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THE FARMER AND MECHANIC,

Devoted to Agricultural, Horticultural, Mechanical, and Domestic Subjects.

Vol. I.

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No. 7.

SPRING WORK.

PLOUGHING.

This is the most important branch of farm labour, and to execute it with neatness, and upon correct principles, are points not easily attained, unless the ploughman be early trained to the business. The great point to be aimed at is to turn a well-proportioned furrow, and to have the whole mass cleanly and regularly inverted to a uniform depth and width, and each furrow made to rest upon its fellow in a certain angle of inclination. The angle that presents the largest surface of newly-turned soil to the action of the atmosphere is doubtless the one that should be preferred, if the character of the implement employed will admit of its being done. That angle being forty-five degrees, will require a furrow to be, as its width is to its depth, in the proportion that nine is to six inches. A six by nine-inch furrow, when all things are considered, is the best for spring work; but it may be increased or diminished in depth, to suit the character and condition of the soil, and to adapt it to the particular crop intended to be cultivated. Straightness of furrow imparts a finish to ploughing, which, if not indispensable to give an abundant return in harvest, will be found at least creditable to both the ploughman and the proprietor of the farm. In performing this branch of labour, the old maxim should be observed, that "what is worth doing, is worth doing well." It is too much the custom of the ploughmen of this country to slight their work, the main object being to go over a great breadth of ground, within a short space of time. One good ploughing is better than three done in a slovenly manner. When land is well ploughed, the furrow-laps will be so completely closed, that the inverted grasses and roots of weeds will, in due time, undergo decomposition, by being excluded from the action of the atmosphere; whereas, on the contrary, bad ploughing only invigorates noxious weeds and couch grass to

grow; and thus, in due course of time, the crops will be destroyed by them.

As soon as the frost is out of the ground, which will doubtless be the case by the time this number reaches the subscribers, the business of breaking up grass land, or old sward, may be advantageously engaged in. This work can at no period be better done than very early in the spring, as it will require a much less draft or power to execute it, and it may be performed many days before other portions of the farm are ready to be ploughed. Instead of reserving old, worn out meadows and pastures for generations, as is still the practice in many cases in England, it is decidedly better to plough them up, and, in their turn, put such land under a course of cropping. Three or four years, at the farthest, is as long as land can be occupied with the cultivated grasses, and even so long a period as this is too great for clover. The crops that can with much certainty be sown upon an inverted clover ley, or sward, are oats, peas, Indian corn, and flax. If peas and flax be sown, it will be found, as soon as the crops are removed off the ground, that, with two ploughings, it may be put into as good condition for autumn wheat as if it had been regularly summer-fallowed. The same applies to the Indian corn ground, only with greater force, as the horse-hoings and ploughings given the land, for the purpose of eradicating the weeds, and imparting a vigorous growth to the corn crop, would abundantly clean and prepare the soil for wheat, so that simply a seed furrow would be all that would be required for the wheat plants, after the removal of the corn. The only objection to this system is the liability of the corn crop being damaged by early autumn frosts. By planting early varieties, this may be obviated, to a great extent; but to get the entire crop off the ground by the 10th of September will require excellent management; and, indeed, it cannot be done in the eastern and northern portions of the Province, if the crop be cultivated to a great extent. When all

things are considered, a crop of Indian corn and pumpkins, planted upon a newly broken up old sward, will pay better than any other crop with which such land can be cultivated; and the following year it may be sown with spring wheat. If spring wheat should be precarious, peas, barley, or flax may be made to succeed the corn, for the purpose of preparing the ground for autumn wheat. The greatest objection to peas on such land is, that in very favorable seasons for vegetation, the growth of straw will be so abundant as to lessen the yield of grain. This, however, may be avoided, by sowing some one of the dwarf varieties, which are only adapted for the richest description of soils, in which case nearly double the quantity of seed will be required, to what is necessary if the long-haulmed varieties are sown. On soils that are too rich for most other crops, the dwarf pea may be grown with the greatest certainty of success. By sowing on such land from three and a half to four bushels of seed per acre, a yield of from forty to sixty bushels may be confidently relied upon. In breaking up stubble land, in the spring, it is well to bring up to the surface some new soil, or, in other words, it may with advantage be ploughed a little deeper than it ever was before. On very adhesive, clay soils, and where the subsoil is composed principally of sand, deep ploughing is not advisable, for it is worse than useless to bring to the surface a soil that contains no fertilising properties, to be mixed with the active soil. Where the subsoil is composed of a permeable clay, and where there is also a large quantity of lime and potash mixed with the subsoil, within reach of the common plough, from two to three inches of the new soil, mixed with the old, worn-out surface-soil, will improve its texture, and impart a degree of fertility that cannot by any other process be so easily obtained. The proper principle to govern the ploughing of most soils is, to yearly deepen them with the plough, until they have reached the greatest depth that can be attained by the common plough, without destroying the appearance and efficiency of the work. This can scarcely be more than ten inches, for the width must always exceed the depth of the furrow at least fifteen per cent. The average

depth of furrow in this country does not exceed six inches, and a very large breadth of land has never been ploughed beyond five inches in depth. Year after year a few inches of surface-soil, being turned up to the parching influence of the sun, and sown broadcast with the cereal grains, without any regard to its fitness or adaptation for the particular crop of grain sown, may satisfy those who know but little of the principles of vegetable physiology and the habits of plants; but those who cultivate old mother earth with a view of obtaining a profitable return for the capital and labour invested, will scarcely be satisfied with the stunted and half-starved crops that such shallow ploughing is calculated to produce. The soil should be deepened, on many accounts, but the principal reasons for doing so are, that it is a means of mixing with the partially exhausted surface-soil a liberal store of food for the plants, thereby bringing within reach of the roots those properties in the subsoil that were previously exhausted from the surface-soil, by frequently cropping it with the cereal grains; that it prevents damage to the crops from draught, in those seasons when rains seldom occur; that it causes a stronger growth of straw, and thus the crops are not so much liable to mildew and rust; and that it imparts a mechanical influence upon soils, through which those that are naturally light and porous, and that are altogether unadapted for the profitable growth of wheat, may be made to yield, in many instances, the heaviest crops, for a succession of years, without any perceptible diminution.

THE PEA CROP.

This may be viewed in many points as a very important crop to the Canadian Farmer. Its main value consists in its being best adapted of any of the coarse grains for making Pork; and, also, as an article of export. It is most productive on rich clay soils, but may be grown with profit on almost every variety of soil, excepting those in which sand forms the principal ingredient. An average crop of Peas may be rated at thirty bushels per acre; but on rich clay soils forty bushels may with confidence be reckoned upon. To obtain as large a yield as the latter will, of course, require clean cultiva-

tion, and the ground must be in the highest state of productiveness. Peas should be sown early, so that the ground may be covered before the hot weather in summer sets in; and, besides, a much greater quantity of seed should be used than what is generally done by the Farmers of Canada. It will be found that three bushels per acre of seed, and early sowing, will in most cases secure a full and abundant growth of haulm, unless the land be in very poor cultivation. If the latter be the case, as soon as the plants get two or three inches above the surface of the ground, a top dressing of gypsum, at the rate of one bushel per acre, (or, four bushels of unleached house ashes will answer the same purpose,) applied broadcast, will assist the growth of straw very powerfully, and will, in most cases, be the means of adding at least twenty per cent. to the yield of marketable Peas. In cultivating the Pea crop, it is important that the growth of haulm (i.e. *straw*) should be so abundant as to smother all weeds and wild grasses.—This is more particularly the case where it is intended to be a preparative crop for fall Wheat, which should invariably be the case in those districts where the latter crop can be grown with certainty and profit. It is rather difficult to cover seed Peas with the common harrows; and a nine-tooth Cultivator will be found an efficient implement for that purpose. But a still better plan is to nicely rib the land with a ribbing plough, each rib or furrow being from ten to twelve inches asunder; and, by sowing the seed broadcast, and harrowing the land twice, lengthwise of the furrow, the seed will be thoroughly covered, and the plants will come up in rows as regularly as if a drilling machine had been employed. If weeds or grass should spring up between the rows, in the early part of the month of June, the crop may be horse-hoed once or twice—by means of which the mechanical texture of the soil will be materially improved for the crop of Wheat intended to succeed it; and, besides, it will be the means of increasing the yield at least twenty per cent.

Pea straw, if the crop is harvested a few days before it is ripe, is quite equal to hay for sheep and colts. There is no cheaper means of fattening sheep in autumn and winter, than to feed

them on unthreshed peas, which have been cut a few days before the crop was ripe, and carefully cured—preserving, if possible, the bright green colour natural to the pea haulm cut and cured at a period when about two thirds of the peas have changed their colour to a light-yellow. The quantity of mutton which can be made from the produce of a ten-acre-field of peas, cut, cured, and fed in the manner described, would astonish the person who has not given the matter a careful consideration. The day is not far distant when the Farmers of this country will ridicule the idea of naked summer fallows for Fall Wheat! when, by sowing peas, and some other crops which we shall hereafter mention, they can make the products of their crops pay the expense of managing, and also those of the wheat crop. Peas of a good quality, and of choice varieties, will always bring a highly remunerating price, for export; and when once the character of Canadian peas becomes raised to its proper standard, it will be a difficult matter to supply the demand. The Pea crop draws its food largely from the atmosphere; and, besides, it leaves the ground in better condition than it was at the time when the seed was sown; and, for these, as well as the other reasons pointed out, it should occupy a much more important rank than it does among the crops grown by Canadian Farmers.

SPRING WHEAT.

The past year, having been an unfavourable one for Spring Wheat, it is not to be expected that as much ground will be occupied this season with this crop as has been the case in former years. For five or six years in succession, Spring Wheat has yielded more bushels per acre, on tolerably rich and well-cultivated land, than did Winter Wheat; and, as might have been expected, it soon became very popular—so much so, indeed, that sufficient of it was raised to supply the home consumption; and, besides, large quantities were shipped to Britain, which soon had a prejudicial influence on Canadian flour. The system of mixing Spring with Winter Wheat was resorted to by our Millers, in order to improve the character of Spring Wheat flour; but what was saved in this way was more than lost from the bad character that was given some of the choicest Canadian

brands. The Inspectors of Flour at last determined that Spring Wheat flour should be branded as such; and, by this means the two qualities were kept distinct. The failure the past season was so great, that the country from this source alone must have sustained a loss equal to £400,000! The failure of Spring Wheat was not confined to one District, but it was general from one end of the Province to the other. There were, certainly, isolated cases; but nineteen-twentieths of the crop did not more than pay the expenses of harvesting, thrashing, cleaning, and taking to and from mill, leaving nothing for the payment of rent, seed, and cultivation. So that it will be seen, that the Spring Wheat crop of 1848 was not only a non-paying one, but that it subjected the Farmers to a loss of some £1 10s. per acre, besides a great disappointment. On the farm occupied by the writer of this article, upwards of eighty acres of Spring Wheat was sown and harvested the past season, which, to all appearance, ten days before the crop was cut, gave most satisfactory evidence that it would yield, on an average throughout the entire crop, a little upwards of thirty bushels of sound grain to the acre; but, in reality, it yielded only ten bushels of a very inferior sample—so bad, indeed, that in other years it would have been feed to the cattle in an unthrashed state.

It will require, but very little calculation to ascertain the actual loss that a farmer would sustain whose crop so singularly failed as the one alluded to, and which by no means is an isolated case. The loss of rent, value of seed, and the cost of ploughing the entire eighty acres, in the autumn and spring, would be sufficient alone to make a farmer very cautious in seeding down so great a breadth of land with a crop that would occasionally prove so thoroughly fruitless. The largest spring wheat crops of which the writer has any knowledge, exceeded two hundred acres, which to all appearance a few days before harvest, would give an average product of twenty-five bushels per acre, but which, in reality, did not pay the cost of harvesting. The owner of the crop in question assured us that his actual loss might be safely estimated at £500.

Although the farmers of Canada may look upon the business of growing spring wheat with a good deal of doubt as to its favourable result, yet it must not be received as being more subject to risk than autumn wheat, when a period of eight or ten years are taken into the calculation. On the score of economy, the country should be supplied with a sufficient quantity of spring wheat flour, to meet the entire local demand for breadstuffs, and the flour manufactured from winter wheat, should be exported to the markets of the mother country. It is useless to sow this crop upon badly prepared ground, and it should also be sown as early as possible, or as soon as the ground becomes sufficiently dry to work the harrows with efficiency. In most cases it is well to have the ground well prepared for spring wheat in autumn, and when this is done, the seed should be sown as early as possible. When it is not intended to cross plough in spring, it is an excellent practice to pass a steel tooth cultivator over the ground once or twice, if time will admit of it, just before sowing the seed. From five to six pecks of seed per acre will not be found too much on most soils; and before sowing the seed much care should be observed in thoroughly purifying it from all other grains, and the seeds of weeds, as well as smut. A little care in this respect will much more than repay the cost, and besides, a perfectly pure sample of grain is always more creditable to the grower, than one that is mixed with other species of grain, and that is discoloured with smut.

BARLEY.

This grain being principally used for malting purposes, is not so important a crop to the country as some others. The land for barley requires to be well worked with the plough, harrow, and roller, and by rights, should be ploughed in autumn, so that by the action of frost it may be made perfectly friable. For a matter of experiment, the editor, a few years ago, in cultivating fifteen acres of barley land, ploughed a portion of the field twice, and the other portion three times, and another four times; that which was ploughed twice yielded 30 bushels, that three times 40 bushels, and that four times 50 bushels per acre. No portion of the land was ploughed only once, but

If it had been, it doubtless would not have yielded more than 20 bushels per acre. Between each ploughing, the land was harrowed lengthwise and crosswise of the furrow, by which means the most perfect state of tilth was produced. Two pecks of seed should be sown per acre; and it is useless to sow this crop upon land unless it be rich, and in a high state of cultivation.

CULTIVATION OF OATS.

There are few crops so easily cultivated as oats, yet, to get a large yield, it requires that the land should be in the highest state of fertility. This crop is usually grown for the purposes of provender, for which it is peculiarly adapted for horses. Of late years an increased demand and value have been imparted to this grain, through the establishment of a great number of oat mills. A small proportion of the product of those establishments is exported to England, but the great bulk is consumed by the home population, thus taking the place of wheat flour. In many points of view, oatmeal is a more nutritious article of diet than wheat flour, and as the crop is much more easily cultivated than wheat, its consumption, as an article of food for man is a matter of much importance to the country. The oat crop may be very considerably increased, without materially lessening the amount of wheat grown in the province; and, therefore, whether it be consumed at home, or is exported, it is so much real gain to the country. If 100,000 barrels of oatmeal-flour be manufactured and consumed in the country, it is obvious that it would be a means of increasing the exports of wheat flour 100,000 barrels, and would thus enrich the country, by providing a means for paying for the imports at the rate of £100,000 per annum. If a saving of this kind can be made, and, besides, an equal quantity of oatmeal exported; both of which are quite practicable, this crop would then become on the list of exports, of third rate importance. Much of the low fertile lands of the country, that is quite too rich and wet for winter wheat, would grow most abundant crops of oats; and if lands like these were much more extensively brought into cultivation, and sowed down with the culti-

vated grasses, and occasionally broken up and sown with two or more successive crops, and the oats converted into oatmeal, a much greater quantity might by that means be produced than what was supposed might be done in the foregoing calculation.

On land that is well-adapted for wheat and clover, it would be very unwise to sow a greater quantity of oats than would be sufficient to supply the horses and other stock on the farm. When oats are sown as provender upon land that is not in a high state of fertility, it is an excellent practice to sow about twenty-five per cent. of the quantity of seed with peas. The peas, having broad leaves, will extract much of their food from the atmosphere; and, besides, they will shade the ground, to a considerable extent, and thereby tend to increase, rather than lessen, the yield of oats. From ten to twelve bushels of a very superior quality of peas may be grown per acre among the oats, without seriously affecting the average product of the latter crop, which may be separated from the oats by the use of riddles for the purpose, or they may be ground together, and consumed as food for stock. The average yield of oats, in the best cultivated districts, does not exceed forty bushels per acre; and if the whole wheat crop of the country were taken into the calculation, it is highly probable that the average, extending over a number of years, would not exceed thirty bushels per acre. During a period of eight or ten years, the cash value of oats does not exceed one shilling and threepence per bushel, at which average the crop is worth only about £2 per acre, which will scarcely pay the rent and cost of cultivation. Those farmers, however, who cultivate this crop with a view of making a paying one, are not satisfied with a less average than fifty bushels per acre; and by such farmers who cultivate their land upon correct principles, from seventy to eighty bushels per acre are, in favourable years for vegetation, produced. The heaviest crop of oats of which we have any knowledge were grown upon a ten acre field, which had been in pasturage upwards of twenty years from

the period it had been brought into a state of cultivation, which was broken up as soon as the land could be ploughed in the spring, and sown with three bushels of oats per acre. The field in question yielded *one hundred and twenty* bushels per acre, of an excellent sample of grain.

In sowing this crop, two things should be observed; first, that the ground should be rich in decomposed vegetable matter, and, secondly, it should be sown very early in the spring, so that the ground may be shaded before the approach of the hot, dry weather, which *most usue*" occurs in the latter part of June and the month of July. If the land be not sufficiently rich to produce fifty bushels per acre, then it should be seeded down with clover and timothy, and allowed to remain in that state, in pasturage, till it becomes so; and if it be exceedingly rich, four bushels of seed may be safely sown per acre; which will secure a thick and full growth of straw, without risk of the crop being lodged:

SOWING GRASS SEEDS.

Many experiments have been made in this country with the cultivated grasses that are in high repute in Great Britain, and other countries in Europe, but they have almost invariably failed in giving that satisfaction that was anticipated from them, before they were made. In fact, the perennial grasses of Europe will not endure the rigour of a Canadian winter, and therefore it is useless to recommend them to public favour. Lucerne will, in most cases, live through winter, if sown upon a dry, deep, and porous soil; but then it bears no comparison to Red clover, either as an article for soiling, or for hay. A much greater quantity of herbage may be obtained from a given quantity of land of the former than of the latter; but it is exceedingly probable, that the latter does possess more nutritive properties for horned cattle and horses; besides, the lucerne exhausts the soil to a greater extent than any other of the varieties of clover, and its roots cannot be broken with an ordinary plough.

The grasses best suited for Canada, are clover and timothy. They should almost invariably be sown together, and the proportions in

which the seed should be mixed, before being sown, will much depend upon the character of the soil, and the object for which the crop is intended. As a general rule, the plants of clover and timothy should be about equal; but if the growing of clover seed be an object, as it doubtless should be on all good clover soils, in which case, the clover should be about seventy-five per cent of the entire crop; and on the other hand, if the land should be low, and be better adapted for timothy than clover, the former should be as much in the ascendancy as the latter in the former case.

In sowing clover upon winter wheat it cannot be done at a more profitable time than during the first ten days of April. By sowing the seed thus early, it will be washed into the ground by the early spring rains, and will germinate before the seeds of weeds send forth their myriads of plants to occupy the ground, that might be more profitably employed in bringing forward to perfection useful plants. Besides, by sowing early, the clover plants will get a strong hold of the ground before the approach of hot weather, which usually occurs in the months of July and August, during which period, especially in seasons of extreme drouth, more clover plants are destroyed than is done by the severest frosts of winter. Timothy may be sown at the same time with the clover, or it may be deferred later, or may even be sown in the previous autumn, in which case it would, under favourable circumstances, make head with the wheat, even to its prejudice, and therefore it would be well not to subject the wheat crop to such risks, as no advantage to the grass crop would result from it. Soils in which the wheat crop very seldom attains a great growth of straw, should be seeded down with the clover and timothy, with the barley or some other crop. Exceptions may be made to this rule, but, in the main, it will be found that the clover plants will absorb much of the food that should be employed in bringing to perfection the wheat plant, and a direct loss from this course, on lean soils, will frequently happen, of from five to eight bushels per acre. If the soil be excessively rich, just the opposite result will occur, as the clover plants will extract from the soil and atmosphere a great quantity

of fertilizing properties, that would otherwise impart to the wheat plants a top luxuriant growth, causing the crop, in many instances, to be blighted with rust and other diseases. Here are two opposite influences produced from sowing clover with wheat, and it is for the farmer to determine the practice best adapted for the particular soil he cultivates.

Without clover it is vain to carry out the business of farming, for a lengthened period, upon a profitable scale; and, therefore, whether the land be seeded down with the winter or spring crops, or both, one of the main points to be observed is, to be certain to have, at least, one-fourth of the farm occupied with that crop, and to seed down only such fields as are in a high state of cultivation. The best crops to seed down with the cultivated grasses, are barley and spring wheat; spring wheat ranks next to barley, and rye, probably, next to spring wheat. Of all the crops that are cultivated, which are at all adapted for the seeding down of grass seeds, oats are the least suited for that purpose; still it is a common practice to sow grass seed with the crop.

A liberal amount of seed should be sown, and a less quantity than eight pounds of clover seed, and six pounds of timothy seed, per acre, will not secure a full crop of both. One half of the meadow and pasture lands of the country are only in a partially productive state, from the small quantity of seeds that are sown. It is a bad practice to depend upon the natural grasses filling up the blank places caused by sowing too little seed. It is also a practice that all careful husbandmen should avoid, in allowing cattle, horses, and other stock to roam at pleasure over the grass fields in the spring and autumn months. A loss of twenty per cent to the hay crop is generally sustained by this practice; and it would be a much more commendable course to keep every description of stock off the grass lands when they are easily ponched by the treading of horned cattle and other stock, and during which period they might be fed with such provender as could be saved through this and other careful means, that might be uniformly observed, without difficulty, on a well-regulated farm. This is a matter of too much importance to be neglected; and

when no care is taken to preserve meadow lands, especially young clover, from the depredations of stock, during the months of April and November, it should not be a matter of wonder that the hay crop the following seasons is below an average, or scarcely pays for the trouble of harvesting and curing. With a little care, in the management of grass lands, two tons per acre may be safely reckoned upon, and a much less yield of hay would not satisfy a provident and skillful farmer.

The business of growing timothy seed, as an article of export to the United States, is a matter of increasing importance. It is worth, in New York, two dollars per bushel, but our farmers rarely get more than half that sum for it. Fifteen bushels per acre is a fair average yield, and as high as twenty bushels per acre of timothy seed has been produced in the Niagara District, where great quantities of it are grown expressly for the markets of the United States. Timothy, when sown alone, is rather a severe crop on land, but when accompanied, in nearly equal proportions, with clover, it improves rather than injures it.

ON FARM MANAGEMENT.

Prize Essay—By J. J. Thomas.

The great importance of performing in the best manner, the different operations of agriculture, is obvious to every intelligent mind, for on this depends the success of farming. But a good performance of single operations merely, does not constitute the best farmer. The perfection of the art, consists not only in doing everything well, individually, but in a proper adjustment and systematic arrangement of all the parts, so that they shall be done, not only in the best manner and at the right time, but with the most effective and economical expenditure of labor and money. Every thing must move on with clock-work regularity, without interference, even at the most busy seasons of the year.

As this subject includes the whole routine of farming, in a collected view, as well as in its separate details, a treatise upon it might be made to fill volumes; but this being necessarily confined to a few pages, a general outline, with some remarks on its more essential parts, can only be given.

CAPITAL.

The first requisite in all undertakings of magnitude, is to "count the cost." The man who

commences a building, which to finish would cost ten thousand dollars, with a capital of only five thousand, is as certainly ruined, as many farmers are, who, without counting the cost, commence on a scale to which their limited means are wholly inadequate. One of the greatest mistakes which young farmers make in this country, in their anxious wish for large possessions, is, not only in purchasing more land than they can pay for, but in the actual expenditure of all their means, without leaving any even to *begin* the great work of farming. Hence, the farm continues for a long series of years poorly provided with stock, with implements, with manure, and with the necessary labor. From this heavy drawback on the profits of his land, the farmer is kept long in debt; the burthen of which not only disheartens him, but prevents that enterprise and energy which are essential to success. This is one fruitful reason why American agriculture is in many places in so low a state. A close observer, in travelling through the country, is thus enabled often to decide from the appearances of the buildings and premises of each occupant, whether he is in or out of debt.

In England—where the enormous taxes of different kinds, imperiously compel the cultivator to farm well, or not farm at all—the indispensable necessity of a heavy capital to begin with, is fully understood. The man who merely *rents* a farm there must possess as much to stock it and commence operations, as the man who *buys* and pays for a farm of equal size in the best parts of western New York. The result is, that he is enabled to do every thing in the best manner; he is not compelled to bring his goods prematurely to market, to supply his pressing wants; and by having ready money always at command, he can perform every operation at the very best season for product and economy, and make purchases, when necessary, at the most advantageous rate. The English farmer is thus able to pay an amount of tax, often more than the whole product of farms of equal extent in this country.

The importance of possessing the means of doing every thing exactly at the right season, cannot be too highly appreciated. One or two illustrations may set this in a clearer light. Two farmers had each a crop of ruta-bagas, of an acre each. The first, by hoeing his crop early, while the weeds were only an inch high, accomplished the task with two days work, and the young plants then grew vigorously and yielded a heavy return. The second, being prevented by a deficiency of help, had to defer his hoeing one week, and then three days more, by rainy weather, making ten days in all. During this time, the weeds had sprung up six to ten inches high, so as to require, instead of two days no less than six days to hoe them; and so much was the growth of the crop check-

ed at this early stage, that the owner had 150 bushels less on his acre, than the farmer who took time by the forelock. Another instance occurred with an intelligent farmer of this State, who raised two fields of oats on land of similar quality. One field was sown very early and well put in, and yielded a good profit. The other was delayed twelve days, and then hurried; and although the crop was within two-thirds of the amount of the former, yet that difference was just the clear profit of the first crop; so that with the latter, the amount yielded only paid the expenses.

Admitting that the farm is already purchased and paid for, it becomes an object to know what else is needed, and at what cost, before cultivation is commenced. If the buildings and fences are what they should be, which is not often the case, little immediate outlay will be needed for them. But if not, then an estimate must be made of the intended improvement and the necessary sum allotted for them.

Here follows estimates of the quantities, kinds, and prices of live stock, implements, seed, labor, &c, which of course vary according to circumstances; and although interesting, are not essential to a full understanding of the subject, and are omitted for want of space.

SIZE OF FARMS.

After what has just been said, the cultivator will perceive in part the advantages of moderately sized farms for men in moderate circumstances. The great disadvantage of a superficial, skimming culture, is obvious with a moment's attention. Take the corn crop as an illustration. There are a great many farmers to my certain knowledge, whose yearly product per acre does not exceed an average of twenty-five bushels. There are other farmers whom I also well know, who obtain generally not less than sixty bushels per acre, and often eighty to ninety-five. Now observe the difference in the profits of each. The first gets 250 bushels from ten acres. In doing this, he has to plough ten acres, harrow ten acres, mark out ten acres, find seed for ten acres, plant, cultivate, hoe, and cut up ten acres, besides paying for the interest on ten acres, worth from three to five hundred dollars. The other farmer gets 250 bushels from four acres at the farthest; and he only ploughs, plants, cultivates, and hoes, to obtain the same amount, four acres, which from their fine tilth and freedom from grass and weeds, is much easier done, even for an equal surface. The same reasoning applies throughout the farm. Be sure then, to cultivate no more than can be done in the best manner, whether it be ten, fifty, or five hundred acres. A friend who owned a four hundred acre farm, told me that he made less than his next neighbour, who had only seventy-five. Let the man who applies a cor-

tain amount of labour every year to his farm, reduce its dimensions until that labour accomplishes everything in the very best manner. He will doubtless find that the amount of land will thus become much smaller than he supposed, more so than most would be willing to reduce it; but on the other hand, the nett proceeds from it will augment to a greater degree than perhaps could possibly be believed.

But let me not be misunderstood. Large farms are by no means to be objected to, provided the owner has capital enough to cultivate every part as well as some of our best small ones are cultivated.

As an example of what may be obtained from a small piece of land, the following products of fifty acres are given, and are not more than I have known repeatedly to be taken from good land by several thorough farmers:

Acres.				
10 wheat,	35 bush. per acre,	at \$1.00	\$350	
5 corn,	90 " "		.40	180
2 potatoes,	300 " "		.20	120
1 ruta-bagas,	800 " "		.10	80
6 wint.apples,	250 " "		.25	375
6 hay.	2½ tons	"	6.00	90
10 pasture,	worth			60
5 barley	40 bush	"	.40	80
5 oats,	50 "	"	.20	50

Total products of 50 acres of fine land, \$1,385

This aggregate yield is not greater than that obtained by some who might be named from a similar quantity of land. Good land could be brought to that state of fertility very easily at a total cost of one hundred dollars per acre, and then it would be incomparably cheaper than many large poor farms at nothing; for while the fifty acres could be tilled for three hundred and eighty-five dollars, leaving one thousand dollars nett profit, large poor farms hardly pay the work spent upon them. One proprietor of such a farm declared—"It takes me and my hired man all summer at hard work to get enough to pay him only."

LAYING OUT FARMS.

This department is very much neglected. The proper disposition of the different fields, for the sake of economy in fencing, for convenience of access, and for a full command of pasture and protection of crops at all times, has received comparatively little attention from our agricultural writers and from farmers.

Many suppose that this business is very quickly disposed of; that a very few minutes, or hours at most, will enable a man to plan the arrangement of his fields about right. But this is a great error. Even when a farm is of the simplest form, on a flat uniform piece of ground, many things are to be borne in mind in laying it out. In the first place, we all know that the fencing of a moderately sized farm costs many hundred dollars. It is very desirable to do it

well, and use at the same time as little material as possible. To do this much will depend on the shape of the fields, A certain length of fence will enclose more land in the form of a square than in any other practicable shape. Hence fields should approach this form as nearly as possible. Again, the disposition of lanes is a matter of consequence, so as to avoid unnecessary length and fencing, and occupy the least quantity of ground.

But these rules may be materially affected by other considerations. For instance, it is very desirable that land of similar quality may be in the same enclosure. Some may be naturally too wet for any thing but meadow or pasture; some may be much lighter, and susceptible of ploughing, while others are not; some may be naturally sterile, and need unusual manuring, with green crops. All these should, as far as practicable, be included each in its own separate boundary. The situation of surface-drains, forming the boundaries of fields, may influence their shape; facilitates for irrigation may have an essential bearing; convenience for watering cattle is not to be forgotten. Where, in addition to all these considerations, the land is hilly, still more care and thought is required in the subdivision, which may possibly require years of experience; but when fixed fences are once made, it is hard to remove them; hence a previous thorough examination should be made. A farm road, much used for heavy loads, should be made hard and firm, and cannot be easily altered; it should consequently be exactly in the right place, and be dry, level and short—the shape of adjoining fields even conforming to these requisitions; but a road little used should not interfere with the outlines of fields.

FENCES.

The kind of fence used, and the material for its construction, must depend on circumstances and localities. A good fence is always to be preferred to an imperfect one; though it cost more, it will more than save that cost, and three times the amount in vexation besides, by keeping cattle, colts, and pigs out of fields of grain. A thriving farmer, whose whole land, except a small part with stone wall, is enclosed by common rail fence, with upright cedar stakes and connecting caps at the top, finds that it needs renewing once in six years. He accordingly divides his whole amount of fences into six parts, one of which is built new every year. All is thus kept systematically in good repair. Stone walls, if set a foot below the surface to prevent tumbling by frost, are the most durable fence. Hedges have not been sufficiently tried. The English hawthorn is not well adapted to our hotter and drier climate; and though sometimes doing well for a time, is not to be depended on. The buckthorn in New England, and the New-castle and Washington thorns in Pennsylvania and Delaware, have succeeded finely.

GATES.

Every field on the farm should be entered by a good self-shutting and self-fastening gate. A proper inclination in hanging will secure the former requisite, and a good latch, properly constructed, the latter. Each field should be numbered, and the number painted on the gate-post. Let the farmer who has *bars* instead of gates, make a trial of their comparative convenience, by taking them out and replacing them without stopping, as often as he does in one year on his farm, say about six hundred times, and he cannot fail to be satisfied which is the cheapest for use.

BUILDINGS.

These should be as near the centre of the farm as other considerations will admit. All the hay, grain, and straw, being conveyed from the fields to the barn, and most of it back again in manure, the distance of drawing should be as short as possible. This will, also, save much travelling of men and of cattle, to and from the different parts of the farm. The buildings should not, however, be too remote from the public road; and a good, dry, healthy, spot should be chosen. The dwelling should be comfortable but not large—or it should, rather, be adapted to the extent of the lands. A large, costly house, with small farm and other buildings, is a bad indication of management. The censure of the old Roman should be avoided, who, having a small piece of land, built his house so large that he had less occasion to plough than to sweep.

The barn and out buildings should be of ample extent. The barn should have space for hay, grain, and straw. It is a matter of great convenience to have the straw for littering stables, housed, and close at hand, and not out of doors, under a foot of snow. There should be plenty of stables and sheds for all domestic animals. This provision will not only save one third of the fodder, but stock will thrive much better. Cows will give much more milk—sheep will yield more and better wool—and all will pass through the winter more safely. The wood-house near, or attached to the dwelling, should never be forgotten, so long as comfort in building fires, and economy in the use of fuel, are of any importance.

A small, cheap, moveable horse-power should belong to every establishment, to be used in churning, sawing wood, driving washing machine, turning grindstone, cutting straw, and slicing roots.

There should be a large root cellar under the barn, into which the cart may be *dumped* from the outside. One great objection to the culture of ruta-bagas and beets, in this country—the difficulty of winter-keeping—would then vanish.

Both barn and house cellars should be well coated on the bottom and sides, with water-lime

mortar; which is a very cheap and effectual way to exclude both water and rats.

CHOICE OF IMPLEMENTS.

Of those which are much used, the very best only should be procured. This will be attended with a gain every way. The work will be easier done and it will be better done. A labourer who, by the use of a good hoe for one month, can do one quarter more each day, saves, in the whole time, an entire week's labour.

CHOICE OF ANIMALS.

The best of all kinds should be selected, even if costing something more than others. Not "fancy" animals, but those good for use and profit. Cows should be productive of milk, and of a form adapted for beef; oxen, hardy, and fast-working; sheep, kept fine by never selling the best; swine, not the *largest* merely, but those fattening best on least food. A Berkshire, at 200 pounds, fattened on ten bushels corn, is better than a "land pike" of 300 fattened on *fifty* bushels.

Having now taken some notice of the necessary items for commencing farming, it remains to glance a little at

SOILS AND THEIR MANAGEMENT.

Soils are of various kinds, as heavy and light, wet and dry, fertile and sterile. They all require different management, in a greater or less degree.

Heavy soils are often stronger and more productive than light; but they require more labor for pulverization and tillage. They cannot be ploughed when very wet, nor so well when very dry. Although containing greater or less portions of clay, they may be distinguished, as a class, from lighter soils, by the cloddy surface the fields present after ploughing in dry weather; by their cracking in drouth; and by their adhesiveness after rains.

Sandy and gravelly loams, also contain clay, but in smaller quantity; so that they do not present the cloddiness and adhesiveness of heavy soils. Though possessing generally less strength than clay soils, they are far more easily tilled, and may be worked without difficulty in wet weather; they do not crack or bake in drouths. Indian corn, ruta-bagas, and some other crops, succeed best upon them. Sandy soils are very easily tilled, but are generally not strong enough. When made rich, they are fine for some succulent crops.

Peaty soils are generally light and free, containing large quantities of decayed vegetable matter. They are made by draining low and swampy grounds. They are fine for Indian corn, broom corn, barley, potatoes, and turnips. They are great absorbers, and great radiators of heat; hence they become warm in sunshine, and cold on clear nights. For this reason they are peculiarly liable to frosts. Crops planted

upon them must, consequently, be put in late—after spring frosts are over. Corn should be of early varieties, that it may not only be planted late, but ripen early.

Each of these kinds of soil may be variously improved. Most of heavy soils are much improved by draining; open drains to carry off the surface water, and covered drains, that which settles beneath. An acquaintance covered a low, wet, clayey field with a net work of underdrains, and from a production of almost nothing but grass, it yielded the first year forty bushels of wheat per acre—enough to pay the expense; and admitted of much easier tillage afterwards. Heavy soils are also made lighter and freer by manuring; by ploughing undercoats of straw, rotten chips, and swamp muck; and in some rare cases, by carting on sand—though this is usually too expensive for practice. Subsoil ploughing is very beneficial, both in wet seasons and in drouth; the deep, loose bed it makes, receiving the water in heavy rains, and throwing it off to the soil above, when needed. But a frequent repetition of the operation is needed, as the subsoil gradually settles again.

Sandy soils are improved by manuring, by the application of lime, and by frequently turning in green crops. Leached ashes have been found highly beneficial in many places. Where the subsoil is clayey, which is often the case, and especially if marly clay—great advantage is derived from shoveling it up and spreading it on the surface. A neighbour had twenty bushels of wheat per acre on land thus treated, while the rest of the field yielded only five.

MANURES.

These are first among the first of requisites in successful farm management. They are the strong moving powers in agricultural operations. They are as the great steam engine which drives the vessel onward. Good and clean cultivation is, indeed, all-important; but it will avail little without a fertile soil; and this fertility must be created, or kept up, by a copious application of manures. For these contribute directly, or assist indirectly, to the supply of nearly all the nourishment which plants receive; it is these, which, produced chiefly from the decay of dead vegetable and animal matter, combine most powerfully to give new life and vigor; and thus the apparently putrid mass, is the very material which is converted into the most beautiful forms of nature; and plants and brilliant flowers spring up from the decay of old forms, and thus a continued succession of destruction and renovation is carried on through an unlimited series of ages.

Manures possess different degrees of power, partly from their inherent richness, and partly from the rapidity with which they throw off their fertilizing ingredients, in assisting the growth of plants. These are given off by solution in

water, and in the form of gas; the one as liquid manure, which, running down, is absorbed by the fine roots; and the other as air, escaping mostly into the atmosphere, and lost.

The great art, then, of saving and manufacturing manure, consists in retaining and applying to the best advantage, these soluble and gaseous portions. Probably more than one-half of all the materials which exist in the country, are lost, totally lost, by not attending to the drainage of stables and farm yards. This could be retained by a copious application of straw; by littering with saw-dust, where saw-mills are near; and more especially by the frequent coating of yards and stables with dried peat and swamp muck, of which many parts of our State furnish inexhaustible supplies. I say *dried* peat or muck, because if it is already saturated with water, of which it will often take in five-sixths of its own weight, it cannot absorb the liquid portions of the manure. But if it will absorb five-sixths in water, it will, when dried, absorb five-sixths in liquid manure, and both together form a very enriching material. The practice of many farmers shows how little they are aware of the hundreds they are every year losing by suffering this most valuable of their farm products to escape. Indeed, there are not a few who carefully, and very ingeniously, as they suppose, place their barns and cattle yards in such a manner on the sides of hills, that all the drainage may pass off out of the way into the neighbouring stream; and some one mentions a farmer, who, with preeminent shrewdness, built his hog-pen directly across a stream, that he might at once get the cleanings washed away, and prevent their accumulation. He of course succeeded in his wish; but he might, with almost equal propriety, have built his granary across the stream, so as to shovel the wheat into the water when it increased on his hands.

The loss of manure by the escape of gas is often very great. The proof this was finely exhibited by Humphrey Davy, in an experiment, performed by filling a large retort from a heap of fermenting manure, placing the beak among the roots of some grass. Nothing but vapor left the vessel, yet in a few days the grass exhibited greater luxuriance round the beak of the retort than any of the surrounding portions. Hence the superiority of unfermented manure—the rich portions are not yet lost. And hence, too, the importance of preventing this loss by an immediate application and ploughing into the soil, and also by mixing it into composts with muck peat, swamp mud, and even common earth in a dry state,—and of preventing its escape from stables and yards, by a daily strewing with dried peat, lime or plaster.

The superiority of unfermented manure has just been mentioned, which is by many doubted. But, the very facts on which these doubts rest,

only prove the efficacy. For they say, "I have always found fresh manure to be attended with little effect the first year, while yet it remains fresh; but afterwards, when fermentation and decay had taken place, the benefit was great and striking." But here is the proof at hand, that not until the rich, soluble and gaseous parts had well penetrated and been absorbed by the soil, was their powerful and invigorating influence exerted upon the growing plants. Fresh manure is generally in a state not readily mixed with soils; it is thrown into large lumps over the surface, some of which are ploughed in and others not, but none of them prove of immediate use to the crops. But on the other hand, fermented manure, from its ready pulverization, admits of an easy admixture. Let fresh manure be thoroughly ground down and worked into the soil by repeated harrowings, and two or three ploughings, and its influence will be like magic.

Swamp mud has often been spoken of as manure. But those who expect great and striking results from its application, will be disappointed, as the writer has been. Even with ashes, it is much less powerful than stable manure, not only because it possesses less inherent richness, but because it has less soluble parts, and consequently imparts its strength more slowly to growing plants. But this quality only makes it the more enduring. By decoction in water, vegetable mould loses a small portion of its weight by solution; but if the remaining insoluble portion is exposed to air and moisture a few months, another part may be again dissolved. Thus, peat, muck, and all decayed vegetable fibre, becomes a slow but lasting source of nourishment for plants.

But it is, when shoveled out and dried, to be mixed with farm-yard manure, as a recipient for its evanescent parts, that peat or muck becomes preeminently valuable. Some parts of the State abound with inexhaustible supplies in almost every neighbourhood; many land owners have from twenty to a hundred thousand cubic yards of their farms, lying untouched, while half-starved crops are growing in the adjacent fields. There are whole counties so well supplied with it, that if judiciously applied, it would doubtless double their aggregate products.

All neat farming, all profitable farming, and all satisfactory farming, must be attended with a careful sowing of manures. The people of Flanders have long been distinguished for the neatness and excellence of their farms, which they have studied to make like gardens. The care with which they collect all refuse materials which may be converted into manure and increase their composts, is one of the chief reasons of the cleanliness of their towns and residences. And were this subject fully appreciated and attended with a corresponding practice

generally, it would doubtless soon increase by millions the agricultural products of the State.

But there is another subject of scarcely less magnitude. This is a systematic

ROTATION OF CROPS.

If manuring is the steam engine which propels the vessel, rotation is the rudder which guides it in its progress. Unlike manuring, rotation does not increase the labour of culture; it only directs the labour in the most effective manner, by the exercise of judgment and thought.

The limits of this paper does not admit of many remarks on the principles of rotation. The following course, however, has been found among some of the best adapted to our State:

- I. 1st year—Corn and roots well manured;
- 2d year—Wheat, sown with clover seed,
15 lbs. per acre;

- 3d year—Clover, one or more years, according to fertility and amount of manure at hand.

- II...1st year—Corn and roots, with all the manure;

- 2d year—Barley and peas;
- 3d year—Wheat, sown with clover;
- 4th year—Clover, one or more years.

- III...1st year—Corn and roots, with all the manure;

- 2d year—Barley;
- 3d year—Wheat, sown with clover;
- 4th year—Pasture;
- 5th year—Meadow;
- 6th year—Fallow;
- 7th year—Wheat;
- 8th year—Oats, sown with clover;
- 9th year—Pasture, or meadow.

The number of fields must correspond with the number of the changes in each course; the first needing three fields to carry it out, the second four, the third nine. As each field contains a crop each, in the several successive stages of the course, the whole number of fields collectively comprise the entire series of crops every year. Thus in the last above given, there are two fields of wheat growing at once, three of meadow and pasture, one of corn and roots, one of barley, one of oats, and one in summer fallow.

OPERATIONS IN THE ORDER OF TIME.

The vital consequence of doing everything at the right season, is known to every good farmer. To prevent confusion and embarrassment, and keep all things clearly and plainly before the farmer at the right time, he should have a small book to carry in his pocket, having every item of work for each week, or each half month, laid down before their eyes. This can be done to the best advantage to suit every particular locality and difference of climate, by marking each successive week in the season at the top of its respective page. Then as each operation

severally occurs, let him place it under its proper heading; or, if out of season, let him place it back at the right time. Any proposed improvements can be noted down on the right page. Interesting experiments are often suggested in the course of reading or observation, but forgotten when the time comes to try them. By recording them in such a book under the right week, they are brought at once before the mind. Such an arrangement as this will prevent a great deal of the confusion and vexation too often attendant on multifarious cares, and assist very essentially in conducting all the farm work with clock-work regularity and satisfaction.

In reviewing the various items which are most immediately essential to good farm management, some of the most obvious will be—capital enough to buy the farm and to stock it well; to select a size compatible with these requisites; to lay it out in the best manner; to provide it well with fences, gates, and buildings; to select the best animals and the best implements to be had reasonably; to bring the soil into good condition, by draining, manuring, and good culture; to have every part under a good rotation of crops; and every operation arranged, so as all to be conducted systematically, without clashing and confusion. An attention to all these points would place agriculture on a very different footing from its present condition in many places and with most farmers. The business then, instead of being repulsive, as it so frequently is, to our young men, would be attended with real enjoyment and pleasure.

But in all improvements, in all enterprises, the great truth must not be forgotten, that success is not to be suspected without diligence and industry. We must sow in spring, and cultivate in summer, if we would reap an abundant harvest in autumn. When we see young farmers commence in life without a strict attention to business, which they neglect for mere pleasure, well may we in imagination see future crops lost by careless tillage—broken fences, unbinged gates, and fields filled with weeds—tools destroyed by heedlessness, property wasted by recklessness, and disorder and confusion triumphant; and unpaid debts, duns, and executions, already hanging over the premises. But on the other hand, to see cheerful-faced, ready-handed industry, directed by reason and intelligence, and order, energy, and economy, guiding the operations of the farm—with smooth, clean, fields, and neat trim fences—rich, verdant pastures, and fine cattle enjoying them, and broad waving meadows and golden harvests, and waste and extravagance driven into exile, we need not fear the success of such a farmer—debts cannot stare him in the face, nor duns enter his threshold.

It is such enterprise as this, that must place our country on a substantial basis. Agriculture

in a highly improved state, must be the means, which next to the righteousness which truly exalts a nation, will contribute to its enduring prosperity. All trades and commerce depend on this great art as their foundation. The cultivation of the soil and of plants was the earliest occupation of man; it has in all ages been his chief means of subsistence; it still continues to furnish employment to the great majority of the human race. It is truly the great art of peace, as during wars and commotions it has languished and declined, but rises again in strength and vigor when men have lived in peace with each other—it has then flourished and spread, converted the wilderness into life and beauty, and refreshed and adorned nature with embellished culture. For its calm and tranquil pleasures—for its peaceful and healthful labours—away from the fretful and feverish life of crowded cities,—“in the free air and beneath the bright sun of heaven,”—many, who have spent the morning and noon of their lives in the anxious cares of commercial life, have sighed for a scene of peace and quietude for the evening of their days.

DRILL HUSBANDRY.

The broad-cast system of sowing wheat, oats, barley, rye, and peas, generally prevails in this country. It is not practiced because it is the best, but has been handed down from father to son, like an heir-loom, for many generations, and indeed is the only system of which the great mass of our farmers have any knowledge. The intelligence and enterprise of our American farmers have become proverbial throughout the entire civilized world, and it is natural to infer that it is only necessary to point out an improved system of managing any branch of the ancient and noble profession of Agriculture, to at once enlist in its favour all those whose circumstances and means would admit of its profitable introduction. A portion of the agricultural press of this country have recently made a favourable mention of drill husbandry, and in some instances the knowledge thus imparted has been seized upon and practiced in a manner highly creditable to the parties concerned.

In various portions of the United States may be found very sensible and enterprising farmers who originally migrated from the countries of Europe where drill husbandry has long been successfully practiced; but, strange to say, as if by common consent, it has almost invariably been the case that this as well as many of the other acknowledged improved systems of farm practice in general use in those countries, have been pronounced inapplicable to the agriculture of America. The system of passing wholesale opinions, and looking merely at the surface of things, does not answer a wise purpose at this enlightened period of the history of agriculture. That drill husbandry can be

profitably practiced in this country, has been thoroughly proved by the writer and scores of other American farmers, and when accompanied by horse-hoeing, at least twenty per cent. may be added to the yield of those crops enumerated above. From a number of trials, some of which were made upon a pretty large scale, an additional average of five bushels of wheat per acre from drill husbandry alone, was produced; and when horse hoed, a still further additional average of five bushels per acre was the result. So large an extra yield as this should certainly be a sufficient inducement to influence every thinking man to make some effort in becoming acquainted with this or any other system of agriculture adapted to produce so favorable a result.

Some of the most prominent benefits to be gained by drill husbandry are, a saving of about one-fourth in seed; the regular distribution of seed in rows to a uniform depth; the free admission that is given to the air and rays of the sun, between the rows of the plants; the excellent opportunity it affords the farmer for the eradication of noxious weeds that may appear in the growing crops; and for the use of the horse hoe in the early spring and summer months, by which a much larger growth of straw and yield of grain will be produced on most soils, and besides the ground will be thoroughly cleaned and improved in texture for the succeeding crops.

The saving in the quantity of seed is not an object that should influence a change of system in the mode of farming in this country, so much as that of obtaining a greatly increased yield; but nevertheless, when a large breadth of land is sown, a saving of one or two pecks of seed per acre is an item of some importance. When the seed is sown in rows, the roots of the plants, especially of winter wheat, become interwoven in each other and hence are not so likely to be thrown out and destroyed by the action of winter and spring frosts as if sown broad-cast, and besides the tops of the plants spread and cover the roots, which afford a natural protection to them during the most critical period in the growth of the wheat plant, in the northern sections of our country.

If a portion of a field be sown with a drilling machine, and another portion be sown broad-cast, that which is drilled will not suffer nearly as much by severe frosts as that sown broad-cast. After an extremely cold winter, or a cold backward spring, wheat sown in the ordinary method, will in most cases, have a sickly and stunted appearance; whereas that sown with a proper drilling machine will scarcely be effected by the frost. There may be exceptions to this rule, but after many years experience with both systems it has been found the case in almost every instance where drill husbandry has been efficiently tested.

The regular width between the rows should not be less than nine or more than twelve inches. Where drilling grain crops is practiced with a view of employing horse hoes to clean the ground, the rows should be about eleven inches asunder; a less distance than this would be advisable, if the crops are not intended to be hoed; but if the rows be much less than a foot apart, it will be found difficult to efficiently work the land with hoes while the crops are in a rapidly growing state. Horse hoeing a crop of wheat or other grain, once or twice in the early part of summer, will promote a very strong and healthy growth of plants, and land that ordinarily produces only fifteen or twenty bushels per acre, will, under favourable circumstances, yield from thirty to thirty-five, and even as high as forty bushels per acre. While this statement will be found to fully accord with the practice of most of those who adopt drill husbandry and horse hoeing, yet it must not be forgotten that there are soils which do not possess a sufficient amount of the requisite elements or food for the wheat plants, to produce so large a product, and hence a much less average increased yield must be taken in the aggregate.

A smart plough-boy with the aid of a horse, and a single drill horse hoe, will find no difficulty in cleaning three acres per day, in the long days of the month of May or June. Two such hoeings would not cost more than one dollar per acre, which is a very trifling expenditure, when the advantages resulting therefrom are carefully taken into account. By the use of the improved English self-expanding horse hoe, one man and a horse will clean in a more perfect manner than can be done by employing hand hoes, from eight to ten acres per day; but as these machines, being constructed entirely of wrought iron and steel, are very expensive, their use in this country is not likely to become very general.

The increased quantity of straw produced by horse hoeing a crop of wheat, barley, peas, oats or rye in the manner described, may be safely calculated at an average of thirty per cent. on the amount that would be produced by the ordinary method of sowing those grains broad-cast. The value of this straw in many parts of our country, especially near large cities would be an object, and where it is not a marketable article, it will be found worth at least as much as the outlay in hoeing the crop, for the purpose of fodder and manure. The extra cleanliness of the ground produced by the frequent use of horse hoes among growing crops, is an advantage that must not be slightly passed over.

The extra large yield of straw, the proportionally increased yield of grain, and the superior tilth or cleanliness imparted to the soil by the practice of drilling and horse hoeing the ordinary field crops grown in our country, are of such great magnitude that no intelligent cultivator

tor should for a moment neglect to make himself thoroughly acquainted with the subject. Every one acquainted with the science and practice of agriculture must have observed the importance of thoroughly disintegrating or pulverizing the soil, and who is there but must have observed the powerful influence that a single hoeing has upon the growth of a crop of garden or field vegetables? No one would think of obtaining a full average of corn without previously pulverizing the ground for the crop, and also, would frequently employ the hand or horse hoe in keeping the ground clean, for the purpose of loosening it, so that the lateral and fibrous roots of the plants might have a perfect freedom in searching for the requisite supply of food to bring them forward to a full and healthy state of maturity. An equal benefit will be found in hoeing field crops, which work cannot be done unless the seed be sown in regular row.

There are various methods of sowing grain in drills, and the variety of machines used for that purpose in Europe have become so numerous that a clear description of them would scarcely be found interesting to the American farmer. The ingenuity of our mechanics has within the few past years been happily turned to the investigation of this branch of agricultural mechanics, which has resulted in the production of machines for drilling grain that are in many very important particulars superior to the best in use in Europe. These machines are cheap and simple, and before we bring our series on "Drill Husbandry" to a close, shall be described, so that their particular methods may be understood and appreciated.

Although horse hoeing is not indispensable to drill husbandry, still, on the score of economy, it should rarely if ever be neglected, and hence in discussing the merits of the latter, we shall invariably press upon the attention of our readers the importance of the former.—[Genesee Farmer.

REVIEW OF THE JANUARY NO. OF THE FARMER.

The following remarks, by a correspondent to the Genesee Farmer, are so applicable to the circumstances of the "Farmer and Mechanic," that we cannot resist the temptation to insert them. We recommend them to the special notice of the farmers and mechanics of Canada:—

Mr. Moore:—I have been looking over your January number, and am much pleased with its appearance, both as to matter and manner. I am surprised that so few among your 20,000 subscribers become contributors to its pages. There is probably no one single individual among them but what knows some one fact that accident, experience or reason has taught him, that would be interesting and valuable to perhaps

nine-tenths of your readers. I can hardly conceive of a person who has the good taste to take and read your paper, but what has the ability to communicate his experience through its pages. In my voyage of life I have never yet found that sober person that I could not dig something out of worth knowing. All useful facts, communicated in howsoever homely style, with your correction of grammatical construction and orthography, are of paramount importance. I am convinced that it is impossible for an editor—a single mind, to be able to amuse and instruct his readers, for years and years together, unassisted; his pond of thought, ideas and facts, will eventually run out—to use a homely phrase, his barrel will run emptyings; therefore, those interested in multiplying facts, and sending forth the knowledge and experience of years, in the different operations and effects of the great science of agriculture, ought to lend a hand.

You, reader—yes, you—as Nathan said to David, "Thou art the man," who can thus render some important benefit to your fellow laborer in the great battle of life; which like the tears of the recording angel, may blot out some of your short comings, with the congratulation of saying, I have not lived in vain; a satisfaction that many, I fear in this breathing world, who have heaped up the acres and the paltry dollars, will not arrive at, and who will cease to be without being able to say, I have left one valuable fact or discovery for the benefit of mankind. Perhaps, Mr. Editor, I shall come broadly in that category; but if so, it sha'n't be for lack of good will.

There is a saying that doctors never take their own medicines, and that they try it on a dog first; but with your leave, I propose to take mine and to try it on you, by looking over your monthly numbers and telling you plainly what some folks think of your articles—mechanical execution, errors of the printer, &c., &c., a kind of fire-side review, with the notions and views of one of the million.

Horn-Ail in Cattle.

This is a disease rather prevalent in this part of the country, the actual seat and character of which, I think, is but little understood among our farmers. The horn is not, as is generally supposed, the original seat of the disease, it being merely a continuation of the frontal bones, the sinews of which extend to the very tip of the horn, and in which, with the surrounding membrane, the disease first commences, afterwards extending to the horn. At this time the farmer generally commences his treatment, notwithstanding the disease may have existed several weeks unobserved, the possibility of which I will endeavour to convince him, by relating some of the primary symptoms of this disease

—*Horn-Ail*, so called. They consist in impaired appetite, absence of dew upon the muzzle, pulse and breathing accelerated, increased heat of the horns, thirst, and frequent constipation of the bowels. Now, at this state of the disease, were the farmer or owner to apply the proper remedies, horn-ail would seldom exist. Instead of this being done, little notice is taken of the animal till all the primary symptoms have subsided, and another set show themselves, such as, greater loss of appetite, depression of the spirits, staring coat, wasting of the body, horns cold, discharge from the nose, a dull, spiritless appearance. This morbid change of the parts, having extended to the horn, terminates in suppuration of its softer parts, and consequently the honeycomb-like cells appear empty when bored into with a gimlet—that being the farmer's remedy at this stage of the disease, generally to him the first stage. He follows the operation by pouging into the hole some irritating mixture, which seldom prove of any avail. I would not say this is the case with every one, but it is thus too frequently. Some, at an earlier stage, commence giving a dose of purging medicine, applying an external stimulant between the horns, changing the diet for a more laxative one, and one easy of digestion. By these proceedings, in some instances they restore the animal to health; at other times the disease terminates differently, by extending to the organs of respiration, producing catarrh, bronchitis, or even pneumonia, (inflammation of the lungs,) which, if not promptly and properly treated, terminates in death. The causes which give rise to this disease are generally pretended difficult to discover. Yet, upon reflection and inquiry, they are easily traced out. Perhaps the door or window of the cow-house have been left open, and a cold wind allowed to blow directly upon the animals. Perhaps they have been turned out into the yard during a cold storm, supposing that, *they being animals*, it will not hurt them, while they are just as liable to take cold as man, if exposed to the same vicissitudes of temperature. Again: frequently their diet is not sufficiently nutritious to keep up the necessary degree of animal heat to resist the excessive cold of our winters, for it is at this season when it prevails the most.

For two years past, I have attended the neat stock belonging to the State Agricultural Society, under the care of E. Phinney, Esq., of Lexington, during which time I have never seen a case of horn-ail, its nonexistence being attributable to the comfortable manner in which they are treated.

Another cause of this disease is in the fodder with which the cattle are fed, it being full of dust. In breathing, the dust is drawn up the nose, into the cavities of the head; irritation of the lining membrane is occasioned, and extends

till the disease is established in one or all the parts before named.

The treatment I prescribe, when called to animals labouring under this disease, in its primary stages, is to place them in a comfortably warm situation, giving them a clean, dry bed to lie upon, a diet easy of digestion, should they be inclined to eat; a dose of moderately purging physic, with such medicine once or twice during the day, as the case may require, and which shall allay fever at the same time, and allow the patient to drink at liberty of cold water. Should I not be called till the disease has assumed a chronic character, I then, after seeing the patient housed comfortably, and giving it a dose of laxative medicine, commence giving one or two doses in the day of cordials, combined with vegetable and in some cases mineral tonics.

There are cases, in some instances, wherein the cure is performed by the operations of nature, and without any aid from medicine. In most cases, however, of this disease, as well as all others, nature can be materially assisted by the timely aid of medicine properly applied.—Lowell Journal.

Time for Cutting Timber.

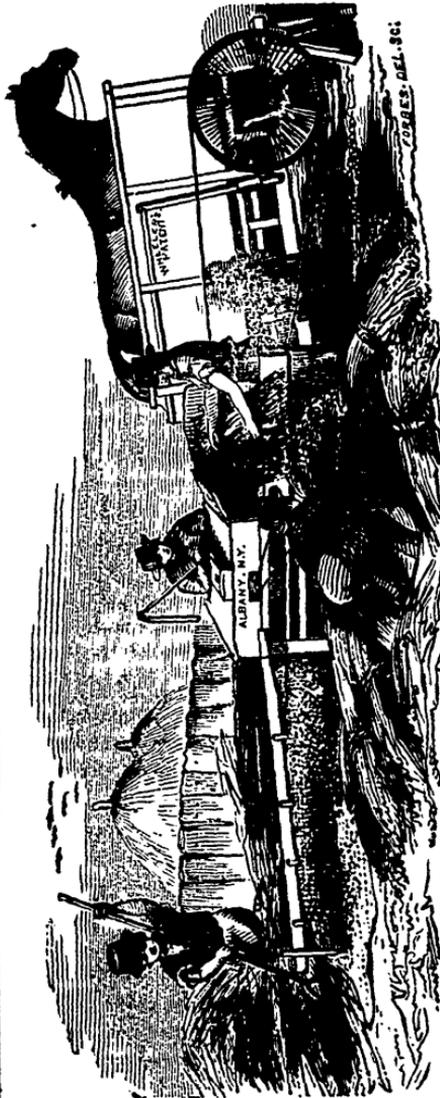
There are various opinions on this subject; some persons preferring one season, and others another. But nearly all are agreed in the opinion that the spring is an unfavourable season, as the tree is then full of sap. Most mechanics, who attend to wood work, prefer timber that is cut in winter, or late in the fall, after the season of vegetation, as it then contains less sap than in spring. If the opinion that it contains less sap in winter than in spring is not correct, it is evident that the sap contained in timber in winter has a less tendency to decay than that of spring.

Farmers who have cut poles for fencing in spring and fall, and let the bark remain on, have generally observed that those cut in fall last far longer than those cut in spring. Some mechanics, who have cut their timber at different seasons, are decidedly in favour of cutting it in June, when the tree is in its greatest vigor, as it is very durable and heavy. At this period it is supposed that the sap or juices of the tree are thick, or of a mucilaginous substance, and that they become fixed in the wood, and fill up the pores, and add to its weight. June is a favorable time for stripping the bark from trees, and this operation is very necessary when timber is cut in June.

We hope that more experiments will be made on this subject, particularly to show which is the best period for cutting timber—in June, when vegetation is in full vigor; or August and September, when it is less active; or late in fall or early in winter, when the tree is in a dormant state.—(New England Farmer.

HORSE-POWER AND OVERSHOT
THRESHER & SEPARATOR.

SIDE-HILL FLOUGHING.



Above is a representation of the Rail-road Horse-power and Overshot Thresher and Separator referred to in the advertisement of Mr. Horace L. Emery, of the Albany Agricultural Warehouse. These machines are in every respect the best adapted to perform the work intended of any we have yet seen. A reference to the advertisement will give full particulars as to price, etc.

Ploughs are now made to go forth and back in the same line, and to turn all the furrows down hill. This is convenient when the land lies in such a position that one side of the hill is inaccessible. When one side only can be ploughed, the side-hill plough turns the whole in one direction, and no lands are marked off. Some farmers object to turning the furrows all down hill, because they would not expose the high parts to barrenness or dead furrows. But ploughing furrows up-hill is decidedly up-hill work, and should be avoided if possible.—When we have a circular piece of land, rising in the middle to a peak or a knoll, we begin to plough at the base and make the dead furrow on the ridge. It is so much easier turning furrows down-hill than up-hill, that we prefer to cart a larger share of manure on to the peak, and make up the loss.—[Mass. Ploughman.

ADVICE IN POULTRY KEEPING.

The principles upon which I rely for success in keeping hens, are, first, to have two breeds—a few to hatch and rear the chickens, and twice the number of everlasting layers, as eggs are more profitable than chickens; second, to get a hatch as early as possible in spring, and to keep them well; these never cast their feathers like the old birds, and if they begin to lay in autumn, lay more or less all winter; third, never to keep old fowls, (none but favorite fowls ought to be kept more than two years:) old birds lay larger eggs than pullets, but not nearly so many; fourth, to give them the best barley I could get, and as much as they could pick up, once a day in summer, and twice in winter: they are not only more profitable, well kept, but the eggs are better. The two breeds I like best are the spotted Dorkings for sitting, and the pheasant breed for laying.—[Ag. Gaz.

PAGE'S PATENT PORTABLE SAW MILL.

This mill has been extensively used, and has fully recommended itself to the public. Mr. Page has made several important improvements upon it, and it is now very generally considered the very best mill extant for sawing lumber. Mr. Page (who is from Baltimore, Md.) has in his possession certificates from gentlemen of undoubted character, saying that with this machine they have cut 8,000 feet of inch boards in one day, with eight horses. He has moved his mill, after sawing 200 boards in the morning, thirteen miles in one day, and was sawing again before eleven o'clock the next morning, without any extra help other than in use at first—six horses and two men.—[N. Y. Farmer and Mechanic.

To our Friends and Patrons.

Agricultural and Mechanical Periodicals deserve, and should receive, the support of the whole community, but more especially of the Farmers and Mechanics for whose *profit* and instruction they are established. For their *profit* we have said; and when the extremely small sum for which they are afforded, is taken into consideration, it is a *certainty*, that the instruction given by their means, if put into practical operation, only make a return infinitely more-greater than the like sum employed in *any* other way. This may be *truly said* of even the least ably conducted among them. Where is the farmer or mechanic who could not listen with pleasure and profit to the conversation of his more learned or experienced neighbour; and *what*, we would ask, is the contents of the various publications but the *written* conversations of the authors of the articles inserted. That there is degrees of benefit to be derived from perusal of the different publications none can deny. From the support and encouragement thus far received, we are led to hope that *all* those who have taken our paper are fully satisfied with the manner in which it is conducted. We are determined that its character shall in *no way* suffer by a lack of attention on our part to sustain it. In our present number we give a variety of cuts, and have made arrangements to continue to do so; and from the confidence we have in the means and ability of our editor, do not fear in any respect a *comparison* of our magazine with *any other* published on *this continent*, and more especially when the extremely low rate at what it is afforded is taken into consideration.

As a further inducement to our friends to exert themselves in our behalf, we offer liberal premiums to persons obtaining the greatest number of subscribers to the current volume, to a list of which, on the second page of this number, we would call attention. We shall continue to offer prizes, in proportion to the amount of patronage we receive, for subscribers to our succeeding volumes.

Publishers and Editors of newspapers will please observe our offer on the second page of this number.

SUGAR MAKING.

March 13th, 1849.

To the Editor of the Farmer and Mechanic.

SIR,—Being lately reminded of the approach of the Sugar making season, and having the vanity to suppose that I might perhaps be able to offer a few instructive remarks on the subject, I determined on making the attempt, and here follows the result:—

It may not, perhaps, be generally known, that the finest loaf sugar is prepared nearly, if not quite as easily, from maple sugar as from the common muscovado; but, as this is really the case, a short account of the method of refining the common sugar may interest as well as benefit your readers. I will therefore attempt to give one as brief as possible. I may in the first place remark, that sugar is not generally refined in those countries where the sugar cane is grown, as there is great difficulty in preventing it from fermenting, on account of the great heat of the climate. I will now proceed to describe the process of purifying the brown sugar, so as to produce the loaf. There are three kinds of substances to be removed before the loaf sugar can be obtained, and these are: first, all impurities, second, coloring matter, and third, the uncrystalisable sugar or molasses. First, to remove all impurities, the sugar is thrown into large cisterns of five or six feet in diameter, and water being added, is dissolved by means of steam, all the bad effects of variable temperature being thus prevented. After it has been dissolved, lime water is added to neutralize any free acid that might be in it and then the solution is mixed with the serum of bullock's blood, which by coagulating, entangles as it were all the solid impurities contained in the sugar; after which it is strained through many thicknesses of a close kind of cotton cloth, when it passes through nearly transparent and tinged slightly of a red color. This color is removed by filtering through a charcoal cistern, which consists of a vessel several feet deep, provided with a double bottom, the upper part of which is perforated with numerous small holes on which a cloth is laid; under the cloth is laid animal charcoal three or four feet deep.

The sugar thus deprived of all impurities and color, is boiled in vacuo by the heat of steam, until it begins to crystallise. It is then allowed to flow out of the boiler, and is poured into moulds of the same shape as the loaves of sugar. These moulds, having an opening in the apex of each, are placed with their small ends downward over jars into which the syrup flows; but as all the syrup cannot be removed in this way, a saturated solution of pure sugar is poured on the top of the mould, through which it persolates and drives before it all the uncrystallisable parts. It is then allowed to remain in the mould for three or four days, and is afterwards taken out; but if the purification has not been managed carefully, the point or top of the loaf is still a little colored, and is therefore scraped or broken off, and by this you can easily tell whether any loaf has been well-refined.

The average product of 112 lbs. of raw sugar, treated in the above manner, is 67 lbs. of refined sugar, 18 lbs. of bastard or second rate sugar, which is obtained by boiling down the inferior syrups, 27 lbs. of molasses, and 4 lbs. of dirt, &c.

Having thus described, as well as I am able, the manner of obtaining loaf sugar, which is adopted in most sugar refineries, I will explain why I have not spoken about the way of making maple sugar, which you might have thought I was going to do, rather than about refining muscovado sugar, for which I can give you a very simple reason, I know nothing about it, never even having seen it made. But I thought, if I gave some account about the method of preparing loaf sugar, that those of your readers, who are interested, might perhaps be able to derive some advantage. I will just offer two suggestions, and then cease troubling you with my tedious letter: First, might it not be an advantage, in boiling down the sap, to fit into the common sugar kettle another of the same form, but smaller (made of whatever material might be thought best), so that a space of one or two inches might be left between them, and this space being filled with water, to boil the sap in the smaller kettle, thus preventing all danger of the heat becoming so great as to burn the sugar? This management would not of course

be required before the sap began to thicken, and before there was danger of burning. And secondly, Would it not benefit the farmers of Canada, if some of our enterprising manufacturers should be induced, by the present duties on imported sugar, to build a refinery for the purification of maple sugar? Which, I may mention, I do not think they will, till our farmers are enterprising enough to make a great deal more than they do at present.

Signs of a Poor Farmer.

He grazes his mowing land late in the spring. Some of his cows are much past their prime. He neglects to keep the dung and ground from the sills of his building. He sows and plants his land till it is exhausted, before he thinks of manuring. He keeps too much stock, and many of them are unruly. He has a place for nothing, and nothing in its place. If he wants a chisel or a hammer, he cannot find it. He seldom does anything in stormy weather, or in an evening. You will often, perhaps, hear of his being in the bar-room, talking of hard times. Although he has been on a piece of land twenty years, ask him for grafted apples, and he will tell you he could not raise them, for he never had any luck. His indolence and carelessness subject him to many accidents. He loses cider for want of a hoop. His plough breaks in his hurry to get in his seed in season, because it was not housed; and in harvest, when he is at work on a distant part of his farm, the hogs break into his garden, for want of a small repair in his fence. He always feels in a hurry, yet in his busiest day he will stop and talk till he has wearied your patience. He is seldom neat in his person, and generally late at public worship. His children are late at school, and their books are torn and dirty. He has no enterprise, and is sure to have no money; or, if he must have it, makes great sacrifices to get it; and as he is slack in his payments, and buys altogether on credit, he purchases every thing at a dear rate. You will see the smoke come out of his chimney long after daylight in winter. His horse stable is not daily cleansed, nor his horse curried. Boards, shingles, and clapboards are to be seen off his building, month after month, without being replaced, and his windows are full of rags. He feeds his hogs and horses with whole grain. If the lambs die, or the wool comes off his sheep, he does not think it is for want of care or food. He is generally a great borrower, and seldom returns the thing borrowed. He is a poor husband, a poor father, a poor neighbor, a poor citizen, and a poor Christian.—[Baltimore Farmer.]

Horticultural.

TRANSPLANTING.

Below we give a Communication from Mr. George Leslie, proprietor of the Toronto Nursery; and it affords us much pleasure to assure our readers, that, from his long experience in the business, his statements may be fully relied on. We would also call their attention to the fact of his having a large assortment of choice Fruit Trees, Shrubs, &c. &c., for sale. We are in hopes of being favoured with *seasonable* articles from his pen on the proper management of the orchard, and fruit and flower garden; for, as he justly observes, "the value of a good orchard is not fully appreciated in this country;" and we shall endeavour to make the Horticultural Department of our paper as instructive as possible.

To the Editor of the *Farmer and Mechanic*.

Toronto Nursery, Kingston Road,
14th March, 1849.

DEAR SIR,—The revolving year has again brought round the season for transplanting Fruit Trees. The increasing interest with which this subject begins to be regarded ought to be fostered and encouraged. A good method of doing this is to bring it *seasonably* under the notice of your readers; and it is hoped the following practical suggestions may be of some service to such (and I hope they are a large number) as contemplate planting out trees this spring. I have been engaged in the business of tree culture for twenty years in this neighbourhood. In recommending varieties of fruit, I shall mention only such kinds as personal observation has convinced me are quite suitable for this region.

The value of a good orchard is not yet fully appreciated in this country. It is a subject which commends itself to every owner of a piece of land, from the farmer, with his hundreds of acres, to the merchant and mechanic, with their town and village lots. Many considerations present themselves to urge upon all the necessity of planting out fruit trees; amongst others, the positive profit resulting to the proprietor, from the ready sale and high price that good fruit does command, ought not to be overlooked. A great augmentation of

domestic comfort is also ensured. The favourable nature of our soil and climate are, in addition, cogent reasons why every family should possess an abundance of choice fruit. Moreover, Canada has a right to share, with other parts of North America, the profit and honour of having her fruit shipped to all parts of the world.

It is superfluous to insist on the necessity of cultivating good fruit. This is universally acknowledged. The progress of civilization and refinement, the increase of population, and the accumulation of wealth invariably create a greater demand for the finer productions of the garden and orchard than can be produced. Besides, the exportation of fruit to the European markets is already an important and increasing branch of the commerce of the United States. American apples are universally popular in England: fruit, of even second-rate quality, is eagerly purchased at a high price. The facilities for procuring fruit-trees, of first-rate excellence, are now such as to leave no excuse for the cultivation of poor, inferior sorts.

Complaints are often heard of the failure of trees after being planted out. This is not surprising, when we consider the source from which many of them have been procured. Such trees as are to be seen hawked through the country may, and generally have been so long out of the ground, and their roots exposed to the sun and air, as completely to dry them up, and destroy their vitality. If people are tempted, under the idea of their being cheap, to purchase such trees, it is no wonder that disappointment is the frequent result. Let your trees be procured from respectable sources: the proprietors of established nurseries find it their interest to do their best for their customers. Such as may favour the Toronto Nursery with a trial, with the view of purchasing trees, would do well, when convenient, to bring their waggons to the ground, and have their trees taken up, and carried home with them. They may then often be planted within forty-eight hours after being dug; and if the following directions for transplanting are carefully followed, success may reasonably be anticipated:—

Have the ground for your orchard securely

fenced, to exclude hogs and cattle, whose presence is fatal to young trees. A southern aspect is preferable, with sufficient declivity to prevent the lodging of superabundant moisture. The ground is then to be ploughed, and the furrow must be so deep as to turn up part of the subsoil. It will also be of great service to cross-plough and harrow it. The trees may then be planted; and much of their future health and vigour depends on the careful manner in which this part of the work is done. The effects of proper transplanting are permanent, and no subsequent amending of the soil can realize the advantages of having the operation properly performed in the first instance.

Let the holes be dug three feet in diameter, and twenty inches deep; throw the subsoil aside, and put in a sufficient quantity of fine surface mould, to bring it to a proper depth to receive the tree. Prune off carefully all bruised and broken portions of the roots, and place the tree in an upright position, spreading out the roots horizontally, in their natural order. Fill in with finely-pulverized surface soil, gently shaking the tree, to fill up all vacuities. When the roots are covered, throw in a pailful of water, and then fill in the remainder of the earth, pressing it firmly down with the foot. This completes the operation, and the tree should then stand about two inches deeper than it did in the Nursery rows. Deep planting is to be avoided, being quite prejudicial to the growth of young trees. The upper roots should not be more than three or four inches under the surface.

Mulching, as it is technically called, should by no means be omitted. It is labour advantageously expended, and consists in putting a quantity (say a barrow load) of long manure around each tree, on the surface. This should be allowed to remain around them till the following spring, when it may be spaded in, at the extremity of the roots. I have often experienced the beneficial effects of this practice, and cannot refrain from urging its adoption in all cases.

To assist your readers in making a selection of superior descriptions of fruit, the following list has been prepared. Nursery Catalogues are useful for general reference; and the one of

this Establishment, recently published, has been favourably noticed by you, in a previous number. In general, to persons unacquainted with the sorts, and who have no means of referring to standard authorities on the subject, the selection may be left to Nursery proprietors: their pursuit naturally leads them to form a correct estimate of the value of orchard products, and a desire to enhance the reputation of their establishment, will induce them to select the most popular varieties.

THE APPLE

Is the world renowned fruit of temperate climates. It is more generally known and universally esteemed than any other. It is not a native of North America, but has been perfectly naturalized. In the Northern States and in Canada it succeeds better than in any other part of the world. Even the same descriptions of fruit grown here are of larger size and finer flavour than can be grown in the moist, cloudy atmosphere of Britain. This climate seems very congenial to its perfect development. It accommodates itself to almost any variety of soil. In Europe it is to be found thriving in all conceivable situations, from the Orkney and Shetland Islands, in the north of Scotland, to the hills and glens of Spain, in the south of Europe. On a deep, heavy loam it is most productive, and attains the greatest perfection. In an orchard, the trees should be thirty feet apart, requiring about fifty to the acre.

Early Fruit.—Red June-eating; Early August (of all early sorts, this deservedly holds the first place); Early Strawberry; Keswick Codlin (a popular English sort, excellent for Cooking from the first of July); Summer Queen, large and fine.

Fall Apples.—Early Crofton or Irish Peach Apple; Fall Pippin ("a noble fruit"); St. Lawrence, Famense or Snow (these two varieties originated in Canada, and for fall fruit cannot be surpassed); Ribston Pippin (in Europe a winter fruit of great excellence, but here not keeping after the end of October); Toole's Indian Raretype; Hawthorndean (begins to bear early, is a handsome fruit, and remarkably productive); Pumpkin Sweeting (large and productive).

Winter Fruit.—Rhode Island Greening (this is pre-eminently the most useful and profitable apple in cultivation: nothing superior to it has yet been discovered. A gentleman of this City, last winter, sent thirty-five barrels of this apple to Glasgow. They were there sold for thirty-five shillings sterling per barrel, leaving a clear profit of upwards of four dollars on each barrel); Baldwin (the best market-apple in Boston); Esopus; Spitzenburg; Holland Pippin; Yellow Bellflower; Hubbardson's Non-such (an early winter fruit); Blue Pearmain; Tolman's Sweeting (productive and superior for baking); Pomme Gris (the finest dessert apple, and a long keeper); Swaar; English Golden Pippin (small, but a long keeper and fine flavour); American Golden Russet (will keep till the end of June.)

Numerous other varieties, perhaps equally good, might be enumerated; but all of these I have had opportunities of testing, and have no hesitation in confidently recommending them.

THE PEAR,

Like the apple, is not indigenous to North America, but was introduced by the early settlers. It is hardy and long-lived, and succeeds admirably here. New varieties, to an almost endless extent, have recently been raised in Europe and the United States. Many of these are of superior quality. Being grown to a much more limited extent than the apple, a few sorts will only be here noticed. The merits of these will be such as are universally acknowledged. The pear delights in a strong clay loam. Light sandy soils should be deepened, by trenching, and a liberal admixture of clay added. Twenty-five feet apart is the proper distance for standard trees. The practice of dwarfing the pear, by grafting or budding on quince stocks, has recently become very popular. This mode is desirable for trees intended for the garden. They occupy little room, and come into bearing the second or third year from the graft or bud. In this way they may be planted at the distance of ten feet.

Summer Pears.—English and French Jargonelles; Summer Bonchretien; Summer Bell; Madelaine.

Fall and Winter Fruit.—Virgalieu; Ste-

ven's Genessee; Bartlett, Buerre Diel; Buerre Gris; Napoleor; Buffum Hazel; Chaumontelle; Winter Orange; Winter Bergamot; St. Germain; Jersey Gratioli.

THE PLUM.

A rich clay soil is best adapted to the plum. The finer sorts are possessed of such rich, luscious flavour, that no apology is wanting to show the necessity of cultivating at least a few choice varieties. In the Toronto market good plums can be sold at from \$4 to \$5 per bushel, a price which amply remunerates the grower. The following are some of the best kinds:—White Egg or White Magnum Bonum; Green Gage; Princes Imperial Gage; Bolmer's, Washington's, Duane's Purple; Coe's Golden Drop; Smith's Orleans; Huling's Superb.

THE CHERRY.

This fruit is ripe at a season when no other is to be obtained. Nothing surpasses it in beauty, delicacy, and richness, for the dessert. Some varieties are also of great value for cooking and preserving. The tree grows rapidly, comes early into bearing, is of a regular and handsome shape, and well adapted for shade and ornament. It combines, in an eminent degree, the useful and the beautiful. The following may be reckoned the very best:—May Duke; Large Red Biggareen; Napoleon Biggareen (the largest and finest cherries known to us); Black Eagle, Black Tartarian; Elton; Yellow Spanish; Transparent; Elkhorn. For preserving, Downer's Late Rate and Mowell's are most esteemed.

THE PEACH.

The growth of this fruit has been attended with some degree of uncertainty in this locality. Occasionally, I have seen as good a crop as could be desired. In some parts of the country, particularly westward of this, it thrives well, and bears abundantly. I am of opinion that if the following, or other similar early varieties only were planted, the chances of failure would be greatly lessened, and a regular crop of this delicious fruit insured:—Early Tiltonson; Early York; Early Crawford; Large Early Red. Raretisse; Yellow Allbergo.

With regard to the proper size and age for transplanting trees, it is difficult to persuade most persons; but that the larger the better.

This is not the case; and the experience of all observant cultivators has convinced them that it is highly injudicious to plant out trees of a very large size. Apples, three, or at most four years from the graft or inoculation, is the best size. They will then be from five to seven feet high. Pears and Plums about the same. Cherries two to three years from the inoculation, and peaches one year.

When young trees have been planted, it is necessary to cut off the young wood of last year's growth to the extent of two-thirds, or, at least, one-half of its length. This concentrates the ascending sap, and greatly facilitates the formation of a fine head. The young tree also suffers less injury from the temporary check it received in removal. Old orchards should be pruned in March or early in April. Where the heads have become dense with branches, they should be thinned out, to admit freely the sun and air. This improves greatly the size and flavour of the fruit. Generally, trees require to be looked over every spring, and all straggling, irregular branches, that interfere with or cross each other, removed. Any diseased or dead wood must also be cut out.

HARDY GRAPES.

It is a prevalent but mistaken notion that the culture of the Vine requires a large amount of professional skill; that it can only be successfully done by practical horticulturists. This is true to some extent in vineries when artificial heat is applied; but the cultivation of hardy sorts in the garden, is an easy matter—almost as simple as that of the currant and gooseberry. The following remarks apply solely to the hardy descriptions, and it is hoped, may have some effect in bringing the practice into more general repute:—

Grapes are grown to a great extent in the United States, on the Ohio River especially, there exists extensive vineyards, the produce of which is manufactured into Maderia, Hock, Champagne, and other wines of superior quality. Large quantities of the fruit also are there packed in saw dust and sent to the markets of New Orleans and New York, for home consumption and export. Our northern region does not admit of profitable vineyard culture to

a great extent. However, as a fruit that can be readily sold, and as being unsurpassed in richness and delicacy, and having formed a prominent part in horticulture from the remotest ages, any praise of mine must be superfluous, and can add nothing to its popularity.

Like other fruits, cold latitudes, the vine is liable to casualties from unfavourable seasons. A late spring frost occasionally destroys the fruit blossoms; an early autumn frost also may sometimes prevent the fruit from fully maturing; but this can be partially remedied by covering them with mats in cold nights. In general, a regular crop may be anticipated from the hardy varieties.

Experience and personal observation are the surest criterions by which to estimate the comparative value of any descriptions of fruit as adapted to particular localities. Following this rule, I would recommend for cultivation all or any of the following sorts: "Alexander," large, black, and good for wine; "Clinton," black, and very prolific; "Catawba," red, the most generally cultivated by the Americans; "Isabella," dark purple, and considered the best hardy grape. These are native Americans, and the best sorts yet in cultivation. Several new seedlings have recently been brought into notice in Ohio. It is the intention of the subscriber to procure a plant of each of the new sorts, from Cleveland, with a view to test their merits in the Toronto Nursery. Of foreign grapes, the White Sweet Water, and Black Hamburg, are the most popular. The former is mostly cultivated here, but the latter is worthy of preference, as being a good and regular bearer, and its fruit in universal esteem.

Any garden soil is suitable for the vine, but dry warm ground is the best. When it is intended to proceed in the best manner and prepare a place expressly, the following is simple and efficacious: Dig out the soil to the depth of thirty inches or three feet, into the bottom of this trench put in nine or ten inches of brick rubbish or broken stones; then fill up with the soil previously taken out—having completely incorporated it with a good quantity of leached ashes, rotten manure and bones. This forms a soil in which the roots delight to riot, and if

well drained it is perfect. The vine soon exhausts the soil within its reach, and in consequence becomes barren. To prevent this, let a quantity of fermented stable manure be yearly dug in as far as the roots extend; washing occasionally with liquid manure, such as soap suds, drainings of the manure heap, &c., is of great service while the fruit is swelling.

The treatment of vines under glass and in open ground, is essentially different—I am writing of the latter only, and for the benefit of amateurs, and not men who have made the business their profession. The first requisite is to secure a perfectly open sunny exposure, south side of a close board fence—it may be assumed that no atmosphere can be too bright or sunny,—next, the vines should be kept within moderate bounds, they are vigorous in growth, and the indulgent cultivator is apt to allow them to cover a large space. This is an error. At first they produce enormous crops, but soon become unfruitful and useless.

I hope I may be excused for taking the liberty of here referring to the grapes grown last season in the garden of John Cameron, Esq., of the Commercial Bank, in this city. This is done without his knowledge. The plants were the Isabella and Sweet Water, and were under the care of Mr. William Gordon, seedsman. The crop was abundant, and the fruit so fine as to excite universal admiration. To have seen them would prove a strange stimulus, to all who have the opportunity, to imitate so worthy an example.

The modes of training the vine are numerous and each method has its own advocates. The following, termed the *upright* mode of training, and *renewal* method of pruning, is simple and easily understood. It is followed generally in England, and in many parts of The United States. Having procured your plants from a nursery, allow two or three shoots to grow unresisted for the first year; in the succeeding fall or early in spring, cut the shoots back to three eyes, allow the strongest of these to form two leading shoots the following season—pinching off all others; at the end of the summer bring down these two shoots to a horizontal position, and fasten them to a bottom rail, about three inches from the surface of the ground,

shortening them into six feet on each side of the plant. From these horizontal branches, whose position is permanent, train three or four others, on each side, to the height of seven or eight feet, in a straight or fan-shaped direction. The following year these upright shoots will bear fruit at every bud, and whilst thus performing their duty, train others between them in a similar way, to bear fruit next year. After the grapes are removed, cut out the branches that bore, leaving the lowest bud, and an inch of wood beyond it. In this way proceed from year to year. Downing says, that this method, if not producing the most abundant crop, invariably yields the finest and largest fruit. The frequent cutting out of the wood, and the vigorous growth of young healthy shoots, are also sure preventatives of the mildew, a disease which, with other modes of treatment, frequently proves fatal.

This communication being altogether practical, I have endeavoured to be as plain and succinct as possible. I will conclude, at this time, by observing, that winter protection, though not absolutely necessary, is yet advisable for greater security. This is done easily by unting all the branches, about the middle of November, having previously pruned them, so as to keep them within the required dimensions. Bring them down to the surface of the ground in a straight line, on either side of the root, and fasten them down with hooked pegs; cover them with soil to the depth of six or seven inches, using no straw or other litter, which is the sure harbinger of mice and other vermin. Do not let fine weather tempt you to uncover them before the middle of the following April.

Finally, as the fruit develops itself, cut off the ends of the shoots bearing the branches, leaving one bud beyond each bunch. As soon as the berries are the size of peas they should be thinned out with a pair of sissors. The extent of this thinning depends on the thickness of the berries. Occasionally I have cut three out of every four. A general rule is to allow plenty of room for each berry; they should not press in any way on each other, and want to be examined about every ten days.

In conclusion, when trees have been planted in a thorough manner, every one should be tied

firmly to a stake, to prevent its being blown about by the wind. The orchard, or at least the ground about the trees, should be cultivated, and occasionally manured for four or five years. This system will ensure healthy, handsome trees, and bring them rapidly forward into a productive state. In a few years a man will have cause to rejoice in the result of his labours, and enjoy the satisfaction of knowing that he has done his family, his descendants, and his country, an essential service.

I am, dear Sir, yours truly,

GEORGE LESLIE.

GOOSEBERRIES AND CURRANTS.—The following are six good varieties of Gooseberries, flavor being the principal consideration: Red Champagne, Woodward's Whitesmith, Pitmas-ton Greengage, Keen's Seedling Warrington, Yellow Champagne, and Red Turkey. With regard to currants, you may be very well satisfied with the Red Dutch and White Dutch. Half your plantation of Red Currants may, however, consist of Red Dutch, and the other half of Knight's Large Red. We are not aware of any White Currant superior to the White Dutch.—[English Paper.

Practical Hints to Amateurs.

By an "Old Digger."

You may transplant, all winter, when the ground is not frozen—only take care not to expose the roots to frost while not covered with soil. In winter-planting, it is best to pile up a mound of earth 6 or 8 inches round the trunk of the tree. This keeps it steady, and protects it, partially, against severe frost.

When a tree brought from a distance has been a long while out of the ground, and looks quite dried up, don't plunge into a tub of water; that would be well-nigh as fatal as giving a gallon at a single drink, to a man nearly dead of thirst. *Moisten* the roots, and after shortening the branches severely, bury the *whole* tree in the ground for three or four days.

When you prune a small branch of a tree, always see that a bud is left opposite the cut; this will help it to heal over quickly: and you will assist the matter still more, by making the cut always a *sloping* one.

Don't let insects of various kinds overrun your orchard or garden, and then lazily fold your arms and say, "it's no use, this trying to raise things, now that so many vermin are about." Spend three days, industriously, in the early stage of the matter, in putting down the rascals, and then look round you and see if a little industry is not better than grumbling.

If you want early vegetables, set yourself, in winter, about making some boxes to protect them. A few cheap boxes, a foot square, with a pane of glass in the top, to put over tender things at night, will cost you but a trifle, and will give you ten days start of the open ground.

To have good currants, gooseberries, or raspberries, the old plants should be dug up at the end of three or four good crops, and their places supplied by young ones. If you plant a few cuttings of the two former, as you should do, every spring, you will always have a supply of fresh plants ready at all times: always cut out all the eyes (buds) of a cutting, on that part which goes in the ground—otherwise you will be troubled by their coming up, year after year, in the form of suckers.

If you have a tree that grows "apace," but won't bear, dig a trench round it, and cut off a third of the roots. This will check its growth, and set it about making fruit-buds.

Never buy fruit trees in the "market-places," of unknown venders, who have no character to lose. You cannot tell by "examining the article," whether they cheat you or not; and you get your tree at half price, only to wish, when it comes to bear, that you had gone to an honest dealer and paid ten times as much, for some thing worth planting. "Hog-Peach" trees are dearer at a penny, than "George the Fourth's" at a dollar.

If you don't love flowers yourself, don't quarrel with them who do. It is a defect in your nature which you ought to be sorry for, rather than abuse those who are more gifted. Of what possible "use" is the rain-bow, we should like to know? And yet a wiser than you did not think the earth complete without it.

Do not grudge the cost and labour necessary to plant a few of the best shade-trees round your house; and if you have any doubts about what to plant, stick in an elm. There are few trees in the world finer than a fine-sweeping elm; and two or three of them will give even a common-looking dwelling a look of dignity. If you plant fruit trees, for shade, they are likely to be broken to pieces for the fruit, and they grow unsightly by the time that forest trees grow spreading and umbrageous.

There are very few men whose friends build so fair a monument to their memory as they can raise with their own hands, by planting an elm or maple where it can grow for a century, to be an ornament to the country.—[Horticulturalist.

TRUTH.

TRUTH is a thrifty evergreen; and, when once thoroughly rooted, it covers the ground so that error can scarce find root.

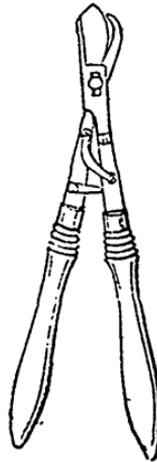
Mechanical.

OUR ILLUSTRATION.

In this number we give, and shall continue to do so, Wood Engravings of Agricultural Implements, and in doing so shall in this, as in all other departments of our paper, make them as *seasonable* as possible. We have been favoured by Mr. Horace L. Emery, of the Albany Agricultural Implement and Seed Store, with a number of Cuts, and take this opportunity of recommending him to our readers, as a man in whose integrity and fair dealing the fullest reliance may be placed, and his implements as being of the most approved construction and substantial workmanship. In connection with this subject, during a long and favourable opportunity of judging of the wants and wishes of the farmers of Canada, we have been painfully struck with the great want of ingenious and enterprising mechanics among us; and what has seemed to us surprising is, that from the difficulty and expense of importing implements, this should be so. The most indispensable requisites of Agricultural Implements are *durability* and *simplicity* of construction, and therefore requiring neither much mechanical skill or ingenuity in the manufacture. Every town and village in Canada would support, and ought to have one or more manufactories of implements, as, from the great wear and tear, farmers should be able to supply themselves near home, so that they might get them repaired with greater facility than by sending them long distances, in many cases impracticable, or by employing inexperienced hands. In cases where castings are used in their construction, they can only be properly repaired where manufactured. This is alone a strong argument in favour of farmers supplying themselves *near* home, that this great defect in our social system should exist, is in a great degree owing to the want of *enterpize* in our mechanics. The late fair at Cobourg exhibited a melancholy and striking contrast between them and our southern neighbours. We shall pay great attention to the MECHANICAL DEPARTMENT of our paper, and shall give illustrations and descriptions of such implements as we judge would

be of service. We are led to do this in the hope of inducing our mechanics to commence their manufacture. We have the advantage, by no means a slight one, of profiting by the ingenuity of our neighbours. One great error into which our mechanics have fallen is in endeavouring to find *customers before* making the implement, forgetting that *ten* farmers would by an approved implement, *when made*, thus enabling them to *see* its construction and mode of operation, to *one* who would order one to be made. Let our mechanics, before commencing the manufacture of any implement, be *sure* that it will answer the purpose for which it is intended, and they may rest assured of finding a ready sale for it. A long experience fully confirms us in this opinion. We shall at all times take pleasure in recommending to our readers such implements as we deem worthy. As an illustration of our remarks, we will mention a case that occurred, among others, with ourselves. We got an order from a distance for some implements, to procure which we were obliged to *order* a portion in Hamilton, another in Newmarket, and the remainder in Toronto, and *wait* until they were *made*; thus requiring the aid of three places before being able to procure what ought to, and would be found in a well-supplied Implement Warehouse.

SLIDING PRUNING SHEARS.

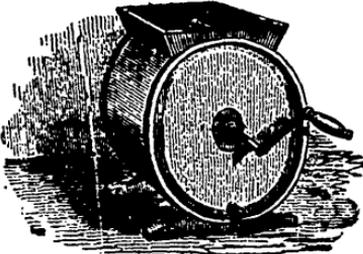


These have wooden handles, and differ from the lopping and branch shears in having a movable centre for the motion of one of the blades, by which means instead of a crushing cut they make a draw cut, leaving the section of the part attached to the tree or shrub smooth and sound, as if cut off with a knife. They are lighter and better finished than the lopping shears.

Lopping or Branch Shears.

These shears are a strong made article, with long wooden handles, and are very useful for cutting thick branches from trees, shrubbery, edges, etc. They are the same as the annexed figure, except the movable centre.

KENDALL'S CYLINDER CHURN.



Too much has not been said in favour of this simple and labour-saving Churn. It is a simple cylinder, with a kind of large hopper upon the top, with a cover or lid to fit. It has an iron shaft, polished, and closely fitted in metal boxes at each end, and on this shaft are suspended two floats or frames, at right angles with each other, thus forming four floats; and, by turning the shaft by means of the crank, the floats being confined to it, are turned at the same time, breaking the cream four times at each revolution of the shaft or crank. These floats are removed or taken out of the churn in a moment, by unscrewing and drawing out the crank first, thus making it very convenient to remove the butter after churning and cleaning the churn.

The churn may be filled more or less to suit those using it, but generally about two-thirds full is the best plan. In churning care should be taken not to turn too fast, as it only delays the coming of the butter, and is harder for the person using it. In case this is filled more than half full, the milk should be drawn off at the bottom, so as to bring the whole below the shaft, before it is withdrawn to take out the butter. Price from \$2 to \$4½. In using they are placed upon a bench, table, or platform.

GAULT'S CHURN.



This is one of the very best Churns, and is in very general use in many parts of the country. It opens in the middle, and the floats are confined to the upper part, and are lifted out of the cream and

butter by opening it, the top being confined on one side by hinges. In operation this churn is not inferior to Kendall's; but in convenience, safety in transportation, and first cost, it has not all the advantages of the latter. It can never be filled quite half full, consequently a

churn considerably larger than Kendall's is required for the same dairy. Price, from \$3 to \$6.

Boys should be Mechanics.

Boys should have tools for their own use, and they should be taught to use them, and keep them in order. In this way every boy may learn the use of common tools; and then, in case he is a farmer, he can attend to various mechanical affairs, and not have to spend a few hours' time to procure a mechanic to do an hour's work, as is often the case with the farmer, especially in sections sparsely settled.

Some boys know so little about the use of tools that their fathers pay a considerable bill annually to furnish them with playthings, when they are big enough to make all carriages, &c., that they need for amusement, if they were furnished with tools, and had but very little instruction.

When a boy is big enough to haul a sled up hill and slide down, he should be capable of making his own sled, and not depend on another. Every boy can do far more than he or his parents are aware of, if he is placed under favourable circumstances for trying, and for developing his mechanical powers.

A farmer once remarked to us that he was in want of a drag at a busy season, and after spending more time in trying to get some one to make it than would have been required to construct it, he was under the necessity of attempting the job himself; and he succeeded well. Had that farmer been trained to the use of tools in his boyhood, he would have known his ability, and would not have wasted his time in the vain endeavour to procure another to do what he could do himself; and that was doubtless only one among many instances of his depending on others for what he might have accomplished himself, at much less expense.—
[New England Farmer.]

PURE OIL FOR CLOCKS AND DELICATE WHEEL WORKS.

This oil should be made to retain its fluidity without being liable to freeze, and also free from acid, so that it will not act upon the metals. To make a very fine oil for the purpose specified, and with the qualities desired, good sperm oil, or an olive oil, should be put into a vessel with seven times its weight of alcohol, and heated nearly to boiling. The liquor should then be decanted, and exposed to the cold. A precipitate will then be formed of a crystalline appearance, which is stearine. The clear solution should then be evaporated to about the fifth of its volume, driving off the alcohol, when the remainder will be found to be aline, which

should be colourless, without taste, almost no smell, very like white olive oil, and not easily affected with cold. Another way is to pour upon oil a concentrated solution of caustic soda, stirring the mixture, beating it slightly to separate the aine from the soap of the stearine, pouring it on a cloth and then pouring off the clear liquid. The latter process is very simple and good. It separates all the acids from the oil and makes a fine oil for machinery. One good quality of Devlan's lucubrating material is, that it is free from all acid—our comon oils are not.

GRAFTING CHISEL.



This is probably the best form for a Grafting Chisel. The wide edge is used for splitting the stock, after being cut off with a fine pruning saw. The two pointed ends are used to open the same to receive the scions.

PATENT SAFETY BRIDLES.

Mr. Henry Seintz, of Marietta, Lancaster county, Pa., is the inventor of a very ingenious bridle, for which letters patent were recently granted, whereby it is impossible for a spirited horse to kick or run away, and perfectly safe for a lady to drive or ride. The principle on which it is constructed is to hold the horse by the application of a pulley around which the reins are made to pass at the side of the horse's mouth, which enables the rider to exert a great deal of lever power to control the mouth of the animal, to check him at any moment. We consider this a very useful improvement, as with some horses, especially when they are young, the old curb when pulled makes them rear and pitch, to the great danger of the rider. This bridle effectually remedies this evil.

IMPROVED ROAD SCRAPER.

Messrs. C. Schofield and G. J. Johns, of Albia, Illinois, have made a very useful improvement on a scraper for making and repairing common roads, which should be adopted and employed by all our farmers in every township. It is especially useful for new settlements. The improvement consists in combining the scoop with a plough and having the scoop fixed to the standard by a swivel joint, so that by a catch-lever connected with it, the scoop can be emptied with the greatest ease without tumbling over the scoop, which has to be done with the scrapers at present in use.

TO CORRESPONDENTS.

A. G., *Weston.* Not intending to give our magazine a literary character, we are under the necessity of declining to insert your poetical communication. We will return or dispose of it as you may direct.

H. L., *Drummondville.* You will find your request complied with in this number.

☞ Communications merely containing the Subscriptions and Names of Subscribers we shall not answer, as the receipt of the paper is sufficient for that purpose.

HOW TO TREAT A WATCH.

First—Wind your watch as nearly as possible at the same time every day. Secondly—Be careful that your key is in good condition—there is much danger of injuring the machine when the key is wore or cracked; there are more mainsprings and chains broken through jerk in winding than from any other cause which injury will sooner or later be the result if the key is in bad order. Thirdly—As all metals contract by cold and expand by heat it must be manifest that to keep the watch as nearly as possible at one temperature is a necessary piece of attention. Fourthly—Keep the watch a constantly as possible in one position, that is, if it hangs by day let it hang by night against something that is soft. Fifthly—The hands of a pocket chronometer, or duplex watch should never be set backwards; in other watches this is of no consequence. Sixthly—the glass should never be opened in watches that set and regulate at the back. One or two directions more it is of vital importance you bear in mind.

On regulating a watch, should it be going fast, move the regulator a trifle towards the slow, and if going slow do the reverse; you cannot move the regulator too slightly or too gently at a time, and the only inconvenience that can arise is, that you may have to perform the duty more than once.—[Scientific American

EASY METHOD OF BREAKING GLASS IN AN REQUIRED DIRECTION—Dip a piece of worsted thread in the spirits of turpentine, wrap it round the glass in the direction that you require it to be broken, and then set fire to the thread; or apply a red hot iron round the glass, and if it does not immediately crack, throw cold water on it while the wire remains hot. Glass that is broken by this means may often be fashioned and rendered useful for a variety of purposes.—English Paper.