by Elliott, and others, and is a tender tree unsuited to Canada; and hence orders given for it correctly filled would result in disappointment.

The name English Golden Russet (not English Russet) is, I believe, the correct one, and should be adhered to.

E. R. M.

Halloway, March 27th, 1871.

### How to Prevent Mildew on Gooseberries.

To the Editor.

SIR,—I observe from time to time, in the reports of the Fruit Growers' Association of Ontario, published in the FARMER, that the English Gooseberry is much afflicted with mildew. About thirty years ago I got some plants of the English gooseberry, and when the time for fruit came round they yielded nothing but poor, dirty looking, worthless stuff, year after year, on account of this same mildew. At the time I could not understand what was the matter—not even knowing what mildew was. After several years of trial I pulled up the bushes. About eight or nine years ago I procured some bushes of the English variety, of two different sorts—one red, the other green; but, as on the previous occasion, these were affected with mildew. By this time I had heard of many preventives, such as sulphur, tan bark, boards, &c. I tried all these, but with very little success. Being very fond of gooseberries, I determined not to give up, and remembering that one of my bushes, of the first lot, had by oversight been spared, it being in a corner of the garden where there was a grass plot, and not being attended to, the wild grass grow as high as

the bush; still there was a little fruit, small in size, but perfectly free from mildew from year to year. It then occurred to me that if sound fruit grew among a tangled mass of wild grass, it might have the same effect to spread grass on the ground, under and around the bushes. For the last six years, as soon as the grass will cut say nine inches or a foot long, I have spread a quantity of new cut grass under my bushes, and let it remain all summer. That, combined with very high cultivation and close pruning, has been a complete preventive of mildew for the last six years. Whether this simple and inexpensive remedy will hold good on all kinds of soil, I am not prepared to say. One thing I can say, as all my neighbours can testify: I have had splendid crops of large sized sound berries, some of them nearly as large as small plums. My soil is a sandy loam, with gravel sub-soil.

GEORGE BARRON,  
Elora.

The results of actual experiments are always welcome.—Ed.

### Grafting.

To the Editor.

SIR,—You have repeatedly invited those in want of information to apply to you, with the assurance that they would be attended to. On the strength of this, and supposing there may be others who need the information I wish for, I will trouble you with a few remarks on grafting. I have practised cleft grafting for more than twenty years, and have no practical acquaintance with any other, being in a locality where orchards are few and far between; while those who have them in general know even less than myself. I have been successful in grafting the apple, but the plum has almost proved a failure I could not understand, from any books I have seen, if they are treated differently from apples, neither could I practise budding from any directions I saw for it.

Is cleft grafting applicable to plums. If not, what other?

What books give the plainest information on budding and grafting? Where can they be procured? What is their probable cost?

If you could give any information on these points in time to try them the coming summer, you would oblige—

A NEW SUBSCRIBER.

REPLY.—We have succeeded very well in grafting the plum by the method known as cleft grafting, but we usually whip graft the plum, especially if working the wild plum stock. Nurserymen usually use some free growing variety of plum, such as the Horse-plum or the St. Julien, as a stock, and propagate by budding. The best work on fruits and fruit trees, and the methods of propagation, is "Downing's Fruit and Fruit Trees of America," but it is expensive, costing, we believe, seven dollars in American currency.

In that will be found ample directions and good illustrations of the method of budding. We understand that a Canadian book is in course of preparation; which will be published during the year, in which all the information required by Canadian fruit growers will be given, with illustrations of the different operations of budding, grafting, &c.

### Our Canadian Grapes

Some weeks since an article on Canadian Vines appeared in the CANADA FARMER, and was copied as a matter of interest to English grape culturists into several of the leading English agricultural and horticultural newspapers. The culture of our Canadian grapes has hence excited considerable attention, and, as a result, an English gentleman who has at present upwards of forty different varieties of vine from all parts of the world, has applied to the writer of the article in question to send him all our hardy hybrid sorts. This has been done, and a recent mail transmitted to England the following kinds, carefully packed in air tight cans, the roots well grouted with clay, and every precaution taken to ensure their arriving at home in first-rate condition. The sorts sent are:—Salem, Iona, Adirondac, Diana, Hamburg, Hartford Prolific, Hattie (a new white), Ontario (very large, but sour), Agawam (hybrid, very fine), Water Frost Wild Grape, Sand Frost Wild Grape, Delaware, Manitoba (a new variety), Royal Muscadine, Wild Vine, and a cross section of the Great Water Frost Grape Vine.

The gentleman who has thus, at considerable trouble, endeavoured to bring before the English horticulturists the advantages of our hardy Hybrid Grapes, has certainly deserved the thanks of the Canadian as well as the English vine growing amateur. I am well acquainted with the person in question, and feel sure that he has done this simply and entirely for the sake of distributing at home the knowledge of the advantages we in Canada possess in this particular pursuit. Formerly a vine in Canada (except the wild species) was a novelty, now their name is legion, they are grown with as much ease and certainty as an apple tree, and subject to as few contingencies. In some cases—I may say in almost all—the result in grapes is excellent. The hybrid sorts are every day developing the fact that by combining the hardy natural variety with the better flavoured and more tender hot-house production, we have, as a result, a grape almost as good as the best, and a great deal more hardy. The cross section of the Great Water Frost Vine sent is certainly a curiosity in itself to English vine growers, it being four inches in diameter, solid, and hard enough to turn from it a beautiful snuff-box, which no doubt will be its probable destiny. This section was cut from a vine nearly 50 feet long in the trunk, and, as far as could

be observed by the gentleman who cut the piece out, the enormous vine did not materially diminish in size at the above length; nor is it by any means a rarity in this part of the country; it was procured from the neighbourhood of Lake Burwell, and there are hundreds more quite as large. The habit of this vine is to grow in the water, or almost so, the land where they abound being quite swampy, and formed by alluvial deposits. The above named piece was cut from the parent stem out of a boat. The Sand Frost Vine, on the contrary, often grows in almost pure sand, where no water whatever can be found, except at the lake line; and the grapes from either variety are quite edible, much larger and better flavoured than the ordinary wild grape. As a contrast, one specimen of this grape was sent, which yields fruit about as large as a marrowfat pea, with a very thick and intensely sour skin, and a large stone, altogether or nearly quite un-eatable, except to boys; and I have yet to see the grapes that boys will not eat, although they may be formed of something very nearly approaching to sulphuric acid and alum enclosed in a leather skin.

C.

### Garden Vegetables.

We are not aware that any one has ever written a treatise upon the influence which articles of food exert upon the human character; and we very much desire to see the question discussed by some well informed mind that has been qualified by observation and reflection to treat this subject as it deserves. That the substances we feed upon have an influence upon our characters and natures, does not seem to us to admit of a doubt. The man who feeds upon fat pork and potatoes and turnips, year in and year out, with but little variety other than the changes that may be made with these, becomes gross in his tissues and gross in his sensibilities, and though strong physically, and mentally resolute, is not fitted for sustained mental exertion, possesses little power of nice discrimination, and still less power of appreciating that which appeals to our more refined susceptibilities.

Would the tillers of the soil give themselves a greater variety in the list of articles that enter into their daily bill of fare, and especially in the matter of vegetable supply, we believe they would be the gainers, not only in personal comfort, but in mental power and efficiency. It is true that the work of the farm requires a great deal of labour and time; but we fully believe that if the garden were better cultivated, and the farmer allowed himself to be employed in the more delicate operations of the garden, and to eat the fruits of it, the farm would not suffer in the long run, and the standing and influence of the yeomen of our land would be extended and elevated thereby. It

may seem very absurd to say that the growing and eating of lettuce, asparagus, spinach, cauliflower, marrowfat peas, beets, beans, and the like, have any influence upon the thinking and sensitive nature; but absurd as it may seem, we are fully persuaded of the fact, and would urge upon our farmers who have a desire to place themselves where they should be in influence and refinement, to cultivate their gardens with the same assiduity that they cultivate their farms, and to eat the fruits thereof.

### Pruning Vines

Last fall I pruned all our vines, and this spring I find what I consider quite an unusual occurrence—namely, that several of the large branches are bleeding badly from last fall's pruning. This is to me a most unusual occurrence, and whether caused by the rather remarkably mild April weather, or from some casual peculiarity, I am at a loss to decide. In any case, I greatly fear the vines will suffer. The Delaware, I notice, feels the pruning and bleeding the most. Can any of your readers account for this, or give a remedy?

### Pears Near Montreal

In a report made to the Montreal Agricultural and Horticultural Society, by Mr. John Archbold, that gentleman states that the following varieties are the twelve best adapted to the climate of the island of Montreal, viz.: Summer Doyenne, Dearborn's Seedling, Beurre Goubalt, as dwarfs; Bartlett and Bonchretien, either dwarfs or standards; Flemish Beauty, as a standard only; White Doyenne, Glout Morceau, Belle Lucrative, and Kingessing, as dwarfs; Oswego Beurre, as standard, Onondaga, standard or dwarf; and Vicar of Winkfield, as dwarf. He adds that the Beurre d'Anjou is a very fine pear, but does not seem to be hardy on the quince stock.

Mr. James H. Springle reports the following summer varieties, viz.: Doyenne d'Été or Summer Doyenne, Osband's Summer, and Tyson, as hardy and coming into bearing early, and recommends that they should be grown on the pear stock. As autumn sorts, he names the St. Shislain, Beurre d'Amalis, Belle Lucrative, Flemish Beauty, Louise Bonne de Jersey, White Doyenne, and Oswego Beurre; and says they are hardy, and the fruit of the finest quality. These French sorts seem to be better adapted to that climate than many of the finer American varieties, such as the Seckel, Kingessing, Sheldon, etc. Of these, he says, the White Doyenne and Louise Bonne de Jersey will do well on quince stocks. For winter sorts, Mr. Springle recommends the Lawrence and Glout Morceau. He adds that he has fruited in his experimental garden, during the last twenty years, upwards of three hundred varieties of pears, on both quince and pear

stocks, and his experience has been that, with a few exceptions, the quince stock in the climate of Montreal will not cause the tree to bear fruit earlier than those grafted on the pear stock; and that it is also a fact that many varieties of pears which do well on the quince stock elsewhere, make in that climate such a strong succulent growth that the wood never ripens, and is mostly killed in the following winter. He also states that he could have given a longer list of varieties suitable for the climate, and also a number of seedlings of both apples and pears of great merit, but that he has confined his remarks to the twelve best sorts.

### Early Peas.

On the 26th of August, 1867, I planted a row of Landreth's Extra Early Peas; they came up, and were growing well, when, on the morning of October 8th, while they were full of small pods and blossoms, we had a sharp frost that froze the vines quite stiff, and killed every blossom and pod on them. The vines were left, and continued to grow as well as before, but did not produce another blossom. The practical lesson learned from the above experience was, that while we may get frosts sharp enough to kill blossoms or pods, it would not injure the vines. If we want early peas, acting on the above experience, we must plant early.

On the 17th of February, 1868, I planted two rows of Landreth's Early Extra Peas; March 17th, they appeared above ground, and, although we had some very rough weather, and the vines were frozen stiff several times, they grew well, and on the 30th of April they commenced blossoming; on the 4th of May they presented a fine display of blossoms; we gathered them on May 20th. They were a few days earlier than any other peas grown around here; they produced an abundant crop; soil, good loam, fifteen inches, on clay subsoil.

Carter's First Crop Pea is earlier than Landreth's Extra Early, in this vicinity. On the 1st of March, 1869, I planted two rows of Carter's First Crop Pea by the side of two rows of Landreth's Extra Early Peas; they appeared above ground April 9th. The month of March was unfavourable to vegetation. The Carter's commenced blossoming May 9th, and Landreth's May 13th. I gathered Carter's June 1st, and Landreth's June 5th; each produced an abundant crop.—*Cor. of Rural New Yorker.*

For me horticulture has done so much—quickening good desires and rebuking evil—that I have ever faith in those with whom its power prevails. But let us never forget that humility on the score of our multitudinous weeds is more becoming than pride in our little dish of so-called fruit; that "we are the sons of women. Ma t r P a g e," and that the old serpent hides still among our flowers.—*Rev. S. Reynolds's Hole*

### Radishes.

Why is it that we so seldom see these upon our farmers' tables? Early in the spring, when anything fresh from the garden is so palatable and refreshing, these come in to relieve the craving and give a relish.

They are easily grown in any light, sandy soil, that is dry and warm. The seed is sown in drills, half an inch deep, and six inches apart, and, as the roots become large enough for use, they are pulled out and prepared for the table. The great secret of nice radishes is to have them grow quickly; this makes them tender and crisp. If they grow slowly, they become tough and pithy. To accomplish this, early radishes require a warm, dry sunny spot, sheltered from north and east winds.

THE SCARLET TURNIP RADISH is an excellent sort for early sowing, coming quickly to maturity, handsome appearance, white flesh, and pleasant flavour.

THE LONG SCARLET, is better for later sowing, of a deep pink colour, crisp and good flavoured.

### Transplanting Evergreens.

From the 1st to the 20th of May is considered a favourable time to transplant evergreens. It is an essential thing, without which all your labour is lost, that the roots of every kind of evergreen should be protected from the sun and wind, and be kept wet or moist from the time they are taken up until they are set out. This is well settled. All evergreens thrive best on a rich warm soil; but the different kinds of the pines, and the red cedar, do better in high, sandy soil, being more easily affected by dry weather than the spruces, hemlocks, white cedar, or firs. Hemlock is a beautiful tree, and will retain its vigour and colour, in any shaded nook; if the soil be a little moist, all the better.

My plan is to dig a hole three feet in diameter, and one and a half feet deep; put in four inches of well rotted manure, and fill up to within eight inches with the sods and surface soil. Trim off by clean cutting all roots that have been broken or bruised; and, after thoroughly wetting the roots, place the tree in the centre of the hole, and carefully place the roots as evenly spread over the surface of the earth as possible. Cover the roots with earth, using the hand to place it in contact with all the roots. Keep the tree upright, and fill in, pressing the earth firmly upon the roots, and about the stem of the tree. It is well to guard against a dry season by mulching with tan bark, chip, or barnyard manure, to the depth of three or four inches. Success is very certain with the above conditions.—*Cor. West-ern Rural.*

### Strawberries on the Farm.

'Strawberries? Why I can't grow 'em. No use trying.'

'Have you ever tried. John?'

'Well, yes. Give 'em a heap of attention—but it's no go.'

'Where is your bed? I would like to see it; perhaps I can tell you the trouble?'

'Wall, it looks kinder bad just now. Ye see, we've had a heap o' work to do, and I reckon Sally and the old 'oman hain't done anything to it.'

'Do you leave it for your women folks to attend to?'

'Yes, kinder so. Ye see that's small business for us men folks, what's got the farm to tend to.'

'Do you love the fruit?'

'Wal, I declare if that hain't a queer question to ask a human bein'—*love 'em?* why that hain't no name for it. I calkerlate my appetite is prodigious for 'em. Why I fancy I can take care of a small size platter full as quick as any man in these parts. Neighbour Jones says I alers manage to find room for 'em when I call round to his house.'

'Is this your bed?'

'Yes, just as I expected it; the old 'oman hain't touched it; looks rather bad.'

'Yes, it seems to be a good place for snakes and birds' nests. Did you suppose, neighbour, you could grow strawberries with such care as they have had? Why, this ground is as hard as a brick, while sods and weeds seem to monopolize the room. Suppose you let your corn grow without cultivation, or hoeing, or your potatoes; or sow your wheat in grass sod, how much will you get? Or just let your boys lay around the bar-room of our village and hear all the low, obscene, vulgar language used there. Throw out of your house the Bible and all good reading, and give them the yellow-covered literature of the day, and see how *they* will grow up.'

'Wall, yes, it might go kinder tough and cross grained like, but I've alers found the biggest strawberries in the wildest grass in my meadows, and why shouldn't I here?'

'Just because your tallest grass grows on the best and most loamy land in your meadow, and of course the strawberries that grow there would be better than on the hard, poor, baked land that grows nothing but sorrel and a little white clover. Did you ever take into consideration, neighbour, the advantages that would accrue to you by having plenty of small fruit.'

'Wall, no; I never could see quite as much profit in 'em as farmin'—raisin' pork and corn.'

'Don't you desire to make your boys love home and the farm, rather than to leave it for the city, one of these days?'

'Wall, kinder, yes.'

'Then, make your home and farm life attractive, by planting plenty of fruits. Raise

a good supply for the table, so that your wife and daughter can give you plenty of such in pure cream and sugar. I tell you what it is, home will seem more cheerful to you and the boys, when you go into the house and see a fine dish of strawberries or raspberries in sugar and cream, to tickle you palate; or a good large short-cake, steaming on the table, with the little red or black rubies within, and for all you may not love flowers, just give up to your boys or the women folks' whims, as you call them, and plant out a few such. Cover your verandah with the sweet-scented honeysuckle and the deliciously fragrant rose. Oh, as you set to the table, with your family around you, with your luscious fruits and the fragrance of the flowers filling the room, life will have a higher, a more holy aspect, and really your family will seem nearer and dearer to you—the world will become more beautiful.'

'Why, neighbour, you'd make quite a preacher, seems like.'

'Yes, if loving flowers and fruits, and soun ling their praises and their benefits into the ears of my neighbours, constitute such, I might. It makes a home cheerless to me to see no fruits, no flowers around, when the Great Giver has so liberally placed them within our reach. It disgusts me to see the sloveliness around many farmers' houses, and the coldness and cheerlessness. No luxuries, no beauties. I don't wonder the sons find the cities and towns more inviting, and the daughters give their best smiles to the town and city fops. When will farmers see the necessity of making their homes more attractive, and supplying their tables with more fruit—planting a tree here and a shrub there, and in the place of broken down stoops and paintless houses, make them smile, as it were, with twining vines, green blinds, and a good, liberal coat of paint? But neighbour, a word about this strawberry bed. Clean it out, give it a good coat of manure, fork it up the soil; along the fence, yonder, set out a row of raspberries and blackberries; through the centre of your garden set posts and nail on slats, to which train a few grape vines, or run them up the side of your barn, or into one of those trees. Set out a few currants, and then give them good care. Suppose it does take a few hours, occasionally, remember how well they feed you—giving you better health, a clearer mind, and a higher appreciation of life. We are not to live here always, and of what benefit will be our accumulated property to us after we are gone. Then, care for such, and enjoy life better—leaving to your sons a better inheritance than great fields—a contented mind and such an attachment for the avocation of their father, that the allurements and vices of the city life cannot weaken or destroy.'

'Wall, neighbour, I reckon there's more truth than poetry in what yer say, and I believe I'll try and fit up the old place a little.'—*Small Fruit Recorder.*

### Roses for Canada

#### THE COMMON MOSS.

We have spoken of the Provence or Cabbage Rose—one of the oldest, yet one of the very best of our hardy summer roses. By the side of this old favourite there grew a lovely daughter that had inherited the form and lineaments of her beautiful mother, like the parent as child might be, save that the modest creature strives to hide her blushing charms behind a mossy veil, which only served to heighten her beauty and enhance her loveliness. And though many years have passed away since first this rose took place in our gardens, none have since appeared that can excel it in beauty or hardiness, and the best rosarians still include this offspring of the Provence in the list of their choicest roses.

This rose is one of those sports or freaks of growth in which the Provence is very prone to indulge, and which has been kept and perpetuated by cultivation. There are some other sports of this same Provence rose which have been preserved by the gardener's care, and among them is another mossy rose known as the

#### CRESTED MOSS.

The plant does not exhibit much appearance of moss, nor indeed does the flower stem or calyx, save that the edges of the segments of the calyx are singularly fringed, giving to the bud a beautiful crested appearance. When fully expanded, the calyx is so thrown back that but little of the fringe or crest is visible. Indeed, it is in the bud that all the moss roses are most attractive. It is there that the mossy covering can be fully seen, while the charming folds of the rose petals are not hidden, only half revealed, half concealed in their lovely mossy mantle.

These two moss roses are perfectly hardy in our climate, and if the grower will expend a little love upon them, prune out the old wood occasionally, and shorten in the new a little, and supply the roots with rich soil in which to ramble, the grateful plants will lift up their beautiful smiles upon him, and repay all his care a thousand fold. What is there in all the realm of nature more queenly beautiful than a beautiful rose? And what more exquisitely charming than a moss rose-bud, just bursting into girlhood? And these beautiful things might adorn every garden in Canada, and bless with their beauty the hearts of our children as in the days now long gone they blessed our own.

—•••••  
EUMELAN GRAPE.—The Eumelan is an excellent grape, so far as quality of fruit is concerned, but whether it will prove to be more valuable than other sorts cannot be known until it has had a more thorough test than has yet been given it.—*Rural New Yorker.*

### Our Canadian Junipers.

We have five varieties of the Juniper in this Province, but so little has been done in the way of disseminating information concerning our native evergreens that much confusion exists with regard to them. Some of these Junipers are very handsome ornamental trees, and well worthy of the attention of those who desire to enhance the attractiveness of home, and who do not despise a beautiful tree or shrub because it is a native.

THE COMMON JUNIPER, *Juniperus communis* of Linnæus, is not only found in Canada, and extending southward into the States of Penn-

sylvania and New Jersey, but is also a native of both Europe and Asia. It is a low growing evergreen, varying in height from five to ten feet, assuming a great variety of forms, sometimes tolerably erect, but more frequently of a spreading habit and quite straggling growth. The fruit is small, globular, dark purple, covered with a light bloom.



FIG. 1

sylvania and New Jersey, but is also a native of both Europe and Asia. It is a low growing evergreen, varying in height from five to ten feet, assuming a great variety of forms, sometimes tolerably erect, but more frequently of a spreading habit and quite straggling growth. The fruit is small, globular, dark purple, covered with a light bloom.

We give our readers an engraving of a branch of the Common Juniper, fig. 1, showing the natural appearance of the leaves and fruit.

The leaves have a glaucous appearance on the upper side; on the under side they are bright green. It is very patient under the

knife, and by judicious shortening in of the branches can be made to form a very dense and compact growth, and any form that the cultivator may desire.

There is also a variety of the common Juniper, with a low-spreading, almost creeping habit, often extending along the surface of the ground to a distance of about six or eight feet on all sides. When planted with the Prostrate Juniper, the beauty of its silvery glaucous foliage is heightened by contrast with the darker hues of its beautiful but more sombre congener. We propose for this plant the name of CANADIAN JUNIPER, Loudon and other bo-

berries are quite small, nearly globular in form, of a very dark purplish colour, and covered with a glaucous bloom. The branches seldom rise more than two feet in height, and extend along the ground to a distance of from three to five feet.

This variety is useful for planting wherever a low, creeping evergreen is desired, and especially in rock-work ornamentation. Planted with its silvery tinted relative, the Canadian Juniper, it forms with it a most pleasing contrast, each heightening and enhancing the beauty of the other.

THE SAVIN JUNIPER, *Juniperus sabina* of Linnæus.—This creeping or trailing Juniper

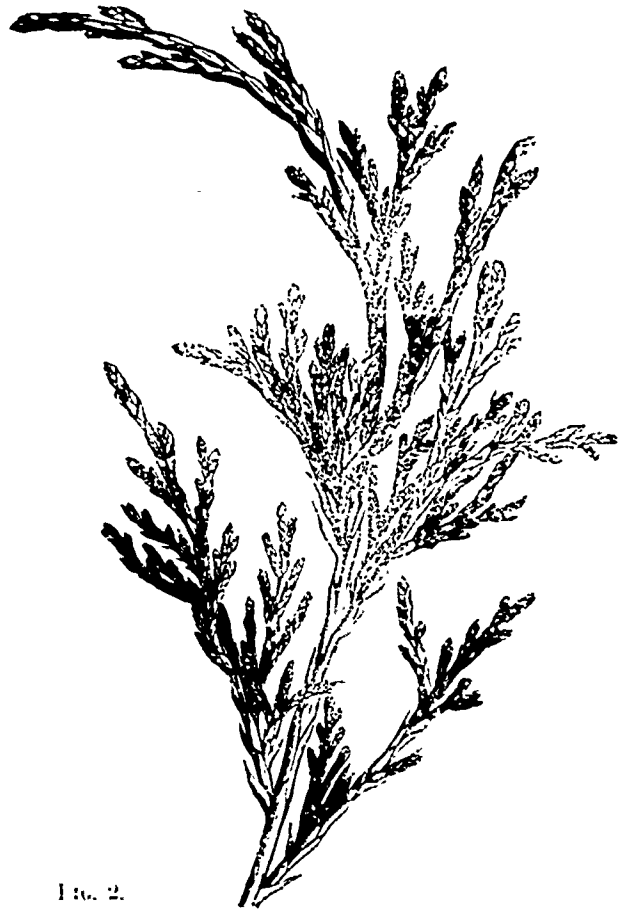


FIG. 2.

tanists having given to this variety the botanical name *J. com. canadensis*. It is very beautifully adapted for ornamenting rock work, or planting in any rocky or stony spot, or wherever a low-spreading evergreen is wanted, as its branches seldom rise above three feet in height. In form of foliage and pretty purple, light bloom-covered berries, it does not differ from the common Juniper.

THE PROSTRATE JUNIPER, *Juniperus prostrata* of Persoon, *J. sabina prostrata* of Loudon. This hardy creeping evergreen is a remarkably vigorous grower, with slender, trailing branches, and handsome spreading habit. Its foliage is of a dark shining green; the

is found not only in Canada and all the northern parts of this continent, but on the Alps, Apennines and Pyrenees, of Europe. When young it is a very pretty evergreen, with very numerous, ramified and spreading branches, covered with dark foliage of a peculiar sombre hue, interspersed with small dark purple berries. When old, the branches lose much of their foliage, and present a rough and ragged appearance. Hence this evergreen is out of place on a nice and highly cultivated lawn; but in a rocky wild-wood, its scathed-looking branches add a wildness and picturesque effect to the rugged landscape.

We give our readers an engraving of a

branch of the Savin Juniper, (fig 2), which will enable them to distinguish it very readily.

THE RED CEDAR, *Juniperus virginiana* of Linnaeus.—This well-known evergreen ex-

representation of a branch of the Red Cedar, showing the peculiar character of the foliage and the form and usual arrangement of the berries.

Having spoken of the Red Cedar, we take

White Cedar of botanists and educated men, and the sooner we correct this bad habit and apply the name correctly, the quicker will we get rid of the confusion that now exists by reason of our error.

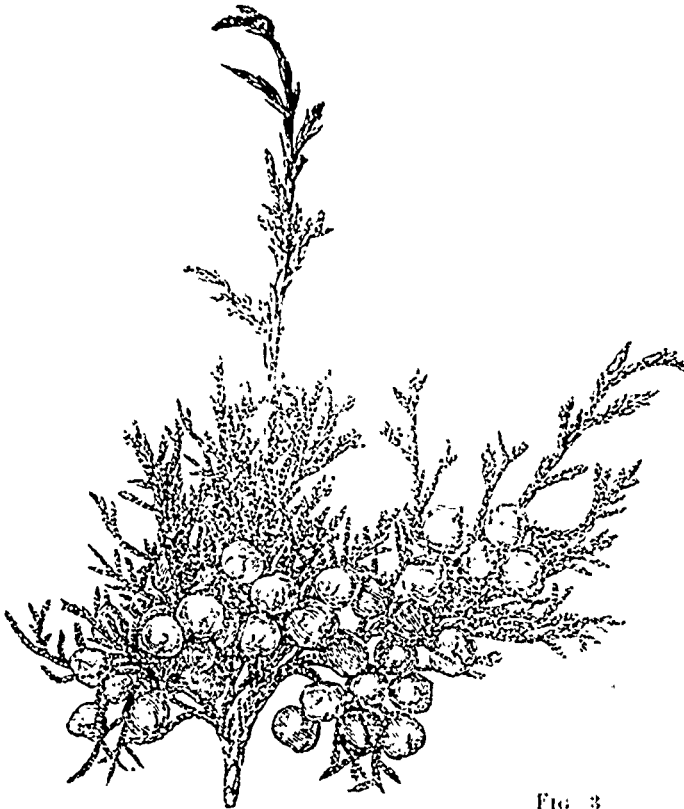


FIG. 3

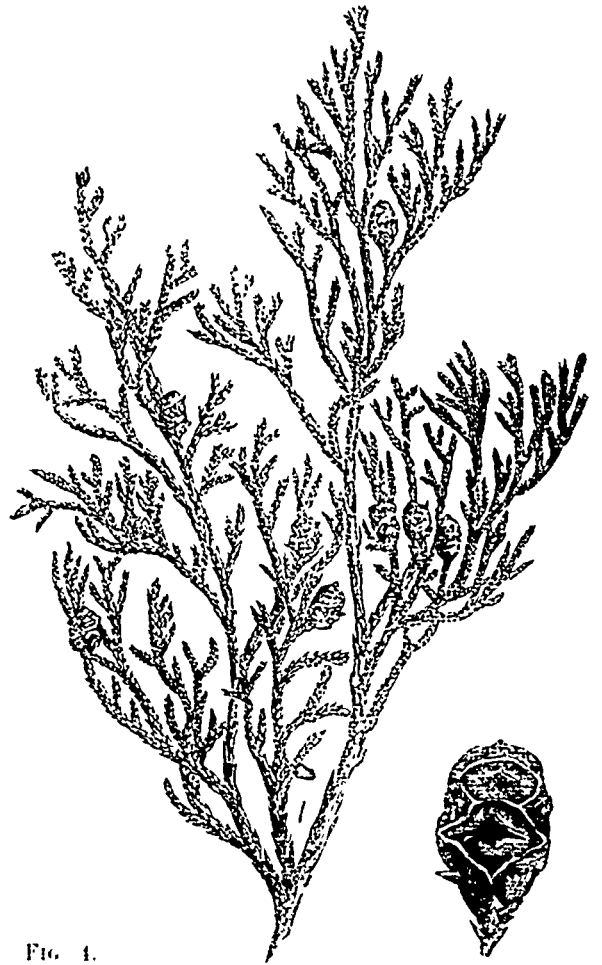


FIG. 4.

tends from Canada to the Gulf of Mexico, but at each extreme becomes more rare and smaller in size than in the more favourable climate of Virginia. In form and habit of growth it is extremely variable, sometimes shooting up in tall columns, and again forming a dense regular conical outline. This diversity of form makes it very serviceable for planting in groups, pleasing from the variety presented. Yet the trees should not be planted too closely together, for when overcrowded the foliage becomes brown and unhealthy and even the branches die out. For this reason it cannot be used for hedges, nor indeed any of the Juniper family, as they all are, in a greater or less degree, impatient of overcrowding, the leaves turning red and the branches dying out. But in groups sufficiently separated to allow of free circulation of air and light, they preserve all their natural beauty, and as old age advances assume a picturesque appearance. The leaves of the Red Cedar are very small, closely imbricated, that is, lying over each other in regular order, and of a dark green colour. The berries are small, dark purple, usually very numerous, and covered with a fine grayish blue bloom. Figure 3 is a

this opportunity to call attention to a great error into which we have fallen in the use of the term *White Cedar*. The evergreen usually called by us *White Cedar* is not the

THE WHITE CEDAR, *Cupressus Thyoides* of Linnaeus, is not very abundant in Canada, though extending from these great lakes to Florida, being found in largest numbers in Pennsylvania, Virginia, and North Carolina. Its favourite haunt is in low marshy ground; indeed rarely, if ever, being found elsewhere. Its leaves are very small, regularly imbricated, and of a light glaucous green. It bears very small, globular, clustered cones, beneath the scales of which may be found the small, globular seeds.

Fig. 4 represents a branch of the true White Cedar, and at the right-hand side is an enlarged picture of its clustered cones.

The evergreen which we have so long and so erroneously called the White Cedar is the AMERICAN ARBOR VITÆ.

Fig. 5 shows a branch of this very common evergreen, and a glance at the two figures 4 and 5 will be quite sufficient to prove quite the distinct appearance of the two trees, and enable the reader ever afterward to name them correctly. It will be at once seen that the leaves of the American Arbor Vitæ are somewhat coarser than those of the White Cedar, and that the cones are of a very differ-



FIG. 5.

ent shape. It grows abundantly throughout Canada, preferring low and moist soils, though sometimes found high up among rocks and on the banks of streams. It is very useful as an ornamental hedge plant, growing rapidly, patient of pruning, and capable of being trimmed into any form that the cultivator may desire.

We trust that, with these explanations, and illustrations here given, our readers will be able to distinguish the American Arbor Vitæ from the White Cedar, and to give it its correct name; and also to discriminate between the Red Cedar and other Junipers which are found in our woods.

Our engravings are copied from an excellent American work on evergreens by Josiah Hoopes, to whom the thanks of all lovers of the beautiful and the true are most abundantly owing.

### Planting Evergreens Early.

Robert Douglass, the well known arboriculturist of Waukegan, Ill., in a private note to us, says:—"People have got a notion that the Larch, being a *Conifer*, must therefore be planted late, when it should be planted at the earliest possible moment. And this recommending late planting for evergreens is all wrong, in my opinion. We invariably get the best growth on ours when we plant them early, and we have tried both early and late planting pretty thoroughly."

The above is in perfect accord with our own experience; and we always transplant evergreen trees as early in spring as the weather will permit. We said many years ago, that the far too general practice of transplanting evergreens late in spring came into vogue through the discovery that they could be safely moved later in the season than deciduous trees, and not because it was a better time. Procrastination is the bane of horticulture, and if a certain kind of work can be put off a week or a month, there are always those who will seek a good excuse for the act. Having tried both early and late planting of evergreens quite extensively, and during a goodly number of years, we are decidedly in favour of the earliest possible moment after the ground is in suitable condition to work in spring.—*Rural New Yorker*.

### Grafting Wax.

There are as many different ways of making grafting wax as there are nurserymen. One of the oldest and most popular recipes is the following:—One pound of tallow; three do. beeswax; four do. resin. Put into a kettle and melt slowly until all the ingredients are combined. If to be used in the open air in cool weather, add a quarter to one-half pound more tallow. Some persons leave out the beeswax altogether; but we prefer to have it, and always use it.—*Rural New Yorker*.

## Entomology.

### The Colorado Potato Beetle.

To the Farmers, Gardeners, and Inhabitants of the Counties of Lambton, Kent and Essex:

Beware! Beware of the Colorado Potato Beetle! Last year the advanced guard of this great western army of destroyers reached your shores, and this year you may expect to have your fields devastated by countless hosts, if you do not ward off the foe. If you make a determined and united effort, you can undoubtedly save your crops of potatoes and prevent the spread of the pest.

As our readers are probably well aware, this destructive insect has been gradually advancing eastward from the Rocky Mountains, at the rate of about fifty or sixty miles a year, and, as we predicted some months before, it reached the shores of Ontario last season. Our country happily is protected by a chain of broad lakes, which present an almost insuperable obstacle to the passage of this insect; but we have vulnerable points along the counties above mentioned, where we are only separated from the adjacent State of Michigan by the River St. Clair. The beetle possesses considerable powers of flight, which enable it to make its way over moderate distances, so that the river presents no effectual barrier to its passage, and it has even been found that numbers survive after having been drifted twenty or thirty miles across a lake. From the entrance, then, to the St. Clair on Lake Huron and its outlet on Lake Erie, the passage of this insect must be guarded against, or else the whole country will be devastated in no long space of time, and the community will be exposed to a loss of several millions of dollars' worth of potatoes.

But how, it will be asked, can this pestilent Colorado beetle be kept off? It entered our country in small numbers last year, and will probably come in far greater numbers this year. What can we do to prevent it? The first thing to be done by all who cultivate land in the counties of Lambton, Kent and Essex, is to plant very few potatoes this year, only enough to barely supply the wants of one's household. Next, do not plant any at all unless you are determined to fight the insect, without relaxing, all through the season. To do this effectually you must not have too large a potato field, and this you must watch carefully from the time the leaves appear until you gather in your crop. When the insect makes its appearance early in the season, make a few small heaps of potatoes here and there in your field, the beetles will be attracted to these for food, and you can then easily kill them by going round every morning and crushing under foot all

that you can find. This will prevent their laying their eggs and producing a fresh brood. Again, plant your potatoes, if possible, in a field surrounded by timber; or, if that is impracticable, surround it with a wide border of Indian corn. If all these means prove insufficient, then you will have to resort to the use of "Paris Green," which, being a preparation of arsenic, is a deadly poison. Be very careful then how you use it; never leave it for a moment within reach of children or careless grown people. Mix it with eight or ten times as much flour, ashes, plaster, or slacked lime, and dust it over the affected plants through a coarse muslin bag or sieve attached to the end of a stick. Keep to windward of it when at work, and apply it when the dew is on the foliage.

We trust that every one in those counties will adopt these precautions, and also that all in the neighbouring counties will be on the watch as well. There is no saying how far east the beetle may get this year—one specimen was found at Stratford last summer—so let all be on the look out. As those on the western frontier who keep off the insect not only benefit themselves, but also the whole population of Canada, we would suggest that a reward should be given by the Government of Ontario, or by the various municipalities, or by both, for all fields of potatoes that are kept free from the pest, where it actually makes its appearance. Or perhaps a better plan would be for the reward to take the shape of so much a hundred for all authenticated specimens gathered in Canada, in the same manner as a price is set upon the head of the Plum Curculio by the Fruit Growers' Association.

Last year we made an additional suggestion, which we still consider of importance. It is that a tract of country, some ten miles in width or more, should be marked off along the border line between the foot of Lake Huron and the head of Lake Erie, and that the culture of the potato should be absolutely forbidden throughout that whole tract during the prevalence of the pest in the neighbouring State of Michigan. We commend the suggestion to the Minister of Agriculture and all others interested in the matter. For further remarks on this subject we beg to refer our readers to the CANADA FARMER for October, 1870.

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.

## Entomological Notes

To the Editor.

SIR.—On referring to my Journal for the year 1870 I find my Entomological Notes neither copious nor particularly interesting. However, such as they are I venture to submit them for your inspection, and for insertion, should you deem their insertion desirable, in the pages of your periodical.

1870.

April 7.—I captured a *Vanesa J. album*, tortoise-shell butterfly.

May 4.—Mosquitoes made their first and most unwelcome appearance in our village. They were much less abundant than usual, during the entire season; in fact, I never remember seeing and feeling, so few in the course of my seven years' residence in North Douro.

May 16.—Another pest, the black-fly, *Simulium molestum*, first presented itself to our senses of sight and touch; indeed, I may add, of hearing too, for when they dance around your head as you are trying to enjoy the evening air in your garden, they buzz in the most irritating manner, like a swarm of miniature bees. In two respects they are not quite so great a plague as are the preceding *Diptera*; they let you rest, even without the intervention of mosquito curtains, at night, and they but rarely molest you in the house. These wretched insects, like the last, were of rarer occurrence, and lasted for a briefer space than during previous years. They left us on the 18th of June.

29.—*Papilio turnus*, Tiger Swallow-tail Butterfly.

30.—*Polyphemus*, Emperor moth.

31.—*Papilio asterias*, Black Swallow-tail Butterfly. This beautiful butterfly was more than ordinarily abundant.

June 3.—Flea-beetle: *Hebea striolata*, Illig. These destructive *Coleoptera* were excessively plentiful. My hot beds in the spring were swarming with them, and my cabbage plants were many of them, after they were planted out and had attained a considerable size, totally destroyed by them. I tried various suggested remedies, such as root, hellebore, Chinese powder, and tobacco water, but nothing proved efficacious. The last named was the least unsatisfactory; it acted as a narcotic, and after its affusion I picked off numbers of the fleas: but then—the labour! “*Egredietur med-ndo!*”

4.—A Longicorn beetle, the ribbed Rhagium: *Rhagium lineatum*, Riv.

6.—Tawney-spotted Buprestis: *Buprestis pulcherrima*, Harris.

7.—On this evening I first noticed that charming Lampyris beetle, commonly called the fire-fly.

15.—*Saperda tridentata*, 5½ tenths of an inch in length.

18.—*Cataclysta annu'alis*, Walker. In swarms on the outer walls of my house and all over my garden.

*Saperda vestita*, Say.

July 2.—I noticed several larvae of the *P. asterias* on my parsnips and parsley.

11.—Camberwell Beauty butterfly, *Vanessa antiopa*.

August 22.—As I was indulging in the lazy luxury of a pic-nic, an enjoyment for which our beautiful river and chain of lakes afford so many facilities, a friend, who had been fishing with a rod and line, brought me, in a basin of water, a tiny snake which had twisted itself round his line. It was a *Gordius aquaticus*, the first specimen I had seen of this hair-snake in an unknotted condition. It swam about like any eel, only with more elaborate contortions, owing to its disproportionate length as compared with its girth.

September 2.—Copper butterfly, *Lycena americana*.

8 Walking-stick insect, *Spectrum fenestratum*. This insect is, as I believe, of uncommon occurrence in our neighbourhood. In the course of fifteen years I have seen but three specimens, including the present one. It measures as follows: Length of the body, 2 and six-tenths inches; length of the antennae, 2 and one-tenth inches, total length, 4 and seven-tenths inches. The colour of the body is brown, resembling exactly that of a dried twig; that of the legs, brown and green.

October 28.—*Papilio asterias* and *Vanessa interrogationis*, Semicolon butterfly, emerged from their pupa state in my boxes.

And finally,

November 29, and December 13.—I was bitten, while sitting reading in my study, by unseasonable mosquitoes. To prove that these *diptera* were not only “alive” but “kicking,” I permitted the second of the two to insert its proboscis into my hand, and to retain it there until its body became bloated and crimson with my blood, just as it would have appeared in the Fall. I may add that between 8 and 9 o'clock a.m. on both days the thermometer stood at 36°.

VINCENT CLEMENTI

North Douro, Feb. 11, 1871.

ANOTHER METHOD OF KILLING THE CURCULIO.—Put some hay into warm brine, and soak it well, then spread it out and let it become nearly dry, so as to burn slowly; attach a wire basket to a pole, and press the hay firmly into the basket, and pour common tar over the hay. On a still evening, cloudy if possible, when the fruit blossoms commence falling, set fire to the hay at the sides of the basket, and hold it up under the tree so as to let the smoke pass all through it; if there be a flame, pour on more tar, so as to produce a dense smoke. Repeat this often. After the smoke penetrates well some of the curculios fall dead, and if the smoke be very heavy, it kills them all.—*The Gardener's Monthly*

## Apiary.

## Bee-keepers should look to their Bees

The snow having disappeared early, bees were generally taken out of winter quarters during the warm weather in March, since which time there has been little to gather except pollen or bee bread; yet there have been many days, even most of the time, that bees would fly out and search for honey. The consequence is many stocks will be greatly depopulated, while others will have consumed all their stores, and will require feeding, or perish.

If a stock become greatly reduced in numbers it may often be of great advantage to exchange places with a strong stock, and in this way get the weak hive increased in numbers. Queenless stocks, if there are any, should be added to those hives which have but few bees.

Several parties have informed me that their bees have died since they were set out, and with plenty of honey and bees. I am led to think that it is the result of some disease, as some bee-keepers have lost a number of stocks without any apparent cause. I hope that where bee-keepers have met with the misfortune to lose their bees in this way, they will report it through the CANADA FARMER, stating all particulars, that we may be able to ascertain the cause of their dying.

J. H. THOMAS.

## Queenless Stocks.

Almost daily some one writes to me, “I have a queenless stock; what shall I do with it? Can you furnish me a queen, and at what price?” For the information of such persons as may have queenless stocks I will say, “It is impossible for me to furnish queens early in spring. A moment's thought and it will be seen that it is impossible to breed queens until about swarming time—until drones make their appearance. Hence I could not furnish queens early in spring unless I had wintered them over for that purpose. This may, and in some cases has been done, but the trouble and expense attending it is considerable, consequently the price of such queens would be nearly double the ordinary price. So few would purchase that I fear the enterprise would not pay.

As it is impossible to obtain queens early enough in spring to save queenless stocks, it is advisable to unite such stocks with other stocks that are weak, or rather with stocks that have become greatly depopulated during winter. This will often prove of great benefit to a stock weak in point of numbers. The addition of more bees increases the heat in the hive, and causes the queen to lay a greater number of eggs, and the stock increases in numbers far more rapidly than it otherwise would have done. The hive and



combs which contained the queenless stock should be well cleaned after the bees are removed, and carefully saved for another swarm. A hive well filled with combs is of great value, as a swarm put into such a hive is at once prepared to gather honey and store it away. The old combs are cleaned very rapidly, and as there is no comb to build, nearly all the bees can go to the field for honey, bee bread, etc.

J. H. THOMAS.

### Bees Robbing.

At this season of the year bees are very likely to commence robbing. As there is no honey in the field, every nook and corner is "interviewed" if possible, to find something sweet, and weak colonies are often overpowered and all their honey taken from them. With a little care this may in almost every case be prevented. As soon as the bees commence to fly out freely in spring, the entrance to every hive should be made very small, say one-half inch square. This not only keeps the heat of the hive from escaping, and thereby promotes early breeding, but it enables weak stocks to guard their stores against more populous colonies. Robbing is far more easily prevented in this way than stopped after it has fairly commenced. Where contracting the entrance has been neglected until robbing has commenced, it may be found necessary to remove the stock that is being robbed to some cool dark room for a day.

J. H. T.

The excursions of the bees to collect honey are variously estimated at from one to three miles each, and they are supposed to make each about ten trips a day.

The quality of honey varies exceedingly, some being dark, and often bitter and disagreeable, while occasionally, when gathered from poisonous flowers, it is very noxious to the human system.

Bees are exceedingly susceptible of atmospheric changes, even the passage of a heavy cloud over the sun will drive them home; and if an easterly wind prevail, however fine the weather may otherwise be, they have a sort of rheumatic abhorrence of its influences, and abide at home.

It cannot be too deeply impressed on the mind of the bee keeper that a small colony should be confined to a small space, if we wish the bees to work with the greatest energy, and offer the stoutest resistance to their numerous enemies. Bees do most unquestionably "abhor a vacuum," if it is one which they can neither fill, warm, nor defend. Let the prudent bee-master keep his stocks strong, and they will do more to defend themselves against all intruders, than he can possibly do for them, even though he spend his whole time in watching and assisting them.—*Lynsgröth*

## Poetry.

### Caleb and Ruth.

Uncle Caleb and Ruth his wife,  
Caring little for outside weather,  
Fifty years of their wedded life  
Spent in this tiny house together.

Mossy the roof and gray the wall,  
Narrow the window low the door  
But I love the sun's light hallowed it all,  
From raftered ceiling to window floor:

Silent to-day; but of yore sweet  
Voices of children long ago,  
Keeping time to their restless feet,  
Followed the mother to and fro

Scattered far from East to West,  
Seeking their fortunes far and wide:  
No one stays in the olden nest,  
Where such be without memory hid

Caring naught for the desolate pain  
Of the wind in the pine tree top,  
Caring naught for the grievous rain  
That so easily over them drops

Heeding as little the summer's heat,  
Feeling sweet even the summer sky  
In a narrower house than this  
Caleb and Ruth together lie

Up where the many mansions was,  
Is there, I wonder, a cottage small  
Not too stately its pearl's gate  
Not too thinning its golden wall—

Where these two may in peace abide?  
Heaven were fonder if these a just part—  
Caleb away from her gentle side,  
Ruth afar from his faithful heart!

Hand in hand from morning to night  
Travelled these two the long earth-day:  
Surely they walk through the fields of light,  
Hand in hand on the shining way.

### Over and Over Again

Over and over again,  
No matter which way I turn,  
I always find in the Book of Life  
Some lesson I have to learn.  
I must take my turn at the mill,  
I must grind out the golden grain;  
I must work at my task with a resolute will,  
Over and over again

We cannot measure the need  
Of even the tiniest flower,  
Nor check the flow of the golden sands  
That run through a single hour  
But the morning dew must fall,  
And the sun and the summer rain  
Must do their part, and perform it all  
Over and over again.

Over and over again  
The brook through the meadow flows,  
And over and over again  
The ponderous mill-wheel goes  
Once doing will not suffice  
Though doing be not in vain;  
And a blessing, falling us once or twice,  
May come if we try again.

The path that has once been trod  
Is never so rough to the feet:  
And the lesson we once have learned  
Is never so hard to repeat,  
Though sorrowful tears may fall,  
And the heart to its depths be driven  
With storm and tempest, we need them all  
To render us meet for Heaven.

## Household.

### Economy in Housekeeping.

When the young woman marries and commences housekeeping in another home far away from the one in which she was born and reared, her ideas are all immature, and need training. The mother under whose eye she learned the mysteries of the art of cooking for an art it is—had all the care and bore the heat and burden of the day. Her smile was the reward when a triumph was achieved, her kindly admonition all the punishment when failure crowned the weary effort. If the girl forgot the time the cake was to remain in the oven, the mother came to her timely aid. If the woman forgets, no one is near to lend a helping hand, and the cake is spoiled, which is not economy. If the girl forgot the way the pies were to be made, she had only to run and ask mother. If the woman forgets, to whom shall she turn? The girl at home, dependent upon her mother's skill, is very differently situated from the young wife far away from home and friends. Her mother may have trained her well—may have taught her to economize as much as circumstances required—but still, when thrown upon her own responsibility, she may fail. Forgetting in the newness of her position the many little details of cooking, she consults a "cook book," and then she only plunges deeper into darkness; for, as a general thing, they are only blind leaders of the blind. It is well for a young housekeeper to have one on hand, as she can often find the time for cooking things, but the receipts are all so rich and expensive that one cannot cook by them if they care to practice economy. The better way is to cull receipts from the housekeeping departments of various papers, if you find any economical ones, and obtain all you can from old housekeepers. Copy them neatly and plainly into a blank-book that you can buy at any stationery store for ten cents; cut out printed headings and glue at the top of the page—not every page—but at intervals through the book: Bread—Cake—Pies—Puddings—Pickles—Preserves—Miscellaneous.

Hang this scrap-book up by a loop made of tape in some convenient place, and it will save you much hunting for receipts kept upon pieces of paper.—*German town Telegraph.*

### Protect your Furs.

Our furs will now soon be laid aside for some seven months, and it is all important that until that time they should be secured against moths—their mortal enemy. Furs are costly and beautiful as well as useful, but nothing looks worse than shabby furs, made so from the destructive inroads of the moth. The worst thing to be done with furs

is to shut them out of sight from the air and forget them. The next worst thing is to put them away *damp*. Should they become wet by exposure to the rain, they should be placed no nearer to the fire than where they will dry slowly. When the season for their use is over, they should not be shut up in a tight chest, box or drawer, for more than a few days or a week without being taken out and well shaken. Putting them in a drawer that is frequently opened is recommended, in order that they may be frequently seen and thus be reminded of the necessity of attending to them. To preserve furs perfectly and without the least fear of moths, frequent airing, shaking and general cleanliness, together with a good supply of camphor, is the grand specific. Your cedar chests, and many nostrums offered in advertisements are never to be trusted.—*German town Telegraph*.

**TO PRESERVE EGGS.**—Nearly fill a deep earthen vessel (a pot churn is the best) with fresh laid eggs, closely and regularly packed in with the small end downwards. In another vessel put as much quicklime as you think will turn enough water to fill up the egg vessel, into the consistence of *thick cream*. Let the lime and water stand two or three days, stirring it frequently, and then, if thick enough, pour it over the eggs, filling the vessel quite up. Take care to place the egg vessel in some corner where it will not be likely to be disturbed, and the eggs will keep good any length of time. The experience of many years proves this to be the simplest, but most effective mode of preserving eggs for poaching and for all culinary purposes.—*Canadian Poultry Chronicle*.

**CLEAN YOUR CELLARS**—Spring has come, and with it the usual annual reasons for special care about the cleanliness of premises. The following, from the *Boston Journal of Chemistry*, is to the point:—"Dipteria, typhoid and scarlet fevers, and many other most serious illnesses, have their origin in cellars, both in city and country; and we can do our readers no better service than to urge them to see that, at all times, they are in a dry, sweet, wholesome condition. Why should farmers and farmers' families, living in the country, away from the pestilential vapours of the cities, be so subject to attacks of malignant diseases? There is a reason for it, and we can point it out. They arise from the indifference manifested to the observance of hygienic rules and the violation of sanitary laws. Cleanliness is essential to health, and it is just as necessary in the country as in the city. A family living over a foul cellar is more liable to be poisoned and afflicted with illness than a city family living in its polluted atmosphere, but without cellar or basement filled with fermenting roots and fruits. There is far more sickness in the country among husbandmen than there ought to be. With plenty of pure air, water and exercise, the evil imp, disease, ought to be kept at bay; and he would be better if an observance of certain hygienic conditions were maintained.

## Agricultural Intelligence.

### Township of Hamilton Farmers' Club

#### PREPARATION FOR SPRING WHEAT.

The following report of a recent meeting of the Hamilton Township Farmers' Club, which after a period of inaction has been re-organised and started with promising spirit, has been furnished by the Secretary, Mr. W. Riddell:—

A meeting of the Club was held at Cobourg on the last Saturday of March; the subject for discussion was "The best method of preparing land for Spring Wheat, and the proper quantity of seed to the acre."

Mr. FRANCIS AITCHISON, who had been appointed at the previous meeting to introduce the subject, after adverting to the political excitement of the recent elections, said—It would best suit his purpose to consider, first, the mode of treatment with green sod, the pea and barley stubble, and then root or planting ground. With green sod, after pasture or hay, he would give the land a good solid farrow, ploughing not less than six inches deep; then roll, harrow, and cultivate, but always lengthwise of the furrows. In the State of New York (where he had been) they ploughed their fallows as soon as they had finished their planting; they cultivated and harrowed their land, but did not plough again, but put in their wheat with one ploughing. He would ridge up his land in the fall, and sow in the spring as soon as the land was fit to sow. In preparing pea or barley stubble for spring wheat he would, after harvest, *ribb* the land about four inches deep—that is, he would cut up one-half of the ground and cover the other half with it, and then plough it up late in the fall. He thought this better than to give the land two ploughings; he thought it rotted as well, took less time, and that the stubble was more out of the way, and not so apt to choke the plough as it was when the land was twice ploughed. In cultivating, he would always cultivate lengthwise of the furrows, and not across. The same with harrowing—almost always lengthwise. It was necessary sometimes to cross-harrow, when the land was stumpy, or when you could not otherwise cover the seed; but he thought the less cross-harrowing the better. After roots, he would harrow down the drills or hills (as the case might be), then plough up the land in the fall, and cultivate in the spring before sowing. With regard to the quantity of seed, he was rather in favour of thin sowing. He would give his own experience in the years that he had kept an account of. The following tabular statement will show the quantity sown per acre and the result during the last seven years:—

Years.	Bushels sowed per acre.	Yield per acre.
1845 .....	1½	22
1846 .....	1½	10
1856 .....	2	3
1857 .....	1½	6
1869, some .....	1½	30
1869 " .. ..	1½	24
1870 " .. ..	1½	12

In 1870, one of his neighbours sowed twenty bushels of wheat on ten acres, rather late, and his return was one bushel to the acre. Mr. Aitchison then read a number of extracts from the *CANADA FARMER* of past years, on drilling and hoeing wheat, the advantages of thin sowing, and the various methods of preparing land for wheat.

W. L. BURNHAM said the great trouble was—we did not prepare our land enough for spring wheat. It was not ploughed and cultivated as much as it ought to be; would approve of sowing in drills; thought it stole out more when sown in drills than when sown broadcast, and was a better crop, would plough in the fall, and cultivate in the spring. Last spring, on one of his fields, he cultivated the east end of the field and sowed the west end without cultivating. He saw a marked difference in the crop; the east end looked better the whole season; the straw was stronger and brighter, and the crop was better every way; the wheat turned out well, and was a better sample. Where it was sown *without cultivating*, he could not cover the seed well; it looked poorly all summer, and turned out badly when thrashed, thought if we could afford the time we should have better crops by drilling and hoeing our spring wheat; thought from a bushel to a bushel and a peck enough of seed for an acre of wheat.

CHARLES BROWN said that if we in Canada were in a situation to drill and hoe our wheat as they do in England, we should have much better crops than we have; but it costs far too much to hoe wheat here. It took less seed to sow with a drill than to sow broadcast; he hardly liked the drills we had here at present, sowing seven or nine inches wide, not enough to hoe between; it left a large space for the weeds to grow up; whereas when sown broadcast, equally over the ground, it had a tendency to smother and choke the weeds; thought about a bushel and a half enough seed for an acre of spring wheat.

EDWARD BELLERY should like to ask a question or two of Mr. Aitchison: Suppose that land was green sod, and a crop of peas taken off it, would he prefer one or two ploughings for wheat?

Mr. AITCHISON replied that he would prefer to cut and cover (*ribb*) once, and plough once, to two ploughings.

Mr. BELLERY would further ask if he had taken any notice how the wheat crop was generally in the country in the years he had mentioned in his experience of thick and thin sowing?

Mr. AITCHISON replied that he had not.

Mr. BELLETRY agreed with all the opening speaker had said about thin sowing, was an advocate of thin sowing, when sowing rather late, would put on a little more seed than if sowing early. Something depended on the time of sowing, and also on the variety of wheat sown.

JOHN PRAIT said the first part of Mr. Aitchison's remarks he hardly understood; perhaps he meant fall wheat land. He thought one ploughing for fall wheat might do, but not for spring wheat. He did not approve of cultivating lengthwise the furrows; by doing so the ground would not be in a good state for cutting with a machine; besides, land cultivated better, more equally, across the furrows and ridges; thought that land for spring wheat, that had been in peas or other crops, should be ploughed as soon after harvest as possible, then harrowed well, and ridged up neatly before winter. He did not approve of "cutting and covering" at all; thought it did not expose the land equally enough to the air; that the seeds would not spring and grow equally, some being covered up too deep for growing; would cultivate across the furrows in the spring before sowing. With regard to the quantity of seed, would be guided somewhat by the state of the land; if the land was rather soft, would put on a little more seed—as the horses, while harrowing, then tramped down some seed too deep for growing. Would sow from a bushel and a half to a bushel and three pecks to the acre; had never tried it, but thought drilling would be better than broadcast. The seed would cover better with a drill. His experience had been chiefly with Fife wheat.

ALEXANDER McDONALD said that in the preparation of land for Spring wheat he differed from Mr. Aitchison altogether. He would take green sod, either pasture land or land that a crop of hay had been taken from; would plough it as *lightly* as possible—say not more than three inches deep, let it lie for ten days or so, then roll lengthwise of the furrows; then, if the weeds came up, he would harrow well, as frequently as he could, or as was required to kill the weeds; would ridge up the land well in the fall, and cultivate in the spring across the furrows, and not too deep, as wheat liked a firm surface; would just raise enough of mould to cover the seed nicely; thought the first object in preparing land for wheat was to get it clean, and in good heart, either by manuring or by ploughing down clover, say to plough down the second crop of clover; would not grow wheat after barley in any case; would not sow two grain crops in succession; after peas would plough lightly, as soon as possible after harvest; thought the land was drawing nourishment from the air as soon as it was turned up. Another object was to kill the weeds and the seeds of the weeds; would like to kill at least two crops of weeds in the fall; if he was going to apply manure, would

prefer to do so before the first ploughing; would ridge up the land in the fall, and cultivate in the spring; as he said before, he thought the farmer he got the ground the better the crop of wheat. With regard to the quantity of seed, would consider the state of his land; on land in good heart, would sow from a bushel and a quarter to a bushel and a half; would sow less seed on very rich land and on very poor land than he would on land in medium condition; on rich land wheat stoled out more, and was apt to grow soft in the straw and lie down if thick; and on poor land there was not nourishment for so many plants. On medium soils, club wheat early sown would sow 1½ bushels; of Fife wheat, would sow from 1 to 2 bushels an acre. On our front land he preferred late sowing—not sooner than the 10th of May. Three years ago he sowed some wheat on the 1st of April, and thrashed from that five bushels an acre, the same year sowed the rest of his wheat (on no better land) on the 18th of May, and thrashed from that 24 to 30 bushels an acre. His early sown wheat was almost all taken by the *weevil*.

The PRESIDENT (Peter Sidey) congratulated the members on the interesting discussion that had been elicited. His own opinion on the subject was—that the quantity of seed required depended altogether on the state of the soil and the season. Some years rather thick sowing did best; other years thin sowing. The farmer had just to use his judgment as to the proper quantity of seed for his land. His practice had been to sow two bushels of seed to the acre on all his land. Until within the last few years he could not believe that the better the land the less seed was required, as old farmers, his neighbours had told him; but he had now found it was so. He had found, too, that it did not do well to sow poor land too thick.

**Ploughing Match and Double Furrow Ploughs.**

A Carlisle (England) paper gives an account of another important trial of Double Furrow Ploughs, which took place at Kirkbythore. The principal English makers, as well as local manufacturers, were represented, and the trial gave much satisfaction to a large concourse of spectators. The following is a statement of the respective draughts of the double furrow ploughs—

Mr. J. Stalker's (2nd prize)	43st 8 10ths
Mr. J. Stalker's	44st
Messrs. Ransome, Sims & Head	44st 2-10ths
Messrs. J. & F. Howard's	45st
Mr. J. Murray's	45st 4-10ths
Messrs. J. & F. Howard's (prize)	46st 2-10ths
Mr. G. Milburn's (Blencairn)	46st 6 10ths
Mr. Corbett's	46st 3-10ths

This seems to indicate that either heavier horses than those in common use among our

farmers, or a team of three, would be required to work these new implements. The correspondent who sends us the account remarks that he was one of a committee who tested the draughts of ploughs at the Provincial Exhibition some years ago at Hamilton, where, out of nineteen ploughs tried, the *heaviest* draught was nearly 100 lbs less than the *lightest* draught of the double ploughs given above.

**Agricultural Statistics of Great Britain**

In 1869, there were 36,100,153 acres of land under cultivation in the United Kingdom of Great Britain. During 1870, the number was increased to 46,177,370 acres, distributed as follows:—In England, Scotland, and Wales, 30,407,579 acres; Ireland, 15,652,578; and in the Channel Islands, 117,213 acres. There were 11,755,053 acres devoted to corn crops, including beans and peas, of which 9,548,041 were in England, Scotland, and Wales, 2,173,103 in Ireland, and 33,903 in the islands. The amount of land devoted to wheat in England, Scotland, and Wales, was about 200,000 acres less than in 1869, which represented an estimated diminution of 700,000 quarters in the home supply. At the end of the year, the total number of each kind of live stock in the United Kingdom was: Horses, about 2,530,000, of which England, Scotland and Wales possessed about 2,050,000, and Ireland 530,000, cattle, 9,235,000, of which 5,403,000 were in England, Scotland, Wales, and 3,796,000 in Ireland; sheep, 32,786,000, of which the number in England, Scotland and Wales was 28,397,000, and in Ireland 4,333,000; and pigs, 3,650,000, of which England, Scotland and Wales had 2,171,000, and Ireland 1,549,000. During the year there was an increase of 159,000 in the number of cattle.

The *Mark Lane Express*, in its remarks upon the returns of 1870, says:—"The growth of the mangold is gradually but certainly increasing both in England and Ireland, as kohlrabi is also coming more into use, while the cabbage is still but an exceptional crop on the farm, making but little way saving in certain districts, or more properly perhaps with a few individual growers. Beet-root, of which Professor Voelcker has of late become so earnest an advocate, gains but slowly on the public mind, and the whole country last year gave up but four thousand acres or so to its cultivation. If, however, they can manufacture from it as good brandy as that sent out as a sample from Buscot, it would surely pay to do more in this direction. So far real British brandy has but a bad name, but if we can succeed in making sugar we might hope to do something also with spirit. The report states that 'the exact acreage under sugar beet is not known,' although an approximate estimate must be very easily arrived at.

"Curiously enough, another fancy crop, that of flax, is going out of cultivation in Ireland, the returns showing a falling away of 34,000 acres between 1869 and 1870. Nevertheless, from time to time we see the most encouraging accounts in the Irish papers, and Irish landlords, if we remember aright, have been very recently speaking to the profit with which flax may be grown and sold. And flax, says Mr. Fonblanque, 'is a more important crop in Ireland than in England,' as here, indeed, at its best we have in all but little over 20,000 acres in crop. The breaking up of permanent pasture would seem to have been one of the especial features of our agricultural history in 1870, as more than 660,000 acres of such land were put to other uses, but the returns for meadow hay and artificial grasses have not been so clearly distinguished, and the information in this respect is scarcely so satisfactory."

It is said the supply of clover seed in Europe was very small, in France the crop being almost a failure, in England much less than usual, and in Germany deficient in quality. Large importations are said to have been made from America.

The West Durham Agricultural Society intend to throw their Fall Exhibition open to the Province. Intending exhibitors are requested to transmit \$1 to the Treasurer, Mr. M. Porter, Bowmanville, before the first of June.

It appears from tabular statements taken from Morton's Almanac, that the loss from lung disease, and foot and mouth disease, in England, during the last thirty years, is estimated at 5,549,780 head of cattle, and valued at four hundred and eighteen million, eighty-four thousand, and two hundred and seventy dollars!

The report of the United States Department of Agriculture comes to the startling conclusion that such is the wholesale destruction of American forests, there will be an actual famine for wood in the country within thirty years, unless immediate measures are taken to supply their places by new plantation. It is estimated that from 1850 to 1860 20,000,000 acres of timber land was brought under cultivation, and that in the present decade no less than a hundred millions will be so reclaimed.

Melbourne, says the *Economist*, is at last to have an Agricultural Society. Several influential men have met at sundry times, and the result of their discussions has been the constitution of the National Agricultural Society of Victoria. There can be little doubt of its success, men of business tact and energy have enrolled themselves as members, and as all political and party feeling is to give way to a general desire to promote the development of the agricultural, pastoral, and industrial resources of the colony, the future of the new society looks particularly encouraging.

The average yield of corn to the acre throughout the Southern States last year was twenty-six and a half bushels.

**IRRIGATION.** Dr. March, in his lecture on "Spain and the Pyrenees," says that land irrigated in Spain will sell, everything else being equal, for \$500 an acre, while that alongside of it, not irrigated, will only bring \$50 an acre. One company organized in Madrid, with a capital of \$1,500,000, has reclaimed 300,000 acres of land, and are paying dividends equal to 18 per cent. on the investment.

The consumption of peanuts in the United States is enormous, and is continually increasing. It is reported that Virginia sent to market last year 400,000 bushels; Tennessee, 300,000; Georgia and the Carolinas, about 200,000. Others of the Southern and Middle States raise this nut in considerable quantities. As a general rule, the cultivation of peanuts is a profitable business where the soil and climate are congenial.

The agricultural returns in Great Britain for the year 1870 show, among other things, that in England, out of a total of 393,569 farms or holdings, 213,626, or 54 per cent., do not exceed 20 acres; in Wales, the total is 55,975, of which 27,185, or 48 per cent., do not exceed 20 acres; and in Scotland the total holdings number 79,603, including 45,434, or 57 per cent., that do not exceed 20 acres.

There never was a better prospect, says the *Western Rural*, for an abundant wheat crop throughout the West than this spring forecasts. The growing wheat stands thick upon the ground; the recent rain and warm sunshine have given it a luxurious appearance, and made the fields look green and beautiful. Wheat growers predict the earliest harvest year known since Illinois was settled, and surely the present indications warrant the prediction."

**THE CHATSWORTH SUGAR BEET FACTORY.**—We are informed, says the *Pratt Farmer*, that the negotiations between citizens of Freeport, Ill., and the proprietors of the sugar beet factory at Chatsworth, have resulted in an arrangement for the transfer of all the machinery and utensils to Freeport, where an establishment will be erected for the manufacture of sugar from the beet on an extensive scale. Mr. C. H. Rosenstiel, of the Executive Committee of the State Agricultural Society, has become largely interested in the enterprise, Mr. Bunn, of Springfield, retaining a large pecuniary interest. Experts in the growing of beets are unanimous in the opinion that the land in the vicinity of Freeport is much better adapted to the growth of this crop, than is that at Chatsworth. Thus we see that while the Chatsworth experiment, which has been a very expensive one, has failed of entire success, it has yet given sufficient confidence in the business to induce further investments and a determination to prosecute it.

## Miscellaneous.

### Backwoods Life—A Pet Bear.

My father was a U. E. Loyalist, and would not reside in the United States, and when Lord Ashburton took a big slice from John Bull's Dominion, my father's property was some three miles in the States, so he pulled up stakes with a few other neighbours, and pushed far into the wilds of Lower Canada, till he found a good locality, near a beaver meadow, where he could cut hay for his cow and oxen. The woods were full of game of all kinds, particularly bears and deer, so that there was no fear of starvation. My father moved his young family, consisting of myself and an older brother, into his new home. The neighbours hunted in pairs; and one day, when out hunting, they killed a huge she bear, and having ascertained that she had young ones, they searched and soon found them, and each one took a cub, which was three days old. They were about the size of a cat, had no teeth, and their eyes were not open. My mother was a strong, able woman, and suckling a young baby, for whose appetite she had more than enough, so young Cubby, as we called him, was allowed to appropriate the surplus milk, which made him grow and shine wonderfully. For the first year or two he was treated like one of the children. We ate together and slept together. He was a great pet, and would allow us to ride him or harness him in a sleigh, and he would draw us everywhere that we had a wish to go. He would perform many tricks, such as sit up and beg; and when begging was not successful he would steal from the children. Then my father would apply the ox whip, which Cubby cared no more for than a straw, for his long hair saved his skin. Poor Cubby got many a thrashing that he did not merit; for when we committed crimes it was laid to Cubby, and he got the chastisement which we deserved, but he sinned on his own account in a thousand ways—one of which I will relate. When he was about two and a half years old, one evening we children were about to get our supper. I had a plate full of porridge set on the floor to cool; Cubby came along, and could not resist the temptation, but licked out my plate as quick as we could have emptied it with a scoop shovel. My father applied the stick to his carcase, but Cubby could open the door from outside or inside as readily as any child in the house, though all attempts to teach him to shut it after him had proved a failure, so Cubby made his escape and climbed a basswood tree, which my father had preserved in front of his house. It was some sixty feet high, and probably thirty before you came to the first limb. My father, seeing the delinquent thus out of reach, determined he might stop and sleep with the owls; and accordingly pulled in the string that served to open the latch. I suppose Cubby was thinking what a comfortable warm bed the children had compared with his dormitory in the top of a tree, and probably when he found all quiet he went to the door to let himself in, and finding no string out, he climbed up the corner of the

cabin, and, in default of other entrance, made his way down the chimney, which was just large enough to let him pass stern foremost. When down, he required no candle to find our bed, and got into the middle, for with his nose he would root us each way, and by appearance in the morning one would think that he had done considerable rooting in the night, for we were as black as sweeps. My father and mother were first up in the morning, and when we children turned out of our bed, one after another, it was discovered that Cabby had descended the chimney during the night, and so painted us that we were not recognizable in the morning. My father now made up his mind to dispose of him; so he put a chain about his neck, and made him fast to the ox cart, and started for Montreal, where he sold him for five dollars. That put a stop to Cabby's sweeping chimneys.

A. B. BROWNSON.

### Digging Wells in Wet Sandy Soil

It is almost impossible to have good water from wells dug in sandy soil. The land is full of surface water, and even post holes are hardly three feet deep before some water is often found to be coming in. This is always surface water, and is rarely wholesome, and never good. Sand will filter water well enough, and leave it bright and clear for use, but nothing short of absolute clay will entirely disinfect it of its miasmatic tendency. Surface water is always more or less aguish in its effect, and hence it is injurious. Many think that because sand water is clear that it is good. Let any one test surface sand water with pure spring water from a deep clay well; put some of each in a tumbler, and place them both on a mantelpiece for two days, in a comparatively warm place, taste them both at intervals of about four hours, and you will soon see an immense difference. The sand water will be stale in four hours, and will throw up bubbles of sulphuretted hydrogen gas in eight hours, and will be utterly undrinkable in two days; while the deep clay well will furnish water quite good after that lapse of time. Now, this fact being decided, and also the fact being pretty well allowed that there exists a very great difficulty in digging down to clay through this super-stratum of running sand, I will proceed to describe the course I took to avoid the difficulty and obtain good water in such a locality.

Sand water almost always overlies a sub-stratum of clay—in fact always, I may say—for if the clay were not there to retain (as in a pond) the water above, it would of course all percolate through and pass away until it did meet with clay or such a retentive soil as would prevent its passage. In digging a well of this sort you must first provide a curb of say 5 feet in diameter and about 8 feet long. This is made by sawing out of inch boards circular segments about three inches wide. To lay them out, you must set your trammel to 30 inches, and having obtained boards as wide as you can conveniently get, strike a number of segments of circles

one within another, not longer than one-sixth of the circumference required, or about half the diameter of your curb. There must be twenty-four such pieces cut out. Six will form a circle five feet in diameter; six more will form a second circle. Place one on the other, and "break joint" with them, so as to avoid cross-grain timber coming together in both circles; then nail these two circles together. This repeat again, and you will have two strong double inch circles. Nail narrow inch boards well jointed and about 3 or 4 inches wide all round them, placing one circle within 12 inches of the top, and one within 12 inches of the bottom. Your curb is now complete, and having sharpened or levelled the lower edge, so as more easily to cut its way into the soft quicksand, you are now ready to dig. As soon as you find the sand troublesome by caving in, drop your curb into the hole you have dug, and continue to dig inside, throwing out the sand. Your curb will settle as you dig; and if well made, and the joints pretty good, you will have very little trouble with sand running in through them, nor will much water come in either. If your curb does not settle down as fast as you dig, put some bricks or other weight on the top, and it will then descend as fast as desired. When you have reached the depth of the first curb, if your well should be deeper, place another curb on top of the first, and proceed as before; sand you will rarely find this to be requisite, as one curb is almost always enough. When you reach the clay, you must see that your curb settles fairly down all round lightly on the surface; and you must now commence and dig another well within the first, of 3 feet 4 inches in diameter. This will leave a shelf of about 10 inches all round within the outside curb. You will now continue to dig without fear of caving in or trouble from the quick sand which you have passed. You will of course go as deep as necessary, and until you reach water. When that is obtained altogether irrespective of the surface or sand water, you will commence to brick or stone up. Bricks, of course, are much the best, and make a far better well. When you reach the shelf of clay before described, you will probably have a good deal of the surface sand water in your well, and you must now proceed to stop it out. This is effected by constructing another curb of 3 feet 4 inches diameter, or the size of the lower part of the well. You lower this curb into the well, and rest it on the edge or shelf formerly spoken of, and now begin the careful engineering of stopping out the sand or surface water. You mix on the surface a quantity of the clay you have thrown out from below; make it into soft, stiff mud, almost mortar, but firmer; and throw it into the space of about 9 or 10 inches wide that exists between the two curbs, being careful to ram it down perfectly tight, especially at the bottom. When this space is quite full you may complete the

bricking up on the inside of the curb to the top of the well, and finish in the usual way, being careful to raise the bricks somewhat higher than the surrounding surface, and also to bank up to the brick with the puddle or mortar before mentioned. When completed, dip out all the surface water, and start fair with a well into which none can by any possibility get in future. The extra cost of these curbs is not much, and the benefit certain; the lower part will never decay, but, on the contrary, last forever. There will be some slight taste of pine for a while if the water from the springs should rise above the curbing, but that will soon go off. I have seen wells so prepared that were dug forty years since, and are now as good as when first finished. The upper part of the curb may decay in the course of years, but the stratum of clay will always be between the sand walls and the bricking, and equally effective without the curb as with it when once in its place. C.

**WEIGHT OF WOOD.**—In the Carpenters' Hand-Book, we find the following given as the weights per cubic foot, respectively, of the woods named:—Beech, 40 pounds; Birch, 45 pounds; Cedar, 28 pounds; Hickory, 52 pounds; Ebony, 83 pounds; Yellow Pine, 38 pounds; Cork, 15 pounds; White Pine, 25 pounds; Lignum-Vite, 83 pounds.

**PAINT FOR SHINGLES.**—Slake stone lime, by putting it into a tub to keep in the steam. When slaked, pass through a fine sieve, and to each six quarts of it add one quart of rock salt and one gallon water; boil and skim. To each five gallons of this add pulverized alum, one pound; copperas, one-half pound; potash, one-half pound; hard-wood ashes, sifted, four pounds. Apply with whitewash brush.

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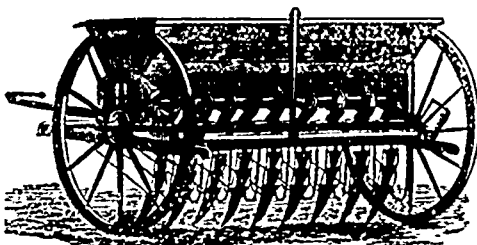
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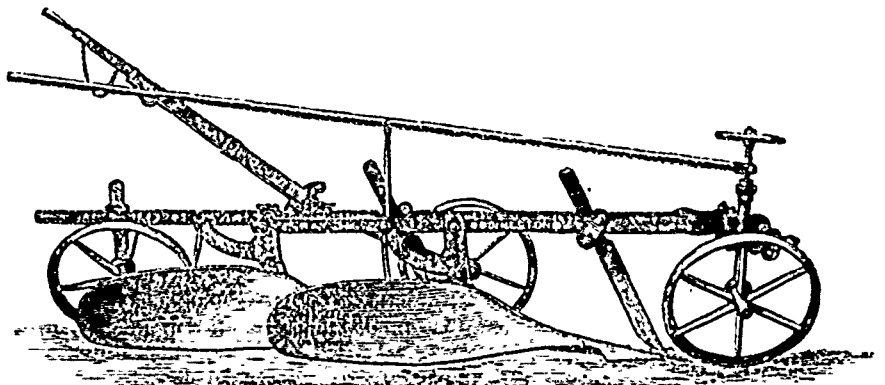
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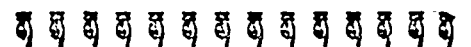
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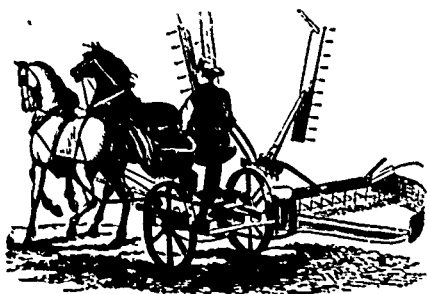
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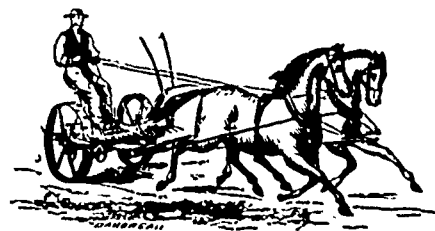
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**F. W. GLEN,**  
PRESIDENT,

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**THE NEW YORK TRIBUNE.**

1871.

Through struggle and suffering, at the cost of multi-form agonies, bereavements, devastations, the American Idea embodied in the preamble to our fathers' Declaration of Independence approaches its complete realization. The noble inspiring assertion that "all men are created equal," and endowed by their Creator with inalienable right to life, liberty and the pursuit of happiness, is no longer a glittering generality, a poet's fancy, a philosopher's speculation, but the recognized base of our political fabric. The benign Revolution, which dates from the Boston Massacre of 1770, finds its logical completion just one century later, in the XVth Amendment, which gives to the equal political and civil rights of every man born or naturalized in our Republic the shield and defence of the Federal Constitution. The billows of Caste and Privilege may roar and rage around that rock, and may transiently seem on the point of washing it away; but its foundations are laid deep and steadfast, and the breakers of Reaction and Slavery are hurled against and dash their spray over it in vain.

We do not underrate the forces of Prejudice and Aristocracy. We do not forget that a very large minority of the American People still hold, in their inmost hearts that Blacks have no rights which Whites are bound to respect. We fully appreciate the desperation wherewith all the warring elements of hatred to Republican achievement will be combined and hurled against the battlements of Republican ascendancy in the Presidential Election of 1872. We do not doubt that local successes, facilitated by Republican feuds and dissensions, will inspire the charging host with a sanguine hope of victory, such as nerved it to put forth its utmost strength in the earlier stages of the contests of 1864 and 1868. Yet our faith is clear and strong that the American People still bless God that, on the red battle-fields of our late Civil War, the Union was upheld and slavery destroyed, and will never consciously decide that the precious blood thereon poured out was lavished in vain.

The Tribune believes in the prosecution of the great struggle by legitimate means to beneficent ends. To State Sovereignty, it opposes indissoluble National Integrity; to Slavery for Blacks, Liberty for All; to Prescription, Enfranchisement; to Popular Ignorance, Universal Education; to intensity and eternity of wrathful Hate, universal and invincible Good Will. It would fain do its utmost to hasten the glad day when the South shall vie with the North in exultation and gratitude over the disappearance of the last trace or taint of that spirit which impelled Man to exult in the ownership and chattelhood of his fellow Man.

Profoundly do we realize that the contest is not yet ended—that Millions mourn, more or less publicly, the downfall of the slaveholders' Confederacy, and rear their children to hate those by whose valour and constancy its overthrow was achieved. If we ever seem to differ essentially from other Republicans, our conviction that magnanimity is never weakness, that vengeance is never politic, and that devils are not cast out by Beelzebub, must serve to explain alleged eccentricities whose perfect vindication we leave to Time and Reflection.

The Tribune has been, is, and must be, a zealous advocate of Protection to Home Industry. Regarding habitual idleness as the greatest foe to human progress, the bane of human happiness, we seek to win our countrymen in masses from the ensnaring lures of Speculation, of Traffic, and of always over-crowded Professions, to the tranquil paths of Productive Industry. We would gladly deplete our over-crowded cities, where thousands vainly jostle and crowd in misguided quest of "Something to Do," to cover prairies and plains with colonies absorbed in Agriculture, Mechanics and Manufactures, and constantly projecting into the blank, void wilderness the homes and the works of civilized Man. Holding the Protection of Home Industry by discriminating duties on Imported Wares and Fabrics essential to the rapid, beneficent diffusion of Production in all its phases and departments, and so to the instruction of our people in all the gainful arts of Peace, we urge our countrymen to adhere to and uphold that policy, in undoubting faith that the true interest, not of a class or a section, but of each section and every useful class, is thereby subserved and promoted.

The Tribune aims to be pre-eminently a News-paper. Its correspondents traverse every State, are present on every important battle-field, are early advised of every notable Cabinet decision, observe the proceedings of Congress, of Legislatures, and of Conventions, and report to us by telegraph all that seems of general interest. We have paid for one day's momentous advices from Europe by Cable far more than our entire receipts for the issue in which those advices reached our readers. If lavish outlay, unsleeping vigilance, and unbounded faith in the liberality and discernment of the reading public, will enable us to make a Journal which has no superior in the accuracy, variety, and freshness of its contents, THE TRIBUNE shall be such a Journal.

To Agriculture and the subservient arts, we have devoted, and shall persistently devote, more means and space than any of our rivals. We aim to make THE WEEKLY TRIBUNE such a paper as no farmer can afford to do without, however widely his politics may differ from ours. Our reports of the Cattle, Horse, Produce and General Markets, are so full and accurate, our essays in elucidation of the farmer's calling, and our regular reports of the Farmers' Club and kindred gatherings are so interesting, that the poorest farmer will find therein a mine of suggestion and counsel, of which he cannot remain ignorant without positive and serious loss. We sell THE WEEKLY to Clubs for less than its value in dwellings for waste-paper; and though its subscription is already very large, we believe that a Half Million more farmers will take it whenever it shall be commended to their attention. We ask our friends everywhere to aid us in so commending it.

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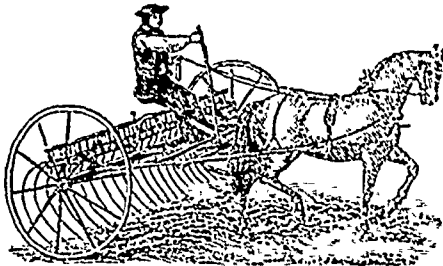
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PATENT

## DISINFECTING POWDER.

IMPORTANT TO FARMERS

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Farmers are recommended to use the Disinfecting Powder to Prevent the Fly in their Turnip Crop. It is necessary that it should be applied before the Fly makes its appearance.

It is used in two ways for this purpose—  
1.—The powder is mixed with the seed, and sown in the drills.  
2.—The seed is first sown, and in three or four days afterwards the powder is sprinkled over the drills.  
The same quantity, viz. 1 cwt. of powder per acre being used in both cases, either of these ways answers the purpose; the latter is generally preferred.

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Yours, &c.,  
W. H. HORNBY, M.P. for Blackburn.

May 20th, 1860.

BEECH COTTAGE, WREXHAM, June 29, 1860.

DEAR SIR,—As I consider the use of your Disinfecting Powder so very valuable for the prevention of loss by the fly, black jack, or caterpillar, I give you the result of my experience last year.

I used 1 cwt. of the powder (mixed with your super-phosphate) per acre, and did not lose any plants, whereas in my neighbours' adjoining fields (where the powder was not used) patches of more than half acres were completely destroyed. From this result I need hardly say I have not this year sown a turnip without using the powder, and all are now up and clear of the fly.

I consider the best mode of applying, is to sow it at the same time as the seed with the drill. It answers very well also sown broadcast just before the seed bursts through the soil, but this plan requires more powder per acre. I think it is also beneficial as a manure, having last year had a very good crop of Swedes sown with 5 cwt. of your super-phosphate and 1 cwt. of the powder per acre.  
Yours truly,  
GEO. T. ATHERTON.

NEW HALL, BY NESTON, June 1, 1858.

DEAR SIR,—I will thank you to forward me to Spittal Station three bags of McDougall's powder.

The fly is threatening entire destruction to the turnip crop; but I find that by going along the drills and slightly dusting the young plants, a complete stoppage is put to the destructive operations of this pest of the farm.

Dear Sir, yours faithfully,

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McDOUGALL'S

PATENT NON-POISONOUS

### Sheep & Lamb Dipping Composition

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The Compositions generally used for Sheep Dipping contain Mineral Poisons and strong Alkalies, the Arsenic and Mercury they contain are a continual source of danger both to the animals and the persons who apply the Poisonous Compositions; ruinous losses are incurred when the Sheep do not happen to be in a condition to resist the action of the Poison, or the operator is not sufficiently skilful in taking the needful precaution, fatal accidents frequently happen, and in some cases hundreds of valuable Sheep have died within a few days after being dipped in these Poisonous Baths. The strong Alkali, by which the Arsenic is rendered soluble, is also a very objectionable application, it combines with and destroys the oleaginous covering or "yolk," as it is called, with which nature has furnished the Wool, thus at once injuring the Fleece and lowering the health of the Sheep.

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3. It cleans and improves the appearance of the fleece, increases the oily covering of the Wool, and owing to its stimulating effects, produces a larger quantity superior in staple.
4. It possesses remarkable healing and antiseptic properties, rapidly cures Shear Wounds and Sores, and prevents contagion from skin diseases.
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6. It is the best cure for SCAB and the ravages of the MAGGOT FLY.

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