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THE
Canadian Agriculturist.

VOL. IX.

TORONTO, APRIL, 1857.

No. 4.

A NEW SYSTEM OF FRUIT GROWING.

We present to our readers this month, a paper by Mr. Leslie, read before the Agricultural and Horticultural Club, on the subject of planting and cultivating fruit trees. Mr. Leslie is one of our best nurserymen; his views are therefore worthy of much respect. But while recommending a careful perusal of Mr. Leslie's paper, we have thought it our duty to submit for the benefit of our Horticultural readers, the following remarks upon a *new method* of growing fruit. We call it a "new method," though it has probably been practiced on a small scale, and in isolated cases, for many years. Mr. Field (of New York) is the first Horticulturist who appears to have adopted it as a system, and, as he alleges, with entire success. The following is a condensed report of his remarks before the New York Farmer's Club, and while we do not endorse all his conclusions, we must admit that he has presented his theory in a very striking form, and sustained it by a number of very plausible arguments. The cultivation of *Pears* was the subject before the Club, but if we understand Mr. Field, his method is not limited to that fruit. It is no longer true that -

He who plants Pears
Plants for his heirs.

He may now plant pears for himself as well as other fruit. The common method of planting and cultivating apple trees postpones to a sufficiently remote period the harvest of fruit. We have in our eye as we write, an orchard planted more than 20 years ago; the trees were from a nursery a few miles distant; they have received ordinary care; the soil is a clay loam, the clay predominating. Not one of those trees has yet borne two bushels of apples in a season—most of them only two or three dozen. "He who planted" them has already left them to his "heirs." He was barely allowed to see specimens of what they *would* produce when he could no longer enjoy it. In how many instances has the same thing happened? We do not think this long delay and miserly yield is wholly attributable to neglect. There is something wrong at the start. Whether Mr. Field's pyramidal system will remedy the evil, time only—and ample experiment—will prove.

THE GENERATION WHICH PLANTS—NEVER EATS.

Beyond question, the form of fruit trees best adapted for all the functions of growth, health and reproductiveness, is the pyramidal or conical, varying in species from the tall spire to the flattened dome. A single seed dropped in cultivated ground, throws up a shoot which, in its after growth, when unobstructed, forms more or less nearly the model to which we should shape our cultivated trees. How to do this at the least expense both of time and the healthy constitution of the tree, will be the subject of this Essay.

We must first look to the structure and physiological necessities of the tree. The genius of Harvey gave us the secret of the circulation of the blood in the animal system, and strikingly parallel are the processes of vegetation. The chyle formed from the digested food in the stomach, is injected by the action of the heart through channels that ramify and spread over the surface of the lungs where in contact with the oxygen of the atmosphere, it commenced its vital combustion, and then returning to the heart is by it driven through the internal arteries to the extremities. Running in minute vessels over the termini, such as the fingers and the toes, it returns in the external veins, depositing the matter that increases the size and weight of the body. So the sap chemically changed by the lacteals and absorbents of the roots, is by the secret forces of vegetable life impelled up the cellular arteries of the woody trunk and limbs, until it reaches the leaves, whose functions correspond so exactly with the lungs of animals. One great exception, however, proves the glorious harmony of the various parts of the Almighty Father's handiwork.

Our lungs reject the carbonic acid gas, which, twice breathed begets disease. The leaves drink up this poisonous gas as their proper atmosphere, and the sap thus aerated, turns over the termini of the leaves, passes down under their surfaces, and again courses back between the bark and the wood, depositing the carbonaceous and ligneous fiber of growth, and the saccharine and albuminous matter of fruit.

Over the terminal buds, as over the ends of the fingers, meet the coming and departing liquids, and to the terminal buds they are attracted with greatest force, and there they of course leave the greatest abundance of the food prepared. All Pomologists know how vigorous is the growth of the terminal shoots, and with how much difficulty they are restrained, so as to allow other parts of the tree to receive their proper and harmonious growth. We can always cut away sufficiently to bring the tree into balance; but as was said by an eminent surgeon, that surgery, or the excision of a diseased member, was but a barbarous confession of inability to cure it. So the cutting and pruning of an extraneous gourmand limb, is but a barbarous proof of neglect or ignorance. Nature needs but little assistance, but that little should be afforded at the proper time.

As plants and trees are grown in close nursery rows, they take an upright, cane-form, because like trees in a wood they are all struggling for the light, and lift their heads, by successive-terminal growths, each to outdo his fellow.

I am often reminded of the horrible confinement of those unfortunate prisoners of Hyder Ali in the Black Hole, when I see the crowded and suffocated trees of a nursery. If radial or side shoots should be formed, they are ultimately dropped by decay—rejected as useless, because their function of supplying healthy sap is lost; they are suffocated amid the multitude of breathers.

But usually no branching spurs are formed, and upright and slim grows the tree which is to furnish the future generations with fruit. Ignorant customers demanding tall trees, induce complaisant nurserymen to encourage this factitious growth, and the tree goes forth, to be planted in an enclosure where grass roots bind and torture its roots; grain stalks smother and stifle its branches; cattle brouse on its lungs; and hogs grub up its rootlets; and the second generation after the planter, eat the first fruit thereof, and forget to thank him, who himself long slumbering in the ground, has perhaps in some rural burial spot furnished the elements of growth to trees his negligence denied in life.

Let us look at the difficulties in the way of preparing the ordinary nursery trees for the true form of fruit trees—the conical or pyramidal—branching from the ground. If

perchance radial branches have been formed lower than three feet, the knife of the mercenary nurseryman has trimmed them off.

To produce a pyramidal form from this, (and I may here say after many examinations of American nurseries, that it is almost impossible to find any other treatment of a tree) we commence by cutting back one-half its length. The next effort of nature is to have the root sap aerated, and there are few or no leaves to effect it. A large amount of sap is thrown upon these few, and often, what horticulturists term suffocation, ensues, and a sickly growth of thin small shoots is the only result. When, however, the roots are not sufficiently vigorous to produce this effect, several roots start from near the amputation and force their way up in a thick bushy clustre, or a gourmand or two springs up, absorbing all the sap and growth. It becomes more and more difficult to draw out the buds below, and after the bark is two years old, almost impossible. So here we must start for our pyramid, with a raw amputation that for years exhibits its ungainly scar, and at last closes over with bark and wood, which conceals within a dead and decaying piece of organism, that must prove similar in its irritating effects to a carious bone in the animal economy.

Let it henceforth be settled as an axiom of Horticulture, which we are required to believe before he can pass the threshold of the science, that to cut any portion of the wood of more than one year old, is to interfere more or less seriously with the organism of the tree. That to cure is better than to amputate, and to form a tree properly we must have begun at the foundation.

The maiden plant must stand at sufficient distance from its fellows to enable it to radiate its branches from the ground for the distance of a foot on either side, without interference. Then, when a sufficient number of radial branches do not form, the terminal bud must be pinched off during the midsummer growth. This wood, now in its succulent and sappy condition, heals over at once, and no scar is left. By the loss of the terminal bud the sap is distributed to the lower buds and radial shoots push forth. Thus is formed the true pyramid, and by an occasional pinching in of its succulent growth, no great interference with its vital organism is effected, and its form is preserved through all its coming growth.

And now I may be asked, what advantages are to be gained for all these pains-takings? What compensation gains for all tedious labor?

When trees have endured the common interference with their structure, and have been trimmed up until they have unwillingly been forced to stand with all their superstructure of leaves, limbs and fruits, mounted on a stem that connects them with their substructure of roots and absorbents, did any one ever seriously ask himself what office the naked trunk of a tree performs in the economy of a tree? did any such querist ever obtain a satisfactory reply? It seems almost as though our fathers, having only the models of the giant and naked bolls of the primeval forest before them, feebly imitated them in their fruit trees.

CAUSE OF SUCH TRAINING—TO OBTAIN GRAIN CROPS IN ORCHARDS.

1st. A tree standing on an open plain should be nearer the model, only that the grass and seeds have forced a short trunk upon it by suffocating its lower limbs. In cultivated grounds this would never exist. With a trunk six to ten feet high the sap must travel through so much waste wood before it reaches the branches where it is to perform its various offices. How ludicrous would be the exhibition of human beings never approaching their food nearer than six to ten feet, and drawing and sucking it through a gutta perch tube! But little less monstrous is the enforcing of this unnatural custom of the shape of trees. The sap, obliged to travel up this waste of wood, becomes thickened and coagulated by the fervent action of the sun's rays, and in midsummer the tree languishes and much of its leaves and fruit falls to the ground. The bark thickens and indurates under this action with mysterious sympathy, to secure the inner structure from the excessive heat; then becoming hide bound, another surgical operation becomes necessary, and the thick bark is slit from top to bottom.

2d. The tree now takes the form of an inverted cone, standing on its apex, and this again lifted upon a pedestal six to ten feet high. It now throws a shadow which covers, and poisons by its shade, an area of ground ten times the surface, measured by its own diameter of foliage. That is, to grow a tree thirty-eight feet in height, eight feet of which is trunk, and whose loose straggling and spreading top could be compressed into a pyramid of twenty feet in height, and then exhibit equal foliage to the sun and air, we

must destroy the herbage on at least an equal radius, or eighty feet in diameter; or in other words, a space equal to the planting of eight trees fully its equal in productiveness and foliage. 1st. Because a conical tree with its base near the ground throws but a small shadow, and next, by the spaces between them increasing an area as we ascend, every portion of them is equally exposed to light and air.

3rd. Trees with a long trunk are much longer coming into bearing. The pear on its own stock as a standard, varies with the kind from eight to twenty. Trained as a pyramid, its period of bearing is lessened from four to twelve years. The Seckel and Urbaniste, upon pear stock, and with a stem of five feet, are not unfrequently fifteen years producing their first fruit. With low pyramidal training, and a slight attention to summer pruning or pinching, this tedious and discouraging delay is most certainly shortened to seven or eight years. How considerable is this addition to the short life which the Great Gardener vouchsafes as to the cultivation of his soil! Were it proper to admit within the limits of this essay, the new and striking results of *root pruning*, I might show how even this short period might be lessened nearly one-half. And lest I may seem obnoxious to the charge which lies at the door of the editors of Agricultural periodicals and theoretic essayists, of saying fine things which need the proof extended and practical experiment, I may here assert, that no position in this essay has been taken, which has not already been substantially and satisfactorily proved with hundreds of trees on my grounds.

The cause of the precocious fruiting of pyramidal trees is, First, that the sap checked by the summer pinching in its flow to the terminal bud, is distributed to the wood buds below, and sufficient nutriment is received to mature them into fruit buds. Second, that the energies and material eight or ten years growth is not wasted in forming a needless trunk, before they can be applied to producing fruit branches.

A certain age of bark and cellular woody formation of a branch is necessary, before it will cause the sap to flow slowly enough to concentrate into fruit juice. Now if the earlier branches formed, are entangled, it is evident we must protract the fruit bearing period. Besides, the pruning away of so much wood forces an abundance of sap to the terminal buds, and its energies are spent in wood growth at the expense of fruit bud formation.

When, however, branches start from or near the ground, having the same age with the trunk, fruit buds are formed long before they could have been on long trunk trees; the sap is more evenly distributed, wood growth is moderately checked, and the cultivator's eye is gladdened with the golden fruit.

At this time of our local prosperity and individual freedom from pecuniary cares of so many successful business men, Nature is asserting her claim to many a man's affections, by unappeasable yearnings for country life. But life with many of these citizens,—turning farmer and fruit raiser,—is already more than half spent, yet still indefinable longings to taste the fruit of their own planting, tug at their heart strings and purse strings. "I can only plant for my children," is his half sad, half complaining conclusion, as he looks at the ancient and shattered orchard, where the memory of fruit is a thing of the last generation. To him, and to all, the new Pomona offers the opportunity of seeing silver blossoms and golden fruits follow in quick succession on the small trees he doubtingly, yet in duty plants. Let him study Nature's silent lessons, for wisdom crieth not in the streets; let him watch her exact but quiet processes, and assist but not distort her workmanship, and he shall see new effects and rich successes crown his labors with delight.

Let no pruning knife amputate the first fruit bearing arms she stretches forth, but gently check in its young growth the errant straggler; supply its roots bountifully with proper nutriment, and there is no man who leaves the weary city, who may not hope to see fruit hang upon the tree he has planted.

4th. The size and quality of fruit is much increased by this cultivation and training of the tree, and nothing has delighted Horticulturists more during the last few years, than this fact. It has long been known that young trees produce larger fruit, but deficient in flavor. Old trees produce fruit of fine taste, but constantly decreasing in size. We combine both these excellencies, and rid ourselves of both these faults by the conical training. In the low compact form, when an excessive quantity of fruit has set, it becomes an easy task to thin out the overplus, and concentrate the sap in that number which can be perfectly matured.

But the length of this essay warns me that I must not indulge in arguments in favor of the advantages in form, but simply state the bare fact.

5th. The longevity of the tree is increased, and fruitfulness is extended over a much longer period. The Peach culture of the last few years has exemplified this most fully; few orchards are now planted with trunks of more than two feet.

6th. A much larger number may be planted on a given area. Instead of 40 Pear, 35 to 40 Apple, 80 Peach, &c., to the acre, 200 to 400 Pear and Apple, and 200 of the Peach, may for many years occupy the soil and yield their fruits, and if a future generation shall find them crowded, the trees have not cost it anything, and the proper number may be thinned out. If the said next generation should be disposed to find fault with the prodigality of its predecessor, it may find consolation in the fact, that the original cost and interest is reimbursed in fire wood; meanwhile the generation which planted has enjoyed the fruit of its labors, and was satisfied. It is easier to cut down a fruit tree that cost two shillings than it is to obtain it with fifteen years growth at ten dollars.

7th. Trees by their comparatively low stature are protected from blasting winds, and often preserve their fruit when the tall tree has cast her untimely blossoms.

8th. Pyramidal trees are less liable to wrenching, turning over by the roots or breaking off by the immense resistance of the sail-like expanse of foliage at the end of the long lever trunk. Having their widest diameter near the ground, they offer little resistance to the wind, and never exhibit the distorted leaning that characterizes thousands of orchards.

9th. The trunk is protected by the foliage from the parching sun-rays, and the sap reaches its destination just in the condition Nature provided in the roots, without concentration or travelling an unnecessary distance.

10th. The soil protected by the near foliage, not only brings forth no suffocating grass or weeds, but its juices are not dried up by the heat, and the roots stunted and starved in their nourishment. Whatever value attaches to mulching, the tree thus provides for itself.

Thus far, and only, can I tax your patience. A thousand curious and beautiful incidents of my own experience, with hundreds and thousands of trees, I dare not indulge myself with beginning to narrate. A Horticulturist's garrulity is only equalled by a parent dilating on a surprising child, and the sentiment which cultivation and care of trees engenders towards them in a genuine tree lover, is near akin to parental affection.

And now middle aged, elderly, and even old man, hesitate no longer to plant the tree you yearn to, because you may not eat the fruit thereof. A new fruit culture promises you that a little patience, a little skill to labor, an earnest watch of Nature, and a good deal of the letting alone of the young tree, will reward your keenest desires.

POINTS IN A GOOD HORSE.—In purchasing a good horse, sight, wind, feet and limbs must be the uppermost objects of inquiry, for nine horses out of ten are defective in one of these particulars. First, then, examine his eyes, and do this before he comes out of the stable; see that they are perfectly clear and transparent, and that the pupils or apples of the eye are exactly alike in size and color. Next examine his pipes; if good and sound, on being nipped in the gullet, he will utter a sound like that from a bellows; but if his lungs are touched and he is broken winded, he will give vent to a dry, husky, short cough; look to his limbs also, and in passing your hands down his legs, if you find any unnatural protuberance, or puffiness, or if feeling first one leg then the other, you discover any difference between them, disease, more or less, is present; he may not be lame, but he is not clean upon his legs. If he is broad and full between the eyes, he may be depended on as a horse of good sense, and capable of being trained to almost anything. If you want a gentle horse, get one with more or less white upon him; many suppose that the particular horses belonging to circuses, shows, &c., are selected for their oddity; but it is on account of their docility and gentleness; in fact, the more kindly you treat horses, the better you will be treated by them in return.—*Spirit of the Press.*

POTATO YEAST.—Pare, boil, and mash fine, twelve potatoes; stir into these, one large cup sugar, and one quart of boiling water; when cool add one quart of cold water, and half a pint or less of yeast; keep it in a warm place about twelve hours when it will be ready for use. Shake it carefully before using. Always reserve a small quantity of old yeast for raising the new. Bread or cakes made with this yeast never need saleratus, and will rise very quickly. Housekeepers should adopt any new method that will dispense with the use of so unwholesome and article as saleratus.

HORTICULTURAL AND AGRICULTURAL CLUB.

Mr. G. Leslie, at a recent meeting, read the following excellent and very useful paper:

ON THE MANAGEMENT OF ORCHARDS AND FRUIT TREES.

The subject I have the pleasure to introduce to the Club to-day, is orcharding and the management of fruit trees, a subject of great importance to the country at large; and I feel sensibly my own inability to treat it as it should be; however, I have endeavored to put a few facts together in a plain way to open up a discussion. The climate of Canada West is particularly well adapted to the culture of the more useful and substantial fruits, namely apples, pears, plums, cherries; and in some sections peaches are grown to great perfection. A number of us will remember what was the general condition of fruit culture twenty years ago. 'Tis true some among the more intelligent land owners had planted fruit trees at that early period, but common orchards then would hardly satisfy modern fruit-growers, and of the fruits then cultivated there was no higher claim than that they were grafted fruit, all sorts being comprehended under the two names natural and grafted.

The few scattered cherries consisted of sour kinds, commonly called Kentish, with sometimes a few scattered May Dukes and Ox Hearts. Our Plums consisted of common blue and yellow, with a few Egg and Green Gage. Few people had ever heard of the fine varieties that have been introduced within the last fourteen years, such as Bolmer's Washington, Jefferson, Quan's Purple, Imperial Gauge, &c., &c. The only distinction then was wild Plums and tame Plumbs. Of Pears, there were none, and they are still scarce, and a great rarity in our markets. These remarks apply to the common practice only, for there were here and there worthy exceptions of individuals, who, in the face of great difficulties which have now happily disappeared, had collected many of the improved varieties which even now stand among our esteemed sorts; such for instance, among apples, as the Fameuse, Pomme Grise, Bourasse Baldwin, R. I. Greening, Early Harvest, &c., &c. Last year our fruit crop was rather a failure, but in the fall of 1855 I was very much pleased to see a few barrels of fine specimens of the following sorts grown in the neighborhood of Toronto, offered for sale in our market, namely:—Fall Pipin, *Æsopus*, Spitzenburg, Yellow Bellflower, Baldwin, Roxbury Russet, St. Lawrence, Ribston Pippin, &c.; and from the number of trees planted in late years, we may expect to see in our market a few more of the best sorts for commerce and transportation. We have now arrived at an advanced stage of prosperity—we have means of conveying fruit and fruit trees from one end of the country to the other,—we have large nurseries in Canada and all over the United States, enabling a man to purchase, within a short distance or a thousand miles off, and we can depend on the accuracy of the names. With all these facilities we are still far behind what we ought to be with fruit culture. I have no doubt but good apples will be worth \$4 or \$5 per barrel in this country nine or ten years hence. I will give you my reasons for supposing so. Our towns and villages are growing with a rapidity never before known in any country; the people must have fruit, and where are they to get it? I venture to say, not in Canada. There are no persons within my knowledge who have gone into fruit culture as a business, and the produce of what few trees the farmers plant, will nearly be consumed by themselves. It is also a fact that north of Lakes Simcoe and Huron, very little fruit can be grown. These are some of my reasons for thinking that fruit will be dearer ten years hence. But there is another reason why we shall have a limited supply of fruit for some time to come, and that is the bad treatment trees receive after they are set out. I know in some of the older townships, in the Home District—orchards that have been set out twenty-five years ago, with some 50 or 100 trees, that do not produce enough for the families that own them, when they should have, at least, 100 barrels to sell. When travelling two weeks ago through the townships of Toronto, Trafalgar, Chinguacousy, Caledon, Mono, and Etobicoke, I was struck with amazement at not seeing a really well managed orchard; but in some half the trees had died out, others were broken down by cattle and sheep, and a few large old ones that might be renovated and improved, had tops as thick as a thorn bush, full of dead limbs, and their trunks covered with moss and rust. The most of these orchards that I saw were growing on flat land—sour-ed up for want of draining, manuring and deep tillage. Now, I would say to the owners of such orchards, go to work—prune your trees properly—scrape the bark clean and smooth with a sharp hoe or

scraper, then wash with the solution hereafter recommended—under drain thoroughly—cultivate the ground in potatoes or other green crop, for a few years, with a good dressing of manure, annually, and the trees that are of inferior fruit and have healthy stalks, graft them with the best sorts of Market Apples. What we need most for our provision for the future, is such a selection as will give a varied and excellent supply through the winter and spring. Long keeping apples may be sent safely to any part of Europe, and pay better than wheat. We need not fear to plant too many of these, for a large supply will create large facilities for their distant conveyance, and open large markets for their sale.

Perhaps what I have now advanced with regard to future supply should be left to be discussed by the club. I shall now proceed to lay before you my views on the following subjects, in the hope that it will at least create a discussion in the club that will be useful to the country :

- 1st. The best situation and soil for an orchard.
- 2nd. Preparing the ground, &c.
- 3rd. Planting, distance, and mulching.
- 4th. Pruning, scraping and cleaning.
- 5th. Manuring, and after management.
- 6th. Diseases, &c.
- 7th. Cost and profit of an orchard.

First, then, Mr. Barry says, the situation and soil of an orchard, with regard to exposure or aspect, requires but little consideration, where spring frosts do not prevail. The main difficulties to guard against are the prevailing high winds, from the west and north, that injure the blossoms and blow off the fruit before it is ripe. If possible a situation should be chosen where a natural hill or ridge protects and breaks the force of destructive storms; but where no such obstacles exist, a belt or border of rapidly growing trees, such as broad leaved poplar, maples, and abeles, should be planted that they may grow up and form a protection, by the time the trees have come into bearing. I agree with Mr. Barry in this view, but I prefer for shelter, evergreens, such as White Pine and Hemlock; White Cedar also makes a beautiful screen, takes up very little room, and may be clipped like a hedge. Shelter is of the very highest importance to the fruit-grower, and no garden or orchard should be without it. Some argue that fruit trees ought to be planted in valleys. I maintain and say it from experience that fruit trees should not be planted in low ground, except on very sandy flats, where it can be drained easily. There are many instances that we read of in the neighboring States of orchards bearing regular crops on high hills, when on low ground they seldom bear a good crop. Mr. Thomas, in his fruit Culturist says, he could mention multitudes of cases where peach orchards were killed to the ground by the winter on low land, and never missed a crop on high land within 500 feet of the same place. He cites as a reason that vegetation is easier excited in spring than in more elevated and colder situations, and that frosts always fall more heavily on low than on high grounds. This will show you, coming from such high authority as J. J. Thomas, that hills and banks unfit for other cultivation, may be turned into orchard grounds, and my own observation convinces me that he is right. The best crop of fruit that I have seen in the country I saw in an orchard on the top of the Hamilton Mountain, when on the flats east of the town, where there are large orchards, the crops are very thin: Experience has taught cultivators that high, dry, and moderately rich soil will produce the best crops.

SOIL.

It is only necessary here to point out the best soils adapted to the different classes of fruit trees. There are soils of certain texture, such as sandy loam, with a clay sandy subsoil, in which, by proper management, all our hardy fruits may be grown to perfection side by side. Our country abounds in such soils, and others somewhat different in character, but equally fit for fruit trees when well managed. On the other hand there are soils wholly unfit for fruit trees of any kind, such as peaty or mucky and damp, cold, spongy soils. For a pear and apple orchard, a dry, deep, substantial soil, between sandy and clay loam is the best; on such we see the healthiest trees and the fairest fruit.—Plums succeed best on a stiff clay loam. The cherry, peach, nectarine, and apricot require a light, dry, warm soil, and will not succeed well on any other. Where the proper ingredients for fruit trees are not contained in the soil, it should be added in the shape of manure or compost. I observed the other day some very healthy fruit trees on the Caledon Hills, where the soil was a clay loam and nearly covered with lime stone.

In preparing the ground for an orchard, every field or piece of ground whether for garden or orchard requires levelling more or less. It adds to the appearance of the ground, and the surface water goes off quickly. The next thing to be done is to under-drain it thoroughly, if the ground requires it, with brick tile, stone or pine rails. Draining is not necessary in all soils, but only in such as are heavy clay, with a hard subsoil, or in wet spongy grounds. Undrained grounds, again, are not fit for trees of any kind; for wet in winter, has a very injurious effect on the roots of trees, whether small or large, I know this from long experience to my cost. After levelling and draining is finished, draw out your manure, 80 cart loads to an acre, beginning on the far side, and spread it only as it is ploughed under. The ground should be at least twice ploughed with a common and subsoil plough. The best way to do this, I find, is to start two teams, one in the common plough, and one in the subsoil, the one following the other, twice in each furrow. In this way, there is no stopping to change the horses, from one plough to the other, which is a great saving of time, and you get 18 to 20 inches depth. Two teams will do half an acre in a day, and the work will be equal to two spit trenching. After ploughing is done, the harrowing and levelling the ground afterwards completes the whole operation, and it can then be laid out, in whatever form the proprietor may wish, for a garden, fruit orchard, or lawn, and if the work has been thoroughly done according to the directions here given, I have no hesitation in saying it will be in fit condition to grow any kind of crop. On ground of limited dimensions the spade may be used in place of the plough.

PLANTING AN ORCHARD.

Having procured the trees, dig a trench and lay them in, covering their roots to prevent them from drying, and take them from this trench according as they are planted. I am aware that some people plant trees and kill them while they are planting them, by leaving the trees exposed, perhaps a whole day to the hot sun. Proceed now to stake out the ground in regular distances, taking care to lay out the plot at right angles, because if this is not done the trees will not line in the different directions. I think it is best to plant in squares, as this gives the best facilities for working the land where oxen and horses are used. If a garden line is not convenient that will reach across the whole plot, provide stakes and set them on the ground in squares of from 25 to 30 feet, where the trees are to be planted, as these are more easily arranged than the trees themselves. Where the ground is prepared the holes need not be dug any larger or deeper than just sufficient to spread the roots out in their natural position, and should be just deep enough to allow the tree to stand as it did in the nursery. The process of planting is very simple and may be done rapidly, only keeping in view that every root and fibre must be spread out with the hand, so that each may meet the soil. Then let one person hold the tree while the other is filling in the soil; surface soil made fine should first be put in among the roots, and then gently shake the tree that no vacancies be left, treading it gently and firmly by the foot. Previous to planting, trim the ends of the roots with a sharp knife, cutting off all bruised roots: this will facilitate the formation of new roots and prevent the decay of the parts injured. Fruit trees of all sorts should be headed back at the time of planting, that is cutting off the half or more of last year's growth. Planting should never be done when the land is wet, as the soil is sure to become baked and hard round the root. After the planting is done it is necessary to mulch all the trees. There is no method of preserving newly planted trees like this; it is also true that no treatment is becoming so universally popular as this, and even well established trees would be greatly the better for a dressing of this kind. It seems just suited to our hot, sunny climate, preserving the moisture, preventing the growth of weeds, and supplying manure. Mulching consists in covering the ground about the trees, to a greater or less distance, according to size of the plant to be treated, with litter or long manure, and where neither is to be had, short straw or hay will do, spread over the roots to the thickness of four inches, and covering a space of not less than three feet in diameter. This will do more to preserve the trees from draught and promote their support than any other course I know of; it is also cheap, safe, and effectual, and no watering will be necessary. I have strongly recommended mulching, because I know very few understand the value of it. Every tree over five or six feet high ought to be staked and fastened to the stake by a straw or hay rope, and be careful to clear away suckets from about the roots as soon as they appear.

If the ground is cultivated in green crops for some years afterwards all the better for the trees, but if not worked with great care I would recommend the whole to be seeded

down at once, keeping 4 to 6 feet in diameter spaded and hard around each tree. The first disease that attacks young trees generally is the Bark Louse. They are easily destroyed by scraping and washing with soft soap. For young or old trees there is no wash that I know of equal to this, and it should be applied at the latter end of April, before the buds begin to swell.

PRUNING.

Pruning properly considered, is one of the most important operations connected with the growth and management of trees. In this country almost all fruit trees are grown as standards, that is to say trees having 5 to 6 feet clear stems. In this way they develop their natural forms, attain their largest size, and produce the greatest quantity of fruit with the least care. Orchard pruning may be considered the simplest and plainest of all pruning. There are many erroneous notions that it is a mere mechanical operation that any man can perform, and that, in rare cases only it is necessary. Nature, they say, never prunes, and why should we? There is no such thing, in reality, as growing well shaped, symmetrical trees and plants and sustaining them in a vigorous and fruitful state, without pruning. A tree is composed of a multitude of parts, each of which has its functions to fulfil, and all these parts bear relation to each other, and to the life and growth of the tree.

Trees have roots and rootlets, stems, branches leaves, and buds, all of which are designated by certain names and have distinct offices to perform in the process of vegetation and fruit bearing. The intelligent cultivator must be familiar with the names and functions of all these parts, the peculiar structure, mode of growth a bearing of the different genera, and species, and varieties. Every man of experience will endorse this statement—the pruner should know well what he does and the precise reasons for so doing.—Pruning is not lopping off a branch at random; but every cut that a pruner makes upon a tree or plant should be guided by a knowledge of the habits of growth and blossoming and bearing of the subject, and have a well-understood and determined object in view. A feeble tree and a vigorous one must not be pruned alike. By way of illustration, I may here mention as a general rule, in all nurseries where trees are cultivated for sale, that pruning is one of the principal modes of cultivation. We take a seedling from the seed-bed, or a cutting from the nursing-bed, to transplant into stationary or nursery rows, and it is an invariable rule to cut back both the roots and tops, according to what their habit may be, to cause them to increase both the size of the rootlets and shape of the tops, which is done years in succession, until they are considered saleable and fit to plant permanently. After leaving the nursery, too much neglect, in many instances, has been the case in not attending to the preceding rules of cutting, or what is termed heading back the tops, of the shoots or young branches, one half of the young wood of the preceding year, also shortening and cutting in the long thick roots, to cause them to establish and furnish the heads with fresh shoots of young wood, from whence the cultivator can obtain the desired effect of it in a proper position. This is one of the principal objects to insure a successful growth after planting. It is no uncommon occurrence for one to plant trees as posts, neither cutting roots nor tops; consequently the extreme points are exposed to the influence of the weather, which has the effect of drawing up the sap from the roots too rapidly, consequently when there is no check from not being headed back, the wood dries up and the tree dies. I might here mention that there is another bad practice in the operation of pruning, that is to say, when a person applies the knife to a branch. The thought does not strike many that are not acquainted with pruning, that there is any particular mode of cutting a shoot or branch off; now what I alluded to is that the cut should be clean, drawing the knife from heel to point in a sloping position, and the cut to be made from the opposite side of a bud so as to leave no more than a sixth part of an inch of wood, or less, if possible, to heal over. Pruning is therefore commonly resorted to only for the purpose of increasing the vigour of feeble trees, or to regulate and improve the form of healthy, luxuriant trees, when established, to cause them to fruit. Pruning in general applies to all trees or plants less or more. We very frequently see the difference between some that have been pruned and some that have not. Pruning should invariably be done in this country in the month of April, when the severe frosts are over.

Since writing the above I find that I have extended my remarks more than I intended to have done; therefore, I leave some time for discussion, I consider it better to reserve the last three subjects mentioned above, namely: Manuring and after-management of an orchard; Diseases, &c.; Costs and profits of an orchard; to which may be added a few

remarks on the marketing and gathering of fruit; and I should feel obliged if the Club would grant me the opportunity this day four weeks, to finish my remarks on fruit culture.

As far as my knowledge extends, the following list of Apples comprises some among the best and most suitable varieties adapted to our climate:—

SUMMER VARIETIES.

Early Harvest, Summer Queen, Early Strawberry, Sweet Bough, Duchess of Oldenburg, Red Astrahan.—6.

FALL VARIETIES.

Fall Pippin, St. Lawrence, Fameuse, 20 oz. Apple, Ribston, Pippin, Porter.—6.

WINTER VARIETIES.

Rhode Island Greening, Baldwin, American Golden Russet, Pomme Grise, Roxbury Russet, White Bell-flower, Æsopus Spinzburg, Newtown Pippin, Belmont, Swaar, Northern Spy, Dutch Megnonne.—12.

Some discussion then took place upon various points touched upon by Mr. Leslie, particular attention being called to the general very great loss of fruit trees after planting; and which nearly all present seemed to concur in ascribing to inefficient drainage of land laid out for orchards, and destructive treatment, or neglect, of the trees, both before and after planting.

A vote of thanks was given to Mr. Leslie for his valuable paper, which, as will be seen above, he promises to continue at another meeting; and the Club adjourned till Thursday, 19th instant, when Mr. Mundie will read a paper "On the Conservatism of Timber and Shade Trees, with observations on planting, both for utility and ornament."

TWIN COLTS.

To the Editor of the Agriculturist.

DARLINGTON, 14th March, 1857.

SIR,—In your number for the present month I see a letter from S. B. S., concerning twin colts. As you wish to hear opinions from personal observation, I thought it my duty to forward this. About ten years before I left England, a mare belonging to my brother had two colts, the one a male the other a female. The mother died and the male colt died also; the female was brought up by cow's milk, and did well. Before I left England she was the mother of three or four colts. She was a capital animal, and the best of care was taken of her. She made as good a brood mare as could be desired. I never knew a twin heifer breed. We always worked them as oxen—the best and quickest workers I ever had—we called them "free martins."

Yours, &c.,

FRANCIS COLEMAN.

GREAT SALE OF SHORT HORN CATTLE—Mr. SAMUEL THORNE, of Thornedale, has brought the entire Herds of Col. LEWIS G. MORRIS and the late NOEL J. BECAR. The Thornedale Herd will now be the finest Herd of Short Horn Cattle in the world—and there can be no need of going to England to secure the best Short Horns, whether blood or quality is desired. These Herds will be removed to Thornedale in June. We understand that Mr. Thorne will have about thirty females for sale, as well as some very superior bulls.—*Journal N. Y. S. Society.*

FRUIT CAKE.—Take 6 eggs, 2 cups sugar, 1 cup sweet milk, 1 cup of butter, 1 pound chopped raisins, 1 teaspoonful saleratus. Spice to your taste.

CHEAP CAKE.—1½ cups sugar, 1 cup butter, 1 cup buttermilk, 1 egg; flour enough for a batter; 1 teaspoonful of saleratus.

BARLEY.

We condense the following remarks on the culture of Barley from late numbers of the *Rochester New Yorker*.

Soils and their Adaptation.

The best soil for barley is a warm, rich, and mellow loam. In England, says Johnston, the terms barley-land and wheat-land are the usual designation of light and heavy soils adapted especially to the growth of these several crops. On clay lands the produce of barley is greater, but is of a coarse quality and does not malt as well—on loams it is plump and full of meal—and on light calcareous soils the crop is light, the grain thin in the skin, of a rich color, and well adapted to malting. Mucky soils will occasionally produce good barley, though rather light in weight, but they are far from sure for this crop. It may appear favorably until near heading, and then turn yellow and produce nothing, particularly if dry weather occur. A deep gravelly loam, in the best condition to promote vigorous vegetation—one which will bear drought and produce a full growth of straw—if fertile and properly moist and favored by a warm season, will produce a large crop of barley. It should not follow wheat or oats, nor should a second crop come immediately after the first, without the application of a liberal dressing of well decomposed manure—and it is the best course to seed to clover, which succeeds well with barley, growing that for two years and then some manured corn or root crop, before re-cropping with barley.

Preparation and Culture.

The preparation of the soil for barley, as already hinted at, should be of a thorough character. A deep mellow tilth is most favorable to productiveness. It is the practice of many of our most successful farmers to sow barley after a hoed crop—when the earth is left light and free from weeds. Barley suffers much from a foul state of the soil. After a good crop of corn, well-manured, and thoroughly cultivated, of course, a good yield generally follows, larger than if the manure had been applied directly to the barley. These corn stubbles are generally plowed in the fall, especially if not of a rapidly drying or well drained character; and care should always be taken to provide ready surface drainage that no water may stagnate upon the soil. A fall-plowed clover ley properly prepared is generally productive. We should recommend in spring first harrowing lengthwise the furrow, and then working with the gang plow or wheat cultivator before sowing. When green sward is to be sown, the use of the Double or Michigan Plow, would ensure a better prepared seed bed. Some plow as deeply as possible with the common plow, and then cover the seed with the gang plow, harrowing and rolling afterward. It is important to roll after seeding in any case, as a better growth will be insured.

It should ever be borne in mind by those who grow barley, that fine tilth—a deep, well pulverized soil is very important. Clays will produce fair crops, if well worked with harrow and roller, and the season be favorable. Maturing quickly, it requires good culture and the soil fitted to give it immediate and abundant support.

Time of Sowing—Amount of Seed.

Barley should be sown as early as the season will allow of adequate preparation. The crop stands about three months on the ground, and it is important that it gets a fair start before the summer drouth comes on. Of late years we find few successful crops which were sown later than May-day, and one advantage of fall plowing our corn stubbles is that it facilitates the early sowing of the barley crop following in rotation.

The amount of seed usually given to an acre, varies from two to three and one-half bushel; poor, early sown, and mellow soils requiring least. If drilled in also a less quantity is required; and rolling when the young plants are a few inches in height, if the ground is dry and porous, is said to be serviceable in giving support to the roots, causing the plants to tiller and increasing their vigor. We question the utility of sowing over two and one-half bushels per acre, though some of the best crops reported have received three bushels, and three and one-half. Others, however, equally as good, have been produced from two bushels seeding.

Harvesting—Value of the Straw.

In harvesting barley it is important to cut it at the right stage, when neither too green or too ripe. If rather green, the grain shrinks, and is of light weight—if fully ripe it shells easily and the straw is of less value. It is said that when the head begins to

assume a reddish cast and drops down upon the straw, the proper period of harvesting has arrived, and as after this the grain matures rapidly, it should at once be cared for. It may be mown or cradled, or cut with a reaper; if the straw is long it should be bound, though with proper forks for loading, it may be pitched from the swath without this additional labor. It need not stand long in the field, yet care should be taken that it is properly dry before storing in large mows, as it is more easily injured by heating than any other grain.

Barley straw well cured and not over ripe is readily eaten by all kinds of stock. It is worth more for fodder than wheat straw, and is equal, perhaps, to corn stalks or inferior hay. The chaff is much liked notwithstanding the strong beards with which it is filled.

Uses—Stock Feed—Malting, Etc.

The greatest use made of barley is in the production of fermented and alcoholic liquors; but this grain affords an excellent feed for horses and is equal to corn for fattening cattle and swine. For the latter purpose it should be cooked or soaked in the grain, or the meal may be wet and allowed to commence fermentation before using. This grain when boiled has long been employed in Europe as horse food, especially after a hard day's work or during illness. When fed to horses in a half malted state, it is said to be perfectly harmless, however heated they may be, or whatever quantity they may eat. To prepare it, soak it in water from twelve to twenty-four hours in the usual way.

In malting for manufacturing purposes the grain is soaked for several days in large vats filled with water, and then heaped upon floors to sprout, in which process *diastase* is formed, which has the property of converting the starch into sugar. The grain, when thus sprouted, is placed over a furnace and hot air passing through it checks the germination and drives off the moisture. When thoroughly dried it is ready for the use of the brewer, who steeps it in warm water, and in combination with hops and other substances produces ale, porter, beer, etc. For distilling it is first ground or crushed, and submitted to the usual process.

Diseases and Insects.

The diseases and insects injurious to barley are not numerous. A kind of smut called the barley brand, sometimes prevails in cold, wet seasons, and is its worst disease. It is a fungus parasite having its seat in the ear, and developing a sort of woody tissue between the layers of the fungus. The outer covering of the grain remains sound, but the internal structure is blackened and destroyed. In the Eastern States the "maggot" or worm in the straw sometimes injures barley, and the wheat midge has occasionally been found in it, in sections where it prevails.

Yield and Profit of the Crop.

The average yield and profit of barley compares favorably with other grains. It can be grown for fifty cents per bushel, and prices of late have averaged more than double that amount. The products ranges to ten or fifteen to fifty bushels per acre—the average may be put at twenty-five bushels in Western New York.

NEVER GIVE UP.—Who are our rich men?—our distinguished men?—our most useful men? Those who have been cast down, but not destroyed—who, when the breeze of adversity swept away their props, sought new standards—pushed on—looked up, and became what you behold them now. A glorious sentence and worthy to be inspired—*Never give up!* Men are not made—they make themselves. A steady perseverance—a determination never to sink, though millstones were hanged about their neck—is the true doctrine. It is this that has made the wilderness blossom, that has given wings to the ocean, filled valley, levelled mountains, and built up the great cities of the world.

SODA CAKE.— $2\frac{1}{2}$ cups sugar, 3 eggs, 1 cup sweet milk, a piece of butter the size of a hen's egg, 1 heaping teaspoonful of cream of tartar, $\frac{2}{3}$ of a teaspoonful of soda and a little nutmeg.

CARROT PIES.—Take 2 good-sized carrots, clean and grate them; scald a quart of milk and pour on the carrots, and set it to cool. Take 3 eggs and 1 cup of sugar, beat well together and stir into the carrot; season with nutmeg or cinnamon.

DRAINAGE WITH SMALL PIPES.

A correspondent of the *London Gardeners' Chronicle*, gives his experience in draining as follows:

"The quantity of land experimented upon was thirty-three acres, of a cold putty-like clay. The expense of drainage, three pounds, (about 14½ dollars,) per acre, cost of pipes of 1 inch bore and 15 inches long, 15 shillings, (\$3.75) per 1000. The drains are placed thirty-three feet apart. The pipes are placed five feet below the surface, the pieces being butted against each other. No stones or bushes placed over them, nothing but the clay soil is returned into the drain. I have several times examined these drains after rains, and find they run admirably, like so many tea-pots, leaving the surface soil dry enough, in a short time, to plow, hoe, or subsoil. The soil is a very strong, brown, brick earth, varying occasionally to a yellow color with much iron in it. *The difference in the wheat crop this year, between the drained and undrained land on my farm is fully eight bushels per acre and one load of straw, being more than the whole cost of drainage.*

"I am aware that the use of pipes so small a calibre as *one inch* is objected to. Doubts are suggested that they are not large enough to carry off the water. I have never, yet, however seen them run more than *half full*, although possibly in the course of years, when the soil becomes, as it will, more friable, water must have a freer access to them. We have the authority of Mr. Josiah Parkes, whose calculations cannot be controverted, that one inch pipes at 33 ft. or two rods apart, and four feet deep, will carry off all the water that falls from the heavens for a given space in a given time.

"There is something very absurd in the opinion held by some that clays are impervious to water. How often one hears "Oh, but water can't get through my soil." Well, then, if water cannot get in, how does it get wet? It is true, clay, already saturated with water, will hold water on the surface like a basin, for a very good reason that *it is already full of water and cannot take any more.*

"But once provide the means of escape from below, and it would puzzle a conjuror to keep the water from sinking through the clay. Tapping the land when full of water, is after all, very much like tapping a cask—the liquor runs out at the bottom, and the cask dries at the top. The deeper the drain or tap, the greater the pressure from above. As the liquor flows, the air must follow.

"Independent of the capillary attraction that assists in causing deep drains to act best, we must consider also, that the deeper the drain *the more steep the decline*; and we all know that water will rush quicker down a steep hill than a gentle slope. Those who consider 1 inch pipes too small should bear in mind how soon such a pipe running constantly, would empty a large pond. It must be bad policy to be at the expense of procuring large pipes where small ones will answer better—no rats or vermin can enter one-inch pipes. It is lamentably painful to contemplate the condition of our heavy undrained lands in winter. Filled with water to the surface, they are wholly incapable of receiving or appropriating the best of manures, the heavenly rain. Every hasty or continuous shower scours the surface, driving down the furrows, in turbid and wasteful streams, the very essence of the soil—while the fertilizing ammonia in the rain itself, finds no entrance there.

"Nor is the appearance of these lands less dismal and distressing in April and May. The blessed sun shines it is true on the saturated soil, but it is dead and impervious to its invigorating rays. The imprisoned water having no escape downwards, can only be released as steam, by evaporation, carrying with it the heat that should warm and invigorate the soil; and leaving behind a clammy and death-like coldness, which is well attested by the sickly and yellow plants. Poor things many die leaving their hardier companions to struggle on, in hopes that a parching summer may do that naturally, by gaping cracks, which man is too poor, too niggardly, too ignorant, or too prejudiced, to effect by cheap and profitable drainage."

CHEAP PAINT.—If any of your readers wish to use a very cheap and substantial paint, of a drab color without lustre, let water lime be mixed with skimmed milk, to a proper thickness to apply with a brush, and it is ready to use. It is too cheap almost to estimate, and any one can put it on who can use a paint brush. It will adhere well to wood, whether smooth or rough—to brick, stone or mortar, where oil paint has not been used, in which case it will cleave to some extent, and forms a very hard substance, as durable as the best oil paint.—*Cor. of Country Gentleman.*

NEW FENCE.—BOARD AND PICKET.

To the Editor of the Agriculturist.

Clinton, February 27, 1857.

Dear Sir,—I hope you will excuse me for troubling you with a few lines on a subject in which, I have no doubt, you feel an interest. I don't know how what I have to communicate will appear in print, as I write but seldom, and never for the press; but I cannot help thinking that if what I wish to inform you of were universally known, it would be as universally approved of, and, where practicable, adopted. Almost every number of the "Agriculturist," for the past year, has had more or less to say in reference to fences. I perused every article in reference to this subject, with peculiar interest. I confess I was surprised and disappointed at the result of the deliberations of the Agricultural and Horticultural Club, who devoted an evening to discuss the subject, and who, after all their debate and investigation, decided that that most of all objectionable fence, the zig-zag, was *the fence* for the farmer. From such conclusion I did at the time and do now most decidedly differ; cause why? Last summer I had a piece of old fence cedar zig-zag which required repairing, which it did annually, and had done for several years. I was getting tired of repairing it, and resolved to try something new. I looked at the old fence, and these were my cogitations:—I thought there was a deal of material in it, and wondered if it could not be put up some other way. I thought, first, horizontal; it would certainly take fewer rails, and look better; but then, to my mind, there is no economical way yet discovered of securing the horizontal fence. I then thought, set the rails up endways or perpendicular; yes, but they are too long. Well, saw them off, or rather make two of them—yes, pickets—that's just it. Now for a fence. Move away the old one, get the plough, and make a straight furrow up and down a time or two, till you have formed a straight trench; sharpen one end of the pickets—the sawed end, of course, is square—then drive one in at each end of the trench, in the place and to the height you wish your fence; next drive one in the centre to correspond. But, before you proceed further, it will be necessary to place either yourself or a person with a straight eye at one end of the fence for a time, till you have got some pickets in for guides or sights, which you will soon do by driving a picket in every centre till you have one about every half rod; you can then commence, and fill up the vacancies. Drive in your pickets three inches apart straight till they are even on the top, and no further. When they are all driven in, straight on the side and level on the top, fill up the trench with what you took out of it; then run the plough up and down each side of it, and bank it up as high as you please, and while you are doing it, recollect you are killing two birds with one stone, viz.—a good bank will support your fence, and at the same time form a trench or drain which will prevent the fence from heaving after frost, and serve the adjacent land. You will then get boards one inch thick and six inches wide, nail them on the top of the fence, put a nail in each picket and break joints on the top of a good sound picket which will hold two nails—and there's the fence as firm as a church. Now, Mr. Editor, if that fence is properly put up, I pronounce it the cheapest, the strongest, the neatest, and

best-looking fence that I have seen, read, or heard of. I don't know if I shall be understood, but I claim for this simple fence as being superior to any other dead fence in these three important particulars, viz.—strength, economy, and appearance. If it is so, then it is certainly worthy the consideration of the farmer. I wish I could write as much as I feel in praise of it. In the first place, for instance, in reference to its strength; you can scarcely conceive the strength the six-inch board on the top gives it as a cap—why, that board gives six times the strength it would nailed up any other way, aye, thirty-six times, if you like; in fact, the whole fence offers *very little* opposing force to the wind, the 3-inch spaces allowing it to pass through regularly. Then, as to its appearance, it is neat on account of its uniformity, and has all the advantages of a straight fence; its novel appearance has repeatedly attracted the attention of strangers, who have often stopped to examine and eulogize it. Then, as to its economy. Here we will refer to a few facts and figures, and compare with other fences; and first the zig-zag—it is generally allowed to require 20 rails to the rod, *i. e.*, 8 rails, 1 rider, and 2 stakes to a panel, and 2 panels to a rod. In the board and picket fence there will generally be from 20 to 25 pickets introduced, and only half the length of rails, observe, and not so heavy either. Thus, there is a saving at least of one half the timber and more—quite a consideration, you will admit, where timber is an object. After I had completed my first fence, which I did out of the old one above referred to, I had quite half of the rails left, which first enlightened me as to its economy in material. Then, again, in this comparison, all will admit, when you go into the cedar-swamp to cut fence timber, it is much easier to find materials long enough for pickets which would not do for rails, pickets being not more than six feet long; and in splitting pickets, instead of making them as square as you can, as you would rails, the object would be to make them broad and thin, more resembling staves, *i. e.*, from 1½ inch thick to 2½, and from 5 to 10 inches broad, and you will be surprised how far a little timber goes, and how fast and easy you will get on with it.

And now for the post and board fence, to complete which requires three expensive kinds of material, viz. : posts, boards, and nails. Now, in the first place, there is very near enough timber in the posts to make all the pickets. Observe, posts are two feet longer than pickets, and if each post was split up, I think they would average five pickets each, and this, with the extra length of the post, would complete four-fifths of the picket fence. So much for the posts. Now, in reference to nails, the post and board fence will average 54 nails to a rod, the board and picket, 22—a startling consideration, but a *stubborn fact*. Then, in reference to lumber, the board fence will average 55 feet to the rod, cap and batten, the board and picket, 9. There, Mr. Editor, are a few of the reasons which induce me to prefer my kind of fence to any I have yet seen. Of course it must be understood that no other timber will answer but cedar; but if you or any of your friends could be induced to try a few rods of it this spring, I have no doubt you will think as I do on the subject. My neighbours, without exception, express their approbation of it, and several are preparing to try it. I should be happy, if requested, to furnish any further information regarding

it; but fearing I have tired your patience, (and if I have, I beg pardon for being so prosy,) I hasten to subscribe myself,

Your's most obediently,

G. B. GOODWIN,

Clinton, Township of Goderich, Huron Tract.

P. S.—I hope, Sir, you will excuse me of egotism or presumption, but I can't help telling you that I have another kind of fence in my fancy, which I shall perhaps try this summer, if I live, and if you do not approve of the board and picket, you will of that.

G. B. G.

COST OF TILES AND DITCHING.

To the Editor of the Canadian Agriculturist.

sir,—Would you do me the favour of giving the following few lines a place in your valuable Agricultural journal, in reference to your correspondent's—East Gwillimbury—enquiries respecting Drainage, and Drain 'Tile? We deliver Tile on board the boats or the railway cars, *cartage free*, for parties living at a distance from Toronto, and sending us orders to be supplied by either the boats or cars. The cheapest way to get them by the cars is, for two or three persons to join, if one does not want so many, and order a car load—6000 or 8000, according to size; the charge for freight will be less this way, as they take a long time to load and unload, and there may not be any other freight to be left at that station. The kinds most used for field drainage are 2½-inch pipe and the 3-inch horse-shoe; the 3-inch of both kinds are used for contributing drains. Parties wanting Tile should send in their orders as early as possible, stating the kind, size, and the time when they will be required as the business is new, and we wish to form an idea what the demand may be which we will have to supply. Samples will be sent when required.

The cost of digging for a Tile drain is less than for any other kind, the ditch required for the tile being much narrower than for either wood or stones. By getting proper draining tools—which can be got at Mr. James Fleming's, seeds-man, Yonge Street, Toronto—a ditch four feet deep need be only one foot wide at the top, and just the width of the tile at the bottom. This was the width of 150 rods, 4½ feet deep which I laid down last fall, through a very light, sandy loam. I paid 5s. per day, and the drains cost in labour 1s. 3d. per rod.

Your's respectfully,

WM. LEA.

HARD OR SOFT WATER IN COOKING.—Nearly every one knows that *hard* water is such in consequence of its containing a small quantity of carbonate of lime, whereas *soft* water is nearly pure. It may not have occurred to every one that this difference often becomes an important one in the daily process of cooking. Where vegetables are boiled in hard water, a deposit of this lime is made upon the surface of the vegetables, as peas, beans, corn, &c., by which process the food is not only not so thoroughly cooked in a given time, but even when done is not so well done. It is always harder when cooked, and less healthy. The minute deposits of lime upon the surface of such vegetables not only impairs the taste and diminishes the softness of the food, but also acts unfavourably upon the digestion—an effect important to those in health, and doubly so to invalids. The subject might be expanded at some length, but we merely suggest it and leave it for the reader's consideration, whether a pure soft water is not preferable to hard for all the ordinary processes of cooking.

BOTTS IN HORSES.

To the Editor of the Agriculturist.

Sir,—As the subject of Botts is one but little understood by Farmers, in general, the following observations, taken from Taplin's "Modern System of Farriery," may not be out of place. I know, from personal experience, that mercurial preparations are the only ones to be depended upon, having myself given the Balls and prescribed them repeatedly to Farmers, during the last seventeen years, with great success.

That Botts will destroy the stomach is too plain a fact for any reasonable man to deny. The first symptoms are a "perpetual anxiety for a constant supply of either food or water, but in the midst of all he never looks well. After being some time a prey to them he gets low in flesh, hard in his hide, his coat stares, he always seems dejected, sweats upon trifling exercise, and that sweat perceptibly unhealthy; but when the Botts are strong in number, and come to maturity, the great irritability of the stomach occasions the most excruciating pain. The Horse is not only distressed, as above stated, but is subject to violent periodical pains approaching to convulsions; he displays all the EXTERNAL symptoms of *gripes, spasm in the stomach, stranguary*; he lies down, rises suddenly, looks round at his flanks, which he endeavours to strike with his hind feet, shewing by his actions, as plain as a horse can, where his pain is; but where the evacuations of stool and urine are not suppressed, no doubt can arise as to the cause of it. Before the following Balls are given, let the Horse have a mash of scalded bran and oats, or bran only, morning, noon, and night, the day before you give them; on the following morning give one of the balls, according to the age and strength of the Horse.

Ball No. 1.

Best Aloes 1 ounce.
Ginger 2 scruples.
Calomel 1½ drachm.
Soap or Syrup sufficient to form
the ball.

Ball No. 3.

Aloes 10 drachms.
Ginger 2 "
Calomel 2½ "
Soap, &c.

Ball No. 2.

Aloes 10 drachms.
Ginger 2 "
Calomel 2 "
Soap or Syrup as before.

Ball No. 4.

Aloes 10 drachms.
Ginger 2 "
Calomel 3 "
Soap, &c.

No. 1 is intended for a young horse of delicate make.

No. 2, where the horse is arrived at full age, or shows greater strength of body.

No. 3, for a stout team horse.

No. 4, for a strong, powerful horse.

Too much caution cannot be used in getting the drugs *good*. I regret to say it is too much the practice with many farmers to purchase so-called cheap articles; it is only for a horse, and they seem to think any rubbish will do. Go to a respectable druggist, and tell him you want the best. I have repeatedly known an ounce of

common aloes given to a horse without the least effect, when six drachms of good has given him a complete clearing out.

The next day give a mash of oats and bran on which scalding water has been poured the night before; then feed as before. To make sure work it is well after six days to give another Ball, mashing as at first. This will clear out any that may remain; and if any doubt remains, a-third ball may be given six days from taking the second ball. I must say I never found it necessary, but others can do as they choose. I have known the first ball bring away as many as one and even two quarts of full-grown Botts. A farmer in King once told me that a horse of his evacuated a gallon measure full. At any rate, the calomel will kill and the aloes will bring away as many as there are there.

I would caution all Farmers, as soon as the first symptoms appear, not to trifle with it, but give one ball at least, when it will tell its own tale; if it is caused by Botts, you will see them, and if not, your horse may be benefitted and cannot be injured by the taking of it. Above all things, avoid giving whiskey, pepper, train-oil, or any other of the useless abominations generally resorted to.

I am, Sir,

Your's sincerely,

Woodbridge, Vaughan.

JAMES ASHDOWN.

WELSH WEDDINGS.—The practice of "making a bidding" and sending "bidding letters," of which the following is a specimen, is so general in most parts of Wales, that printers usually keep the form in type, and make alteration in it as occasion requires. The custom is confined to servants and mechanics in towns; but in the country, farmers of the humbler sort make biddings. Of late years tea parties have in Carmarthen been substituted for the bidding; but persons attending pay for what they get, and so incur no obligation; but givers at bidding are expected and generally do return "all gifts of the above nature whenever called for on a similar occasion." When a bidding is made, it is usual for a large procession to accompany the young couple to church, and thence to the house where the bidding is held. Accompanying is considered an addition to the obligation conferred by the gift. I have seen, I dare say, six hundred in a wedding procession, and have been in one or two myself (when a child.) The men walk together and the women together to church; but in returning they walk in pairs, or often in trios, one man between two women. The last time I was at such a wedding I had two strapping wenches attached to my person. In the country they ride, and generally there is a desperate race home to the bidding, where you would be surprised to see a comely lass, with Welsh hat on head and ordinary dress, often take the lead of fifty or a hundred smart fellows over rough roads that would shake your Astley riders out of their seats and propriety.

CARMARTHEN, October 2, 1850.

"As we intend to enter the Matrimonial State on Tuesday, the 22d of October instant, we are encouraged by our Friends to make a Bidding on the occasion the same day, at the New Market House, near the Market Place; when and where the favor of your good and agreeable company is respectfully solicited, and whatever donation you may be pleased to confer on us then, will be thankfully received, warmly acknowledged, and cheerfully repaid whenever called for on a similar occasion.

By your most obedient servants,

HENRY JONES, (Shoemaker,)

ELIZA DAVIES.

The Young Man, his Father, (John Jones, Shoemaker,) his Sister (Mary Jones,) his Grandmother (Nurse Jones,) his Uncle and Aunt (George Jones, Painter, and Mary, his wife,) and his Aunt (Elizabeth Rees,) desire that all gifts due to them be returned to the Young Man on the above day, and will be thankful for all additional favors.

The Young Woman, her Father and Mother (Evan Davies, Pig-drover, and Margaret, his wife,) and her Brother and Sister (John, Hannah Jane and Annie Davies,) desire that all gifts of the above nature due to them be returned to the Young Woman on the above day, and will be thankful for all additional favors conferred."—*Notes and Queries.*

BONES AND BONE MILLS.

To the Editor of the Canadian Agriculturist.

Paris, C. W., 18th March, 1857.

Dear Sir,—Can any of your correspondents inform me if the machinery for Bone Mills is manufactured in Canada. I have made many enquiries in this neighbourhood, but cannot learn whether there is a Bone Mill in the country. I purpose starting one, and wish information as to cost of machinery, amount of power required, and best place to order the mill gear. Added to which, "your opinion of bone dust as a manure, and different effects of the various sizes of bones when ground," will be thankfully received.

Respectfully yours,

A. W. G.

Remarks.—We are not aware that the machinery for Bone Mills is manufactured in Canada. A Mr. Lamb, near this City, erected a Bone Mill some years ago, and advertised Bone-dust for sale. But we have heard nothing of him or his Mill, for the last year or two.

We have frequently published articles on the subject of Bone Manure; but as we have had but little experience of its benefits, we must refer our correspondent to those authorities where its qualities and uses are stated, from chemical analysis, as well as experimental results.

The following extract from a late number of the *Country Gentleman* may give A. W. G. some of the information he desires :

EXPENSE OF A BONE MILL.—Thinking that it might be of interest to some of your readers to know the cost of a good mill for grinding bone, I will give the cost of the one in this city (Albany) belonging to Mr. Thomas Coulson, and which is acknowledged by all who have seen it, to be superior in its operation, at least so far as the quality of the article produced is concerned, to any in this country. Four pairs of cutters are used. The first two pairs cost, with gearing, \$300—the last two pairs, without gearing, \$600—the necessary belts, elevators, sifters, shafts, pulleys, &c., about \$200. The first set of cutters have done about ninety days' labor, ten hours per day, and are now completely "used up;" the second, or last set, have not been in operation so long, but are not expected to perform more than one hundred days' labour. To the first cost of all may safely be added 25 per cent. for repairing, breakages, &c., before they are finally laid aside. The motive power is a ten-horse engine, which, with building, built and used only for this purpose, cost \$1500 more.—CHARLES BELL.

GUANO AND GUANO ISLANDS.

The *Mark Lane Express*, of a recent date, makes the following remarks on the Guano question :—

We are just now at the very height of our guano difficulty. That is to say, this is the season—a most favorable season, too—when above all others we need it; and there is none to be had. One of our most respectable manure-dealers was, for the first time, on Saturday, directly refused. They could not even promise him any further supply. When people have gradually accustomed themselves to the matter-of-course use of anything, the unexpected want of it must be very severely felt. This is the case with the farmer. We want guano as a manure for our barley and oats, and as a top-dressing for our wheat. We have reckoned more or less on our customary allowance, and have consequently neglected proportionately, to provide any substitute. With ordinary care, as we begin to see now when it is too late, we might have fallen back upon our own resources; as it is, however, there is an extraordinary and altogether unprecedented run on such manufactured manures as contain the ingredients required—ammonia and phosphates especially. The makers and dealers are at their wits' end to answer the orders pouring in upon them, and go from one to the other anxiously seeking the material to fulfil them.

Each succeeding year turns up its peculiar subject for discussion. Last year it was agricultural statistics; this it is assuredly the guano monopoly. Almost every one of our leading national societies have already touched upon it. The Farmers' Club, as we have shown, was the first to open the attack; and since then both the English and Scotch Agricultural Societies have given it a prominent place in their proceedings. A fortnight since, Mr. Evelyn Denison, as President of the Royal Agricultural Society of England, was deputed to confer with Lord Clarendon on the subject. We have yet, however, to learn what came of the interview. And only on Monday last a more numerous deputation from the Highland Society paid an official visit to Lord Stanley of Alderley. The object was of course to procure, if possible, a supply of guano from elsewhere; and the first point urged upon the attention of his lordship was the policy of obtaining possession of the Kooria Moorria Islands. These deposits, it will be remembered, have been brought into notice chiefly through the agency of Mr. Caird, who, a week since, at a general council Meeting of the English Society, dwelt at some length upon their value. The representatives of the Scotch agriculturist went on to ask for an exploring expedition; at the same time they warned the Government from sanctioning any further monopoly, as it seems is to be the case with Captain Ord and the Arabian Guano. Still the principle of monopoly is broken through when once we can establish an opposition to it; and the possession of these Kooria Moorria islands might work us good in a variety of ways.

We believe such conferences as these to be all in the right direction—the first step to the attainment of what we seek. It is sheer absurdity to say we must not look too much, or depend much upon the Government here. On the contrary, this is just one of those cases that we must look to the Government; and, moreover, let them know that we depend upon them. Pray who is to help us, or to put such a trade as this upon a proper footing, if our own flag does not? Was it any other business—Manchester, Birmingham, or Sheffield—so interested, their leaders would never stay their exertions until something was done. Neither must ours. The farmer has surely some friends in either House who will keep the question alive for him. But what did these Houses or the Government ever do for the farmer yet? the less sanguine may inquire. Little enough, perhaps. A sufficiently good reason for their doing more now they have the opportunity—and when they may do it, and not merely without injury, but with manifest advantage to themselves and the community.

The following conversation took place in the House of Commons:—

Lord Naas asked the Vice-President of the Board of Trade whether any correspondence had taken place between the Government and Messrs. Ord, Hudson, and Hayes, of Liverpool, relative to the license which had been granted to them, giving them for five years the exclusive right of raising and exporting guano from the three islands of Jiblea, Hanki, and Ghurzoad, on the coast of Arabia; and if so, whether he would lay that correspondence on the table of the House? Also, whether any guano had been raised from the islands, or whether the agents of the licenses had been driven away by the Arabs?

Mr. Labouchere believed the facts of the case to be these:—Some time ago this firm of Liverpool merchants applied for a license to obtain guano from these islands, which had been ceded by the Imaum of Muscat to the Government of this country. The discovery of the islands having guano was made by Captain Ord; and the Government, as a proper encouragement, granted to the firm an exclusive license. They were also informed that, as far as practicable, they should receive such support from the Government as could be afforded to them. At the same time, it was an enterprise of a very speculative nature. The parties to whom the licenses was granted went to the islands and endeavored to procure guano. Unfortunately some tribes residing not 20 miles off, who had a sort of trade there, considered their privileges interfered with. Captain Ord and his party applied for assistance to the Bombay Government; but, unfortunately, the Government of Bombay was unable at the time to give that assistance. A good deal of correspondence had taken place upon the subject, and he trusted arrangements would be made by which these parties would be able to proceed to the islands and test whether they did or did not afford a supply of the important article of guano. All that was needed was, that the Government of Bombay should support Captain Ord by the presence for a few days of a small armed vessel. That was the state of things at present. The Government were fully sensible of the importance of encouraging, by any means in their power, the supply of Guano to this country. He believed an hon. friend would shortly move for the papers, and there would be no objection to lay the correspondence on the table of the House (Hear, hear).

In reply to Sir A. Campbell, Mr. Labouchere said that the power of granting these licenses was derived from the Queen.

Sir J. Fergusson asked whether in the licenses which granted a monopoly to these gentlemen there was any reservation as to the prices which they should be entitled to charge. Mr Labouchere said a monopoly was undoubtedly granted to them for five years, of which about four years expired.

RURAL ARCHITECTURE.

In a progressive and enlightened age like this, it is somewhat astonishing that so little effort has been made to improve and beautify the homes of the rural population.

The associations connected with childhood have an important bearing on the conduct of the man, and the recollections of youth form the most agreeable pictures that are impressed on the tables of memory.

The scenes of our childhood, the hopes of our youth, and the aspirations of our manhood come crowding to the mere mention of home. In infancy, consciousness first dawns upon the beauty of nature beneath the grateful shade of its trees, and their memory in after life acts as an incentive to noble action.

There are but few whose eyes will not brighten, and whose pulse will not quicken as the reminiscences of past happy days are brought to mind.

“How dear to my heart are the scenes of my childhood,
As fond recollection presents them to view;
The orchard, the meadow, the deep tangled wild wood,
And every loved spot which my infancy knew.

“The wide-spreading pond, the mill that stood by it,
The bridge and the rock where the cataract fell,
The cot of my father, the dairy house nigh it,
And e'en the rude bucket which hung in the well.”

With associations similar to these, and with sufficient wealth at their command, a large portion of the citizens of our prosperous country are content to dwell in houses but little if any better than those constructed by the first settlers of our soil; and there to bring up and educate the children, who are to be the men and women of the next generation.

They think, no doubt, that it is for the benefit of these children that they continue to economize and toil; but a few moments' reflection would show that the foundation of all education is laid at the home of our childhood. With the perceptions of order, symmetry, and beauty, awakens the desire for possessions, and with them comes that refinement of manners which distinguish a civilized from a coarse and brutal people. And as the first perception of order and beauty is awakened in most minds by external objects, a comfortable and attractive home has an important bearing on education and refinement.

Like a strong anchor, the mere sentiment of home has saved many a man from shipwreck.

Then, how necessary does it become, for a thinking moral people, to throw every attraction around their home that their means will allow. In this view, the adornment of the Homestead has social and moral influences far beyond the mere gratification of the eye, or the consideration of dollars and cents.

The desire to surround ourselves with the higher sources of enjoyment, rather than be content with mere utility is to acknowledge the existence of a sentiment, which, next to a religious one, is the purest and noblest part of our nature.

A man's dwelling, to a certain extent, may be regarded as a type of his character, and in the aggregate the appearance of the houses, as an index of the people.

Ranlett, in his work on Architecture, observes that, "The house proper, deserves more care and calculation, in its structure, than a packing box. It is the case in which a man places the objects which are dearest to him; in which he shuts himself from the world to enjoy that portion of it which he can call his own; it is his sanctuary in the time of trouble, his retreat from oppression, the scene of his struggle for life, and the last glimpse of the world."

Doubtless many persons are deterred from endeavoring to render their homes attractive by fear of its involving a large outlay of money. To a certain extent this need not be the case—taste and judgment will point out many additions and ornaments that can be had, which cost but a trifle or a few hours' labor.

The effects of vines, evergreens, and shade trees are not sufficiently appreciated.—Three-fourths of the cottages that have endeared themselves to the hearts of true poets and lovers of nature, have owed their charms to the trees and shrubs and vines with which they were embowered. It is the rural character imparted by this drapery that wins the affections.

Associations of refinement, grace, and beauty, are connected with the occupation of a cottage, where

"Across the porch, thick jessamines twine,
And in the garden, myrtles blossom."

A row of evergreens judiciously placed might hide an unsightly object from the view, but nothing can compensate for the want of shade trees around a country house.

In lieu of enclosing the door-yard and adjoining field with the ordinary worm fence, how much better it would be to have a hedge—a plain paling—a rough board or even a post and rail fence. Such additions as these, costing little but time, would entirely change the aspect and throw a charm around many a place that now looks cold and desolate. Something of a love for the beautiful is always suggested by a vine covered cottage, because mere utility would never lead any one to so adorn their residence.

A house may be compared to a woman. A great deal of money might be expended in rich dressing, which would add, if properly applied, to the attractions suited to the taste of some persons, but when neatly and tastily dressed with well fitting garments, there is a charm that all will acknowledge; and to carry the simile a step further, if slovenly dressed, a dislike is sure to be produced.

There is a misapprehension of the requisites of beauty in a dwelling; most persons think to embellish a house would be very expensive—this need not be the case. An expression of beauty can be given to the simplest farm house. Even a common log house may be made attractive.

Our country houses should embody such ideas of order, beauty, and truth as shall elevate and purify the mind. A building may completely answer the useful requirements of man, and yet not give a ray of pleasure or satisfaction to his heart or understanding.

VISIT YOUR SCHOOLS.—You could not do a better thing. Your boy has the idea that you care scarcely more than a fig's value about his progress there; your girl thinks you are too busy about *more important* matters to worry about her recitations. Grammar is dry as dust to her, geography is tedious, arithmetic is a bore, reading is horrid, writing is her special abomination. If she speaks of either at the table, she is hushed up. You talk of stocks and senatorship, of the war and free trade. The young ones learn to think their studies very small matters in comparison with yours.

But visit your school to-day. Hear a lesson or two recited. Learn from their teachers what their standing is, in what they oftenest fail, and in what they excel. See who sits next to them in the school-room. See how they compare in personal appearance, whether they look happy and at home. If acquainted with their school habits, you cannot but be interested in them, and then you cannot possibly avoid talking of them. Making these matters subjects of home conversation will certainly stimulate them to better efforts—make better scholars of them. By all means, then visit your schools. Go alone, if no one will go with you. You will always be welcomed by the teacher, unless he is a fit one to be turned off.

TO IMPROVE FARM-YARD FOWLS.

Mr. C. N. Bement of Rochester is the author of a useful book on Poultry. In a recent communication to a Rochester journal (*R. N. Yorker*) he thus discourses on the subject of improving barn-yard fowls:—

Every one is aware, or should be, of the fact that, generally speaking, the fowls commonly kept by our farmers are but poor specimens of the race—are small in size and usually but indifferent layers. Neither the inferiority in their size, nor their poor egg-laying qualities are, however, to be attributed to the kind of food they receive, for farmer's fowls generally fare pretty well, particularly in threshing time, nor to any want of attention; but to the fact that in very many cases the stock is never changed, or if changed at all, so seldom as to be productive of no good results. Thousands of miserable, weak-minded people, idiots, lunatics, attest the evil results of marrying between blood relations. If such be the consequences resulting from "breeding-in-and-in," as it is generally termed, from the human family, will not the same principle apply to fowls? Will not a stock of fowls, let us ask, degenerate from year to year, both in size and other good qualities, if no additions from other varieties or yards are made? Look to the chicken commonly called "dung-hill fowl," a variety more generally had than any other kind in this country, and which, although small and comparatively of little value, were doubtless, at one time, in every respect equal to those for which such enormous and unwarrantable prices have been paid.

The reason of this degeneracy is very easily explained. The idea of improving the breed of fowls rarely visits a farmer's mind; and in the multiplicity of duties resting upon him, he does not think it a matter of sufficient importance to change the cocks with neighbors, or to kill off his old ones and purchase new. This is a great error, as we shall endeavour to show by facts gathered from experience.

We are convinced, from our own experience and observation, that by changing the plan of breeding of chickens we can materially improve them in some essential particulars, by procuring the very best cocks that can be found, paying attention to size, form and vigor only—color being a secondary consideration. Then, by selecting the finest formed and largest pullets of the previous season, cross them with selected cocks, provide comfortable quarters for them during the cold weather, and feed them well with *animal* and other good, substantial food, and, our word for it, you will receive in return a fair supply of eggs. None of the young cocks should be retained; they should either be sent to market or "to pot." The old cocks should be displaced and an entire new supply of young ones procured, of the best size and form that can be purchased. To give them size at once we should advise a cross with the Dorking, or any of the Asiatic tribes, the Brahma or Coch-in for instance. Some of the finest fowls we have seen were a cross of Dominique on the Cochin and Brahma. To keep up vigor and stamina, we would recommend on occasional cross with larged sized Game cocks. By pursuing this system every spring, or, at least, every other spring, the progeny would attain a size superior to their progenitors. Their constitution and laying qualities would certainly be much better.

The third year the chickens will not only be greatly improved in size and appearance, but in the quantity of eggs from the same number of hens. This plan pursued, or even that of selecting the largest and most vigorous cocks of the common "dung-hill," we cannot but commend to our farmers generally, as the fowls will be one-half larger, and cost no more food or trouble to keep them, and when sent to market they will command a much better price.

It is hardly necessary to draw the attention of breeders generally, to the fact—how few an *imals* maintain their superiority for a series of years in any particular variety. All being of the same blood their offspring are puny, weakly, and highly susceptible to disease. This can only be obviated by procuring the cock birds from another strain or family, and if well selected, there is little fear but there will be ample cause for self-congratulation as to their produce.

If we were to give what we consider the points of excellence desirable in fowls, we would say—they should have a small head, beautifully poised upon a taper neck, which sweeps in a gracefully expanding line to the broad shoulders. The breast must be very full, round and prominent, like that of the Darham cow, broad and well developed in the cock; the body square, the legs light-colored and small. They should be of good size, quick of growth, hardy, meaty, and fit for the table at an early age; abundant layers, especially in winter, good mothers, and quiet in their habits and disposition.

The chicken cocks, or cockerels, will be first ready for killing, and they should all be killed during the first season; then the extra or old cocks, and lastly the pullets, which are not required to recruit the stock. The old hens should be killed before they are three or, at the furthest, in their third year, as after that they are nearly worthless.

CHINESE SUGAR CANE.

As many of our Subscribers will probably attempt the cultivation of this new plant, we desire to give them all the reliable information in regard to it, that has fallen under our observation. With this view, we publish the following "Circular," from the United States Patent Office:—

UNITED STATES PATENT OFFICE, Dec. 10, 1856.

SIR:—This new plant seems to be destined to take an important position among our economical products. Its seeds were sent, some sixty years ago, from the north of China, by M. de Montigny, to the Geographical Society of Paris. From a cursory examination of a small field of it, growing at Varrieres, in France, in the autumn of 1854, Mr. D. J. Browne, then on a mission from this Office for collecting agricultural information and products, was led to infer, that, from the peculiarity of the climate in which it was growing, and its resemblance in appearance and habit to Indian corn, it would flourish in any region wherever that plant would thrive. From this source, he obtained some 200 pounds of the seed, which was distributed in small packages, by this Office, among the members of Congress, with the view of experimenting with it in all parts of the Union, and thereby ascertaining its adaptation to our soil and climate. In numerous instances, the results proved highly satisfactory, as it attained the height of 8 or 10 feet, as far north as St. Paul's, in Minnesota, and matured its seeds at various points in Massachusetts, New York, Pennsylvania, Illinois, and other places further south. The following year, while in France, on a similar mission as above, Mr. Browne obtained several bushels of the seed of this plant, grown from that reputed to have been brought from South Africa, by Mr. Leonard Wray, of London, and which has since proved to be identical with that obtained by this Office in 1854.

There appears to be a doubt among many in Europe, as well as in this country, as to the true botanical name of this plant. M. Louis Vilmorin, a scientific cultivator, of Paris, provisionally gave it the name of *Holcus saccharatus*, which had previously been applied to the common broom-corn, if not to other species, or at least varieties, of some allied plant. He also conjectured that it might be the *sorghum vulgare*, (Andropogon sorghum of others,) and thought that it might comprehend a variety of it, as well as *Andropogon cafra*, *bicolor*, etc., of Kunth. Mr. Wray, who has devoted much time and attention to the cultivation of this plant, with the view of extracting sugar from its juice, at Cape Natal and other places, states that in the south-east part of Cafraria, there are at least fifteen varieties of it, some of them growing to a height of 12 or 15 feet, with stems as thick as those of the sugar-cane (*Saccharum officinarum*.) M. Vilmorin, also, says that, in a collection of seeds sent to the Museum of Natural History at Paris, in 1840, by M. d'Abadie, there were thirty kinds of Sorghum, among the growth of which he particularly recognized several plants having stems of a saccharine flavor. Others are of the opinion, that the common broom-corn, (*Holcus saccharatus*), the chocolate or Guinea-corn, (*Sorghum vulgare*), and the Chinese sugar cane, (*Sorghum saccharatum*), all of which, containing more or less saccharine matter, belong to the same species, but are variations caused by differences of soil and climate, or by a disposition to sport, after the manner of Indian corn and other plants under cultivation. The Chinese sugar-cane, however, differs from the others, in containing a far larger proportion of juice, and consequently is more valuable for fodder and other economical uses.

In 1766, a plant analogous to the one in question, was experimented on at Florence, in Italy, by Pietro Arduino, for the extraction of sugar; yet it must have been of a different variety, as he describes its seeds as of a clear brown colour, while those of the Chinese sugar-cane are of a shining jet-black, and in appearance identical with those of the sorghum vulgare, of the old collections.

DESCRIPTION AND HABIT OF GROWTH.

The Chinese sugar-cane, when cultivated on ordinary land, in the United States, somewhat after the manner of broom-corn, grows to a height of from 8 to 16 feet, while in

Europe it does not attain much more than half of this altitude. Its stems are straight and smooth, often covered with a white bloom, or down, having leaves somewhat flexuous, falling over, and greatly resembling in appearance those of Indian corn, but more elegant in form. When cultivated in hills, containing eight or ten stalks each, it puts forth at its top a conical panicle of dense flowers, green at first, but changing into violet shades, and finally into dark purple, at maturity. In France, and the central and northern sections of the United States, it has thus far proved an annual; but from observations made by M. Vilmorin, as well as some experiments in our Southern States, it is conjectured that, from the vigor and fullness of the lower part of the stalks, in autumn, by protecting them during the winter, they would produce new plants the following spring. It stands drought far better than Indian corn, and will resist the effects of considerable frost without injury, after the panicles appear, but not in its younger and more tender state. If suffered to remain the field after the seeds have ripened and have been removed, where the season is sufficiently warm and long, new panicles will shoot out at the topmost joints, one or more to each stalk, and mature a second crop of seeds. The average yield of seed to each panicle is at least a gill.

CULTIVATION.

Since its introduction into this country, the Chinese sugar-cane has proved itself well adapted to our geographical range of Indian corn. It is of easy cultivation, being similar to that of maize or broom-corn, but will prosper in a much poorer soil. It does not succeed so well, however, when sown broad-cast with the view of producing fodder, as it will not grow to much more than one-half of its usual height. If the seeds are planted in May, in the Middle States, or still earlier at the South, two crops of fodder can be grown in a season from the same roots—the first one in July, to be cut before the panicles appear, which would be green and succulent, like young Indian corn, and the other a month or two later, at the time, or before, the seed is fully matured. In the extreme Northern States, where the season is too short and cool for it to ripen in the open air, the cultivator will necessarily have to obtain his seed from regions further south. If it were important for him to raise his own seed, he could start the plants under glass, in the spring, and remove them to the field or garden at about the period of planting Indian corn, after which they would fully mature. One quart of seeds are found to be sufficient for an acre. If the soil be indifferent or poor, they may be sown in rows or drills about three feet apart, with the plants from 10 to 12 inches asunder; but if the soil be rich, they may be planted in hills, five or more seeds to each, 4 or 5 feet apart in one direction, and 3 or 4 in the other. The plants may be worked or hoed twice in the course of the season, in a similar manner to Indian corn, any suckers or superfluous shoots, which may spring up, may be removed. The seed should not be harvested before it acquires a dark or black hue. Should the plants lodge, or fall to the ground, by the excessive weight of the heads, during storms of wind or rain, before the seed matures, they may remain for weeks without injury. In collecting the seed, a convenient method is to cut off the stalks about a foot below the panicles, tie them up in bunches of twenty-five, and suspend them in any secure, airy place, sheltered from the rain. If intended solely for fodder, the first crop should be cut just before the panicles would appear, and the second, as soon as the seed arrives at the milky stage. It may be tied up in bundles, shocked and cured, like the tops or stalks of Indian corn. If not intended to be employed for any other economical use, after the seed has been removed, and the weather be cool, and the average temperature of the day does not exceed 45° or 50° F., the stalks may be cut up close to the ground, tied in bundles, collected into shocks, or stowed in a mass in a succulent state, for fodder in sheds or barns, where they will keep without injury if desired, until spring. In this condition, however, the lower parts of the stalks will be found to be quite hard and woody, and will require to be chopped into small pieces for feeding.

PRECAUTION.

Particular care should be observed not to cultivate this plant in the vicinity of Dourah corn, Guinea corn, or broom-corn, as it hybridises, or mixes freely with those plants, which would render the seeds of the product unfit for planting.

Yours, very respectfully,

CHARLES MASON, *Com'r.*

THE HAW-THORN.

All ye wha pride in Adam's trade,
Wha swing the scyth, or wield the spade,
Or ply the crooked pruning blade
The trees amang;
Listen, O brither o' the trade,
And hear his sang.

And ye wha broke in Buck and Bright,
To haul the logs together right,
And fit them sae to burn up right,
And clear the land;
Come, also hear a brither wight,
Won't keep you long.

And ye wha's got your farms a' clear
From trees and log heaps, stumps an' gear,
And in your pocket snugly thare
Your free clear deed,
And hate to see a neighbor near
In ony need.

You are the chaps I want to tell,
That I have good Thoru Plants to sell,
From six inch high unto an ell
Of good Scotch measure,
And raised from haws I grewed mysel,
With pride and pleasure.

But as I have but little room
To grow so many things upon,
You will oblige by coming on
To help to clear
A piece to plant potatoes on,
In this same year.

True Scotchman will remember well
The bonnie nawthorn o' the vale,
And trysting thorn far in the dale,
Where he met Maggie,
And there his tale of love did tell—
Ca'ed her his lady!

I've seen my ain Meg's cheek most burn,
When looking at the flowering thorn,
I raised to dry her hippens on
At log-house door.
We've left that place, and sair she mourns,
Its bonnie flower.

She says 'tis lovely green in May,
In June 'tis white, in July gray,
In autumn red, with haws so gay,

The birds sing in it,
The mavis and the blackbirds lay,
Aye, and the linnet.

And now I'll tell you what I mourn
Is, you care little for that thorn;
But hark ye, lads, you'll take a turn,
And wish that had ye
Ta'en advice and had not spurned
The thorn so hardy.

If you will plant out twenty trees,
In some snug spot, 'twill please your bees,
Your wife and daughters, and will ease
Your lugs from ringing,
When they on them with looks that's pleased
The hippens flinging.

Plant twenty trees one rod apart,
In twenty years with little art,
With twenty thousand you may start,
To fence your farm;
In seven years more no bull nor brute
Could do it harm.

I sowed some seeds in '33,
And from the produce of one tree,
I've fifteen thousand, you may see—
Fine thriving plants;
Now that is hint enough to gie
To them who wants.

I will spare twenty for one dollar;
And if your mistress grudge the siller,
Look back to Maggie's colour,
Then ask your wife,
And then as soon as come good weather
I'll see you baith.

And mair than that, they're acclimated,
Although its hard to get it stated,
Folks won't believe, and *hac me rated*
Oft and again,
Because I say they're over-mated
Canadian.

They're not so apt for to get lousie;
Fifty for one I can grow easy,
Tried all the sorts, nor am I lazy;
But try again
A maxim is with old and prosy
John Williamson.

PRESERVING EGGS.—I am convinced from numerous experiments, that eggs may be preserved in corn meal or bran than in any thing else. Mrs. ———, the lady knitting in the other corner there, last fall put down some twenty dozen, small end down, and only two came out worse for resting. To this present sitting, some four months, they are "good as new." Salt does not do as well.

HORSES AND OXEN FOR FARM LABOR.—The Trustees of the Massachusetts Society for Promoting Agriculture, have offered a premium of two hundred and fifty dollars "for the best practical essay on the comparative economy of horses and oxen for farming purposes in Massachusetts,—the offer of said premium to remain open until the first of January, 1858, and the premium not to be awarded for any essay which shall not be considered by the Trustees of sufficient practical value to be worthy of publication in the Transactions of the Society."

CULTIVATION OF THE BEAN.

The *Bean* is much more extensively cultivated in the neighbouring States than in Canada. It may be profitably adopted as a field crop upon many of our light soils. We copy the following remarks on its culture, from one of our exchanges, the *R. N. Yorker*.

For a few years, in those portions of the State, where the enemies of the wheat crop have rendered the production of that cereal a labour of risk, and oftentimes a loss to the cultivator, much attention has been given to the growth of various grains, roots and plants as a substitute therefor. Among those which have assumed a prominent position, as regards freedom from pernicious and destructive insects, profitable returns for time and labour expended, facility for marketing, yield of provender for farm stock, etc., will be found the bean.

In the culture of the bean, the soil should be one of a light loamy texture, of at least medium fertility, and needs fine tilth, as well as cleanliness at the hands of the cultivator. What is known as a quick, dry soil, seems to be the desideratum sought for by most of those engaged in its production. Upon clay or retentive lands, the crop is liable to be severely affected by droughts or heavy rains—a superabundance of moisture injuring the pods nearest the ground by rot. In addition to the benefits derived by the crop from a judicious selection of soil, the cultivator will find that land easily kept friable and free from weeds, will lighten labour materially. If manure is used, it should be well worked in, and it were better if applied some time previously to planting, as decaying matter tends rather to the development of straw, than the formation of seed.

The preparations for *planting*, as well as the *after-culture* of the bean, should be most thorough. The ground needs to be well pulverized, and if retentive of moisture, ought to be ridged. Hill and drill planting are both followed—with about equal success as to product—but we are inclined to think that the former mode involves the greatest amount of labour. All danger from frost should be over before planting, as the bean is not hardy.

The common practice in planting, is rows three feet apart, and in hills about one foot distant. Should the rows be brought nearer together, it would be well to give more space between the hills. The distance given, however, is as close as can be worked to advantage where the cultivator is used; where the hoe is depended upon, 20, or 24 inches will cover the ground better. The last of May or first of June will be found a propitious time for depositing the seed. When planted in hills, from 4 to 6 beans is sufficient. In drill planting, from 3 to 5 pecks are used. Many farmers plant the bean in rows or hills, alternate with corn, and seem to think that advantages are derivable from such procedure.

As, in the culture of any new branch of the farm economy, a diversity of opinion is apt to exist, and detailed experiments are worth more than all that can be said theoretically, we are induced to note the conclusions of a few of those who have given the subject attention. A Chautauque County friend writes:—"I do my work the last day in May. Plough and harrow the ground smooth, mark out in shallow furrows, about two and a-half feet apart, with a corn plough, then drop the beans, two or three inches apart, in the furrow. I can plant, with the assistance of a couple of hands, four acres per day in this manner. When the young plants are three or four inches high, use the cultivator, and weed and hoe them well. When about eight or ten inches high, use the common plough, turning the soil against the vines. I sometimes sprinkle my beans with plaster when I hoe them. Average yield, twenty to twenty-five bushels per acre. Save the vines to feed the cattle. I have wintered cattle and kept them in good order, with little else than bean straw, the cattle consuming the product at the rate of about one and one-third acres per head."

In Orleans County, where much space is given to its culture, the planting is usually done with machinery manufactured for the purpose. A man and boy will plant twelve acres per day. One bushel is the quantity used for seed. Variety—the "medium white." Average yield, 18 to 20 bushels per acre.

The time of harvesting has arrived when the pods turn yellow, and the beans should be pulled and stacked. If the weather is fine it will prove of benefit to place them in rows for a few days, that partial curing may ensue. Care must be exercised that sharp frosts do not catch them still in the ground. To stack them, drive a stake in the ground, cover the earth with something that will keep the beans from it, and lay the beans about

the stake, the roots toward the centre, and cap with some material that will keep off the wet.

Another mode, and a very convenient one, is to cut crotched sticks, about two feet below the crotch, and four and one-half feet above, sharpening the lower end, which should be driven securely into the soil. The crotches should not be abrupt, but taper gradually and be strong. Upon these stack the beans in layers, head and root alternating, then bind across from the tops of the stack. These can be protected from rain by any slight covering, and as the stack is elevated and the straw drooping, it will soon shed moisture should it become wet.

The analysis given below, by Professor Emmons, of the "White Kidney Bean," and that of Einhoff, of the "Field Bean," will exhibit the amount of nutriment they contain:

	Kidney Bean. Emmons.	Field Bean. Einhoff.
Starch.....	36.74	50.1
Legumen.....	18.60	
Albumen and Caseine.....	9.92	11.7
Fibre.....	15.42	
Sugar and Extract.....	7.20	8.2
Water.....	13.25	15.6
Husk.....		10.0
Loss.....		4.4
Total.....	101.13	100.00

The bean is not an exhausting crop, but possessing a large leaf system, derives a considerable portion of its subsistence from the atmosphere. With clean and careful culture the soil, instead of being impoverished by a crop of this nature, will be left in the best possible condition for subsequent productions.

TRANSACTIONS OF THE BOARD OF AGRICULTURE, 1856-57.

Two sheets of the "Transactions" will be found to accompany the April number of the *Agriculturist*. Each subscriber to this Journal will be supplied with the remaining sheets as they are published, until the Volume for 1857 is completed. We cannot state the number of pages the Volume will comprise—probably not less than 350. The page is not quite so large as the *Agriculturist*; but as the paper has a larger margin, there will be no difficulty in binding the two works together at the end of the year. The *Transactions* not being of a miscellaneous or serial character, each sheet will contain the whole or part of an Essay, Report, &c., as the case may be—the subject being continued in the next sheet. The successive sheets should be carefully preserved till the end of the year, when they may be stitched or bound together.

The Volume begins, as our readers will observe, with a Prize Essay on the Agricultural Resources, &c., of the County of Simcoe. It is unquestionably the fullest and most reliable account of this new and important County that has yet been published. When each County of the Province has been treated in a similar manner—and the annual Prizes of the Board seem well calculated to draw out the information—we shall have the materials for compiling a fuller, more reliable and more valuable history of the industrial resources and agricultural capabilities of the Province, than it is possible to obtain by any other means.

We hope the readers of the *Agriculturist* will respond to our efforts to diffuse valuable information, by inducing their neighbours to send along their *half-dollars*. Surely we are giving more than value for the money this year.

BRAIN OF THE HORSE.—Dr. Dadd, Veterinary Surgeon of Boston, and Editor of the *American Veterinary Journal*, has sent us a large and well executed lithograph, representing two views of the Brain of the Horse: one exhibiting the "Arteries at the base of the Brain," coloured the other the "Base of the Brain, showing its nerves." The Price of the lithograph is \$2. A copy may be seen at the office of the *Agriculturist*.

We observe that in the list of "Exchanges" published in the *Veterinary Journal*, the subscription price of the *Agriculturist* is set down at *two dollars per annum*, just four times too much!

FRESH SEEDS, &c.—We beg to direct the attention of our readers to Mr. Fleming's advertisement. We know that Mr. F. takes great care in the selection of his seeds; and being well established in his business, orders may be sent to him with confidence.