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THE
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A SEMI-MONTHLY JOURNAL

OF

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AND

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VOLUME X.

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DEPARTMENTS.

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GRASSES & FORAGE PLANTS.

IMPLEMENTS OF HUSBANDRY.

RURAL ARCHITECTURE.

THE DAIRY.

HORTICULTURE.

AGRICULTURAL CHEMISTRY.

EDITORIAL.

AGRICULTURAL INTELLIGENCE.

THE BREEDER & GRAZIER.

VETERINARY DEPARTMENT.

THE POULTRY YARD.

ENTOMOLOGY.

THE APIARY.

ILLUSTRATIONS.

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THE
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 1874.

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The Field.

Cultivation of the Soil.

In commencing anew our labors as Agricultural Journalists, we know not how we can make a more fitting or instructive start in this department than by two or three chapters about soils from Mr Waring's excellent work on the Elements of Agriculture.

The soil, says Mr. Waring, has many offices to perform aside from the feeding of plants:

1. It admits the roots of plants, and holds them in their position.
2. By a sponge-like action, it holds water for the uses of the plant.
3. It absorbs moisture from the atmosphere to supply the demands of the plants.
4. It absorbs heat from the sun's rays to assist in the processes of growth.
5. It admits air to circulate among roots, and supply them with a part of their food, while the oxygen of that air renders available the minerals of the soil, and its carbonic acid, being absorbed by the water in the soil, gives it the power of dissolving and supplying to roots more earthy matter than would be dissolved by purer water. All of these actions the soil must be capable of performing, before it can be in its highest state of fertility. There are comparatively few soils now in this country, but there are also few which could not be profitably rendered so, by a judicious application of the various modes of cultivation. The three great objects to be accomplished are:—

1. To adopt such a system of drainage as will cause as much as possible of the water of rains to pass through the soil, instead of evaporating from the surface.

2. To pulverize the soil to a considerable depth.
3. To darken its color, and to render it capable of absorbing atmospheric fertilizers.

The means used to secure these effects are *under-draining, sub-soil and surface-ploughing, digging, applying muck, &c.*

UNDER-DRAINING.

All soils which are cultivated should be thoroughly underdrained, either naturally or artificially. All lands which are made wet by springs or through which the water of rains does not readily settle away, must be drained artificially before they can be cultivated to the best advantage.

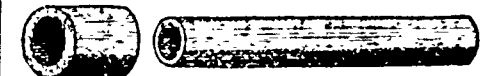
The advantages of *under-drains* over *open-drains* are very great. When open drains are used, much water passes into them immediately from the surface, and carries with it fertilizing parts of the soil, while their beds are often puddled by the running water and baked by the heat of the sun, so that they become water tight, and do not admit water from the lower parts of the soil. The sides of these drains are often covered with weeds, which spread their seeds throughout the whole field. Open drains are not only a great obstruction to the proper cultivation of the land, but they cause much waste of room, as we can rarely plough nearer than within six or eight feet of them.

There are none of these objections to the use of *under-drains*, as these are completely covered, and do not at all interfere with the cultivation of the surface. *Under-drains* may be made with brush, stones, or tiles. Brush is a very poor material, and its use is hardly to be recommended, except when a better material cannot be afforded. Small stones are bet-

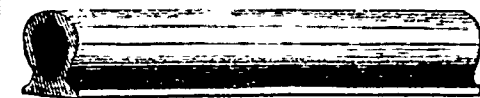
ter, and if these be placed in the bottom of the trenches, to a depth of eight or ten inches, and covered with a little litter, having the earth packed well down on them, they make very good drains. But they are very much more costly than tile drains, and are not so permanent.

TILE DRAINING.—The best under-drains are those made with tiles, or burnt clay pipes. The first form of these used was that called the *horse shoe tile*, which has the form of an arch, leaving the unprotected ground for the water to flow over, this was superseded by the *round pipe*, and the *sole tile*.

Experience in both public and private works in America, and the cumulative testimony of English and French engineers, have demonstrated that the only tile which it is economical to use, is the *best* that can be found, and that the best,—much the best,—thus far invented, is the *pipe, or round tile*,



and collar, and these are unhesitatingly recommended for use in all cases. Round tiles of small sizes should not be laid without collars, as the ability to use these constitutes their chief advantage; holding them perfectly in place, preventing the rattling in of loose dirt in laying, and giving twice the space for the entrance of water at the joints. A chief advantage of the larger sizes is, that they may be laid on any side and thus made to fit closely. The usual sizes of these tiles are 1 1/2 inches, 2 1/2 inches, and 3 1/2 inches in interior diameter. Sections of the 2 1/2 inch make collars for the 1 1/2 inch, and sections of the 3 1/2 inch make collars for the 2 1/2 inch. The 3 1/2 inch does not need collars, as it is easily secured in place, and is only used when the flow of water would be sufficient to wash out the slight quantity of foreign matters that might enter at the joints."

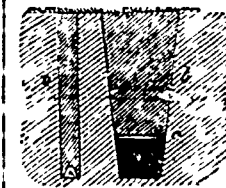


Sole tile is made (like the horse-shoe and pipe tile) of common brick clay, and is burned the same as bricks. It is about one half or three quarters of an inch thick. The orifice through which the water passes is egg-shaped, having its smallest curve at the bottom. This shape is the one most easily kept clear, as any particles of dirt which get into the drain must fall immediately to the point where even the smallest stream of water runs, and are thus removed. An orifice of about two inches rise is sufficient for the smaller drains, while the main drains require larger tiles.

These tiles are so laid that their ends will touch each other, on the bottoms of the trenches, and are kept in position by having the earth tightly packed around them. Care must be taken that no space is left between the ends of the tiles, as dirt would be liable to get in and choke the drain. This may be best prevented by the use of *collars*, but if sole tiles are used, as collars cannot be fitted to them, it is well to cover the top of the joint with a very small rope or twisted grass, secured by a stone or lump of clay on each end, or to lay on the joint a saddle of bent tin, zinc, or galvanized iron, which may be obtained at little cost from a tinsmith, cut from pieces in the waste-heap.

The ditches for tile draining may be narrowed in, at the bottom, to a width barely sufficient for the

workman's foot. In filling-in, after the tile is laid, care should be taken that no stones large enough to break the tile be allowed to fall upon them. After the tiles are covered to a depth of a foot or eighteen inches, the filling should be trodden, or pounded, firmly down, so as to fit closely around the tiles, and leave no space for water to circulate about them.



Tile drains are made with much less labor than the stone drains, as they require less digging, while the breaking up of the stone for the stone drain will be usually more expensive than the tiles. Drains made with large stones are not nearly so good as with small ones, because they are more liable to be choked up by animals working in them.

ADVANTAGES OF UNDER-DRAINING.

The advantages of under-draining are many and important.

1. It greatly lessens the injurious effects of drought.
2. It admits an increased supply of atmospheric fertilizers.
3. It warms the lower portions of the soil.
4. It hastens the decomposition of roots and other organic matter.
5. It accelerates the disintegration of the minerals in the soil.
6. It causes a more even distribution of nutritious matters among those parts of the soil traversed by roots.
7. It improves the mechanical texture of the soil.
8. It tends to prevent grasses from "running out."
9. It enables us to deepen the surface soil.

By removing excess of water—

10. It renders soils earlier in the spring.
11. It greatly lessens the throwing out of grain in winter.
12. It allows us to work sooner after rains.
13. It keeps off the effects of cold weather longer in the fall.
14. It prevents the formation of *acetic* and other organic acids, which induce the growth of sorrel and similar weeds.

15. It hastens the decay of vegetable matter, and the finer comminution of the earthy parts of the soil.
16. It prevents, in a great measure, the evaporation of water, and the consequent cooling of the soil.
17. It admits fresh quantities of water from rains, etc., which are always more or less imbued with the fertilizing gases of the atmosphere, to be deposited among the absorbent parts of soil, and given up to the demands of plants.

18. It prevents the formation of so hard a crust on the surface of the soil as is customary on heavy lands.

SPRING HARROWING.—We have successfully harrowed wheat in spring, repeating the operation two or three times at intervals of about a week, until the wheat was a foot high or more. The result was quite successful, and the crop was increased over five bushels per acre. The implement used was the smoothing harrow, which pulverizes the earth without injuring the plants. At the last harrowing, clover seed was sown, and it took better than another sowing early in spring in the usual way without harrowing. This mode of harrowing may be applied to wheat sown broad-cast or drilled equally well, and it makes little difference whether the harrow is run with or across the drills. We do not see any advantage in rolling wheat—except in case the wheat has been heaved by frost, when it has been thought useful by pressing the plants back into the soil.—*Albany Cult.*

How to grow Sugar Beets

In the first place, select a suitable piece of ground a low, mellow and loamy corner of your last year's corn field would do first rate, provided the ground is not sodden with water. Sugar beets want moisture and a great deal, but not too much. The soil must also be friable, and the deeper the better. Having such a piece selected, plow it up the first chance you can get; take your time when at it and plow deep—at least one foot, and as much more as possible. Unless it is in very good heart, spread on a thick coating of barn yard manure or muck compost, and let Jack Frost and the rain and snow dissolve and mix all through the soil for you, better than you could do it yourself, and free of expense. After you are through planting corn next spring, turn in and get your beet patch ready. Plow it again good and deep; this will mix the sour subsoil, first turned up, all through the good soil; then it will not damage your crop. Harrow the ground very thoroughly; furrow out two and a half feet apart; fill the furrows with a compost that you set to work making as soon as you read this, and which will be in just the right condition when wanted for use; fill the furrows level full, then turn two furrows (one each side) over on the manure making a ridge, and making it pretty high.

Next go along with a hand rake, and smooth off the tops of the ridge,—being sure to keep it straight. Get a seed sower and plant your seed, not too thick. It is a common fault to sow too much beet seed; the beets must stand five or six inches apart finally. You can try your sower and regulate it on a board, to sow about twice this amount then; when the plants are up about two or three inches high, so that you can see the rows plainly, give them a good and unsparing thinning out.

I may as well remark here, for the benefit of those who have never raised a crop of sugar beets, that they are very quick growers when young, and being of a yellowish green, are immediately distinguished from all weeds. They are nothing like carrots. Carrots are grand for food, but they need to be tenderly nursed till eight inches high. They are four times the bother, and yield only one-half the crop that beets do. You have no trouble hunting to find the row in beets. They are hardy, and if covered up will almost grow out in the night; that is more than my experience will bear in carrots.

Your beets thinned out and growing nicely, go through them with a hand plough (if you have one) while they are still very small, ploughing from the row; in a few days plough to them. This can be done before it is advisable to begin with a horse, and then you get the start of the few weeds that survive your winter ploughing and the preparation of the ground. As they grow larger, plough deeper and deeper, and in case of drouth run the cultivator through often, just skimming off the crust; it will let the moisture in the soil at night and much increase the crop; and now you are ready to harvest the crop. It is best to pull them out, as they then come clean, without any dirt; they will pull easily, as they grow one-half out of the ground; boys can readily pull them if you have too many to pull, go through with a sharp hoe and cut the tops off, pick them up out of the way, and save to feed to the cows; then take a team and plough, turn one furrow away from each row and then throw them out; have them picked up and thrown in heaps to dry, then put away for the winter and keep in a dark place.

If you follow these simple directions you will not be disappointed at harvest, for when you go to gather the crop, you will find it in abundance. You may, by this method, count on 500 bushels to the acre—and more, if the season is good; besides, your soil is all the time improving. In France, where beets are raised by the thousand acres for sugar, the country has improved so much that it is estimated that the soil is four or five times as productive, and the cattle fed on the refuse pulp from the presses) number hundreds for one formerly. In short, beet raising has completely transformed the country.

Just make up your mind to raise a patch of white sugar beets next year. If you raise them once you will raise them always. You will find your cattle slick and thrifty; your dairy profits greater; you can keep double the stock; your compost heap will be increased; your land improved, and you will be made better off in many ways by the sugar beet.—*Can. Rural New Yorker.*

Philip E. Gilca, of Magnolia, Ill., has husked 3,330 bushels of corn this fall at four cents a bushel. He husked ninety-five bushels in one day.

Exhaustion of Pasture Lands.

At a recent meeting of the New England Agricultural Society, an essay on this subject was read, from which the following is an extract:

The causes of this deterioration of pastures are obvious, and a brief consideration of them will pave the way for a more thorough understanding of the remedies. The first and great cause is that farmers, like the horse leach, have been continually saying to the pastures, "give, give," and for the wool, beef and mutton given by the pastures, have returned no equivalent. Judging from the practice of the great majority of farmers, they must have the impression they are doing justice to the pastures when they keep their flocks and herds upon them day and night, so that the land receives all the excrement. They forget that this excrement contains only a part of the food consumed, and that a large fraction goes off in the milk and carcass of the animal, and that this balance against the land must in the course of years bring it and the land owner to poverty. Milk and beef are at present the chief exported products of New England pastures; and a moment's consideration of the composition of these staples must convince the most thoughtless that neither Providence or the pastures are to blame for the deterioration of the latter. One hundred pounds of average cow's milk contain:

Table listing components of milk: Caseine (4.48 lbs), Butter (3.13 lbs), Milk sugar (4.77 lbs), Salmo matter (0.60 lbs), Water (87.92 lbs), Total (100.00 lbs).

The saline matter of milk consists principally of the phosphates of lime and magnesia, and the chlorides of potash and soda, and must all come from the soil, the air not being able to furnish a particle of it, though liberal in her supplies of organic food to plants. A herd of 20 cows, therefore, giving on an average 12 quarts of milk daily, will abstract from the pastures each day in their milk nearly 3 lbs. of earthy matter. This may seem a small amount, but as "a continual dropping will wear away rocks," so such a petty theft, practiced for an indefinite length of time will wear out pastures. It must be remembered that this saline matter in milk is not of a gross nature, but constitutes the very essence of a good soil. How rich milk is in all the elements of animal life, may be inferred from the fact that man and all the animals of the mammalia as live upon it in the earlier stages of their existence.

Where the rearing of young stock or the fattening of beef is the leading object of the farmer, the draft on the pastures is great, especially in the former case, in which the carcass of the young animal is to be built up. To form 100 lbs. of bone the animal will need to incorporate with itself:

Table listing components for bone formation: Gelatine (35 lbs), Phosphate of lime (35 lbs), Carbonate of lime (4 lbs), Phosphate of magnesia (3 lbs), Soda, potash and common salt (3 lbs), Total (100 lbs).

Every calf, therefore, that is sold from the farm must carry off a very appreciable amount of inorganic matter. The fattening of stock, that have already attained maturity, is the least exhausting of any branch of farming. Such stock "make no bones" in growing fat, and hence their excrements are far richer than those of young cattle. Still the increase of muscle and fat must make some demand upon the pastures. To add one hundred lbs. to the muscular part of a full-grown animal requires:

Table listing components for muscle gain: Water (77 lbs), Fibrin (22 lbs), Phosphate of lime (3 lbs), Other saline matters (4 lbs), Total (100 lbs).

The fat of animal, is derived from their food, composed of the organic elements, oxygen, hydrogen and carbon, which plants derive from that inexhaustible resource of plant food, the air. Fat is almost identical in chemical composition with starch and sugar, and in these three compounds the oxygen and hydrogen are in the same proportions as in water, so that for simplicity we may say that they are composed of carbon and water. These elements are abundant in nature, so that in the production of simple fat there is no danger of great exhaustion of the soil of pastures.

Action of Frost on Soil.

The most fertile and productive regions are those where the frost penetrates the earth deeply and exerts its influence during a considerable portion of the year. The action of the frost is a powerful stimulant of the soil, it disintegrates it, and unlocks the closely combined elements and thus sets free vast quantities of plant food. Its action also counteracts the compressive force of rains and the tread of teams and other animals, and so each year lifts up and lightens the compact earth. With frost to aid, the farmer need not plow and cultivate so much, to put the soil in good condition, as when this element is not operative. In this aspect, then, winter is a blessing to the farmer, and he should wisely avail himself of all its advantages. If he cannot plow and harrow during half the year, let him expose his soil with judgment to the action of the frost which silently plows and harrows, subsoils and rolls for him. On heavy and naturally strong, rich lands, thorough fall plowing is advisable. If the surface is left rough, it is perhaps better; if lumpy, the clods disintegrate and crumble to dust under the icy fingers of the frost farmer. The addition of fertilizers to such soil in the fall is wise, because they become intimately mixed with it by the combined action of frost and water, and are then immediately available for the plants when growth begins in the spring. Farmers who complain that the long winters do not permit thorough culture, underestimate the value of the action of frost. It is a noteworthy fact that where winter is most severe, within the temperate zones, the soil is prolific and good crops certain to a degree much beyond that of lower latitudes. The soil seems stimulated to productivity in proportion to the time and severity with which the frost acts upon it.—*American Rural Home.*

Dormant Fertilizers.

One of the most interesting facts which this extraordinary wet season has brought out is, that fertilizers applied to soils in dry summers without appreciable effects, are rendered available in those that are wet. The plants upon which our fertilizers have been applied during the past years, when the rainfall has been so deficient, produced wonderfully this season. The fertilizing substances have been lying dormant in the soil for the want of water to render them soluble or to hold them in solution, and this year the conditions have been favorable for promoting the changes, chemical and mechanical, necessary for plant food to be made available. Owing to the dry weather the past three years, it has been difficult to conduct experiments with manures, and reach anything like reliable results. Hundreds of farmers have been misled, and have condemned as worthless manurial substances which had positive value, but which needed the usual meteorological agencies to render them assimilable. Farm dung and stable manures, as well as chemical fertilizers, have not exerted their full influence upon soils to which they have been applied, because of the absence of rain. This season they have been thoroughly subjected to the action of water, and crops have been benefited by the dormant manurial agents applied two or three years ago. Manures are not lost which do not act promptly, unless they are blown away by winds, or are washed into brooks in sudden and violent showers, which sometimes fall upon the baked earth in summer. If they remain in or upon the soil, favorable seasons, which are sure to come, will force them to give up to plants the food they contain, and the husbandman receives his returns in abundant crop.—*Boston Journal of Chemistry.*

Influence of Trees on Rain.

A very striking illustration of the influence which trees have upon rain, is given by a gentleman who has just visited the island of Santa Cruz, West Indies. Twenty years ago he was there, and the island was a lovely garden throughout its length and breadth. Trees native to it and flowers everywhere flourished, and the soil was fertile. When his last visit was made he found a third of the island a desert waste; the soil was parched and barren on the seashore. The destruction of vegetation is steadily going on, and the planters one after another abandon their farms, as they yield them nothing. The only way to account for the great change is that nearly all of the trees have been cut down, and the amount of rain which has fallen since has not been enough to keep the land refreshed.

Grasses and Forage Plants.

Under this general heading, we propose to publish in continuous numbers of the new series of the CANADA FARMER, brief, practical descriptions of the several forage crops grown in Canada, or well adapted to be introduced among us, accompanied by suggestions as to their cultivation, cutting and curing.

It has been truly said by Mr. Flint, that in the whole family of plants, the grasses form the most extensive and the most beautiful branch, as well as the most important to mankind. It embraces nearly a sixth part of the whole vegetable kingdom; it clothes the globe with perpetual verdure, or adorns it at fixed seasons with a thick matted carpet of green, none the less beautiful for its simplicity; and it nourishes and sustains by far the greater part of the animals that serve us and minister to our wants. When we consider the character of our climate, and the necessity that exists, throughout all the northern and middle portions of the North American continent, of stall-feeding from three to five or six months of the year, for means of which we are dependent mainly on the grasses, it is plain that, in an economical point of view, this subject is one of the most important that can occupy the farmer's attention. The annual money value of the grass crop of the continent, for pasturage and hay together, amounts to several hundreds of millions of dollars, to say nothing of a vast amount of roots and other plants cultivated and used as forage crops.

We think we cannot better commence our work in this department than by an exhaustive article on the subject of clover culture which accompanies these brief introductory remarks.

Clover.

Clover has come to be regarded as the most valuable of the forage plants. It belongs to the pulse family, or *Leguminosæ*. Botanists give the names of fifty-nine sorts of Clover, but there are only seven kinds in practical use. These are:—

1. Alsike Clover—(*Trifolium hybridum*.)
2. Crimson Clover—(*Trifolium incarnatum*.)
3. White Clover—(*Trifolium repens*.)
4. Perennial Red Clover—(*Trifolium pratense perenne*.)
5. Hop Trefoil—(*Trifolium procumbens*.)
6. Yellow Clover—(*Medicago lupulina*.)
7. Common Red Clover—(*Trifolium pratense*.)

THE COMMON RED CLOVER is by far the most important of the whole clover family for the practical purposes of Agriculture. Its introduction into England produced an entire revolution in her agricultural system; and "when we consider how important a part it plays in our own system of farming we can with difficulty imagine how our ancestors ever got on in farming without it."

ALSIKE CLOVER is a plant of Swedish origin, and has been grown in Canada for some years past, to a limited extent. Those farmers who have given it a fair trial, report highly of it. It does not attain its full luxuriance until the second or third year after it has been sown, and during the first year seldom arrives at any great degree of growth. It is therefore best adapted to mix with other seeds, for permanent grass land. It yields, on suitable and fruitful soil, rich and good fodder. It loves clayey soil, especially marly clay, with a somewhat moist position; but it also thrives on cultivated fens and marshes. It grows but little after mowing, and no second crop can be expected from it, as is the case with red clover. In this respect, as well as in the longer time it requires before it yields a full crop, Alsike stands after red clover. Its great and undeniable advantage lies in the fact, that it is far more hardy than red clover, and can be cultivated on moist soil, and land that is flooded at certain times of the year, on which red clover will not grow. If Alsike be mixed with white clover and suitable grass, it yields rich and certain crops. When cultivated on arable land, common red clover should be mixed with the seed with which the field is sown, by which the great

advantage is gained, that, the first year after sowing, two crops of fodder may be gathered, chiefly consisting of red clover; and that the following years, in the same proportion as the red clover declines, the Alsike clover appears in its place, and yields rich and certain crops, together with the grass with which it is sown. The cultivation is the same, in the main, that is usually given to red clover. As Alsike clover has a great tendency to lodge, it ought properly when cultivated for fodder, to be sown together with meadow or fox-tail grass on marshy land, and with timothy grass on drier soil. The crops by this means become much richer, and the grass supports the Alsike clover.

CRIMSON CLOVER is as yet little known in Canada as a farm crop, but has been often cultivated in the garden, as a border annual. It is extensively grown in England and in many parts of the European continent; and we know of no reason why it should not be profitably introduced on this side the Atlantic. It is one of the most beautiful plants known to field culture, its stem rising to twenty-four inches in height, with spikes of tapering, nodding, bright scarlet flowers. It is an excellent forage crop, and when sown in the autumn is ready for cutting very early in the spring. "Of all known plants," Mr. Lawson says, "it is best suited for culture on the stubble of a white crop," when it is sown broadcast and harrowed in, after removal of the crop, at the rate of from 18 to 20 lbs. of seed to the acre. When sown in summer, it is usually drilled in rows, of from eight inches to one foot apart. When sown in autumn, the entire crop may be grown, cut down, and cleared off by the June following, allowing the ground to be worked up for turnips, for corn fodder, or buck-wheat. When cut in full flower, it makes a hay much relished by horses, and its entire yield is said to be more than that of common clovers. It ripens its seeds easily in England, and is regarded as a very profitable crop.

WHITE CLOVER is indigenous to North America and is found widely diffused all over Canada. Its chief value is as a pasture grass; and it is as valuable for that purpose as the red clover is for hay and for soiling. It easily accommodates itself to a variety of soils, but grows most luxuriantly on moist lands and in moist seasons.

PERENNIAL RED CLOVER bears a great resemblance to the common red clover (biennial) in its general habits and appearance. It is said to differ from it chiefly in having rather more woolly leaves, in being more durable, and in coming later into flower.

HOP TREFOIL has yellow leaves—but must not be confounded with the plant known as yellow clover. Its name of hop-trefoil is bestowed on it with much propriety, the heads being larger and more resembling the hop than any of the rest of the species. It is common on the borders of fields in dry gravelly soils. In some meadows it forms a considerable part of the crop, and makes excellent fodder; and it is much used in England for pasture, with or without white clover.

YELLOW CLOVER has a small yellow flower, and is very prolific of seed. Although the crop is bulky, its stems are hard and wiry; neither cattle nor sheep are fond of it, either in a green or a dry state.

Value of the Clover Crop.

Clover is valuable from the rapidity of its growth. But a few months elapse from the sowing of the seed before it yields, ordinarily, an abundant and nutritious crop, relished by cattle of all kinds.

Clover is an admirable soiling crop, coming in early, yielding two heavy crops with good management, and in favorable seasons three crops. Mr. Stephens estimates that in Scotland the average crop of green food, from two cuttings, is eighteen tons (of 2000 lbs.) per acre. With liberal employment of plaster and liquid fertilizers, we should say that this crop can, in most seasons in Canada, be exceeded.

Clover is invaluable as a hay crop when properly cured. It is worth nearly or quite as much as good timothy to feed to farm stock generally. For milch cows and sheep it is preferable to timothy. For horses and working oxen, timothy hay is better than clover hay. The usual practice, however, all over North America is to sow timothy and clover together for hay, with frequently red-top added. Universal use justifies this practice. Nothing is more clear, however, than that the addition to this mixture of other valuable grass-seeds would greatly increase and improve the crop, at the slight cost of the seed only. But on this point, we will have something to say hereafter.

Clover in pasture lands is excellent for all descriptions of stock. Hogs are beneficially affected to a remarkable degree by a run in the clover pasture.

Clover, however, has a still higher claim than any other (possibly than all of them together) to the affection of the agriculturist, in its wonderful powers

as a fertilizer. In this respect it is unequalled by any crop grown on the farm; and for this it is indebted to its capacity for foraging largely on the air. The different ways in which it adds to the fertility of land are chiefly these:—

1st. *Shading the surface of the soil.* Owing to its rapid and luxuriant growth it soon forms a close and heavy covering over the soil, that acts as a mulch in protecting it from the scorching rays of the summer sun. At the same time that the soil is protected the weeds are smothered out, and the land cleaned up.

2nd. *Aerifying and disintegrating the soil.* Clover possesses peculiarly long and powerful tap-roots, that penetrate deep, loosening the soil and admitting the air. Thus rapidly changing the physical condition not only of the soil, but of the subsoil also.

3rd. *By effecting important chemical changes, necessary to enrich the earth with plant food.* Its abundance of foliage enables Clover to gather from the atmosphere immense stores of gases that give life to the plants, which its far-reaching roots send deep down into the earth. Thus a clover field becomes, as it were, a great reservoir for plant food. And clover itself becomes a great commissary, collecting food from the earth and the air for whatever crop that may follow.

4th. *By preventing washing.* The Clover mulch breaks the force of the hard beating rains, while the roots hold the soil in a mat as it were, thus preventing it from washing.

5th. *As a green manure.* Perhaps no crop is so valuable for turning under in a green stage, as Clover. In addition to the immense amount of rich vegetable matter in its abundant roots, the plant itself is extremely rich in all the materials necessary to the healthful growth of succeeding crops.

6th. *As a special preparation for wheat and corn crops.* On this point Dr. Voelcker says:—

"All who are practically acquainted with the subject must have seen that the best crops of wheat are produced by being preceded by crops of clover grown for seed. I have come to the conclusion that the very best preparation, the very best manure, is a good crop of clover. * * * A vast amount of mineral manure is brought within reach of the corn crop, which otherwise would remain in a lock-up condition in the soil. The clover plants take nitrogen from the atmosphere, and manufacture it into their own substance, which, on decomposition of the clover roots and leaves, produces abundance of ammonia. In reality the growing of clover is equivalent to a great extent to manuring with Peruvian guano; and in this paper of mine I show that you obtain a larger quantity of manure than in the largest dose of Peruvian guano which a farmer would ever think of applying."

[In our next number, we shall show the most approved methods of Cultivating and curing the Clover crop and making Clover Seed.]

Hungarian Grass in New England.

"There are certain substitutes which are useful for local purposes. I have been very much surprised, within the last two or three years, to see of how much value a certain grass which has been condemned a good deal is to the farmer at home. I refer to Hungarian grass. I have not been particularly fond of Hungarian grass; I had been told it was injurious to horses; that it did not grow well, did not spend well, required a certain kind of season, and was a doubtful crop, that when it got into the land you could not get it out, and so on. But I commenced in a small way the raising of Hungarian grass, and have gone on, until this year I have sown twenty-five acres, and I find it to be one of the most useful and profitable grasses for home consumption. You are obliged to be careful in the growing of it; it is not a grass that grows in cold weather, like the grasses to which I have formerly alluded, one advantage of which is that they begin to grow early in the spring, and the colder the spring the better they grow, and they are adapted especially to this climate. But the Hungarian must not be sown till the warm months. It is analogous to corn. If you sow it too early, it grows to a certain point and stands still until the warm weather and then starts up, because it has an uncongenial climate. I am satisfied that Hungarian grass, sown when the ground is ready to take clover and herd grass seeds, does not yield so well as that sown later. And, more than that, sown at that time, it grows so slowly that the weeds get ahead of it, and when the time comes for you to cut your grass, you find yourself loaded down with a combination of Hungarian grass and weeds, which is not by any manner of means an indication of good farming, and which is not so nutritious for the animals. So I would sow Hun-

garian grass from the middle of June to the first of July, and on a piece of land properly manured, well cultivated, and a warm rich loam, you can in six weeks raise a tremendous crop of Hungarian grass, and it makes excellent hay. I suppose that a fair crop is two tons to the acre; three tons can be easily grown. The amount of seed to be sown averages from half a bushel to three pecks; perhaps a little thicker than half a bushel is better than thinner. In that way, the grass will not grow too coarse and rank for good curing, and it will grow thick enough to keep the weeds out. I find that in the autumn and early part of winter, it is fed to cattle in the most useful way. I have seen a horse restored from a bad condition, in the month of November and December, quicker by Hungarian grass than by any other kind of food. I have fed it a great deal to milk cows, and I think as much milk can be made from Hungarian grass as from any other kind of grass, if properly cut and mixed with a little shorts or meal. It spends well; it is useful to feed. I have been unable to ascertain that there was any foundation for the opinion that it is injurious to cattle. As I told you, I fed it to a horse, and it did not hurt him, it did him good. I was told that Mr. Solon Robinson said in his book that it was injurious to horses and sometimes to cattle. I opened his book, and found there were nearly three pages of recommendations of Hungarian grass, and nothing unfavorable, except a hint or suggestion, that possibly it might be injurious to horses. I do not know, therefore, any objection to it. And if you let it grow until it is just going out of blossom, and the head formed, you will find that it will not shrivel so much as you supposed it would in drying, and when dried, its weight is nearly equal to that of herd-grass, which is about the heaviest grass we have."

—Dr. Geo. B. Loring.

Sowing Grass Seeds Alone.

Mr. Wm. Strong thus writes from the State of Michigan to the *Albany Cultivator* —

In the fall of 1865 I harvested a small field of "Swedes," the ground having been kept during the summer perfectly free from weeds. The soil was a strong clay, made quite rich the year previous by the application of barn-yard manure, when a crop of sorghum cane was raised. After the "Swedes" were harvested the ground was harrowed very smooth—not plowed. As soon as the snow was gone in the spring of 1866 it was sowed to timothy and clover. The 24th of July following, this piece was mowed—and it is very seldom that a farmer has the pleasure of mowing a heavier crop. This was mostly timothy, and perfectly free from weeds. This piece has now been mowed ten times, three crops of second growth having been cut, each crop being as heavy as it could well stand; indeed nearly every crop was more or less lodged, and to-day that piece is apparently as good for hay as ever.

One year ago last August I seeded a small, clean summer-fallow to clear timothy. Last July a heavy crop of timothy hay was cut, but no weeds. On the other hand, there are fields in sight of where I now write that were tilled *ordinarily clean*, where a crop of corn was raised. This corn ground was plowed in the spring, dragged fine, seeded to timothy and clover, and rolled smooth; in other words, it was nicely fitted for seeding. But what was the result? A total failure to secure a crop of hay the first year, but on the contrary a thick growth of weeds of all kinds natural to that soil—so thick that the timothy and clover could make no growth to speak of. It is not well to say that these weeds would have made good hay had they been cut at "just the right time," for by the time they had made growth enough to cut, many of the weeds would have matured sufficiently to have seeded the ground, or filled the barn and yards with foul seed. It would have been far better to have sowed the grass seed with a grain crop than to have lost the use of the land for a whole season, raised a crop of foul seed, and a crop of weeds that were not worth the cost of curing.

What then may be learned by the foregoing? That on any good land that has been *cleanly tilled* with any crop, like turnips or potatoes, or a clean summer-fallow, and left so as to be fitted for the seed with a harrow, grass seed may be sowed alone, with a fair prospect of cutting a good crop of hay the first year; but where it is necessary to *plow* a piece before seeding, as in the case with corn stubble land, fresh weed seed is brought to the surface ready to grow immediately. In a well-tended corn-field the foul seed has germinated and been destroyed at the surface, and might answer to seed to timothy and clover alone were it not for the stubs; these seem to require that the land should be plowed; so, unless the farmer is quite sure his land is free from foul seed, it would be well to commence on a small scale to *plow* his ground in the spring, and sow nothing but timothy and clover.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Introductory.

In entering upon a new era in the history of THE CANADA FARMER, the occupant of the editorial chair of the Horticultural department, since the first establishment of the work, confesses he looks back with satisfaction on the amount of useful information he has been enabled to present to the readers of this department. The lover of fruits has been directed to the choicest varieties; he has been taught how to adapt his selections to the requirements of his peculiar soil and climate; and indoctrinated as to the best methods of cultivation. The gardener has been instructed in the most valuable vegetables, and shown how they may be best grown to enhance the comforts of the table. And those who have been endeavoring to beautify their homes with trees and shrubs and flowers, have found many a word of encouragement and help. We recall too with pleasure many kindly expressions of thanks received for these helpful hints and timely suggestions, for words of caution or words of cheer. On the whole, looking back on these nine years of pleasant labor, we have the gratification of believing that a helping hand has been given to many a hesitating head or faltering heart; that something has been done to advance the science and practice of horticulture among us, to add to the home comforts of the people, and to develop taste and refinement.

What, then, we have, in a measure been able to do in the past, we are earnestly resolved to accomplish more fully in the future. To enlarged experience will be added increased facilities. Abundant illustrations will be added to careful description, so that our readers may be fully informed in all the processes of horticulture, and familiar with the forms of such new fruits, vegetables and flowers as are likely to be valuable to them. Diagrams and plans of horticultural structures will be given, as suggestive aids to those who are intending to erect green-houses, conservatories, vineries, orchard-houses, etc.

We propose to treat more systematically than heretofore, each branch of practical horticulture; and going back to the A B C of the art, carry our readers in consecutive papers, upward and onward with us, to the highest walks and newest things of the day. Dividing our department into appropriate heads, we shall give under THE ORCHARD all items relating to the cultivation of fruit trees, and their several varieties of fruit; the planting of trees, selection of kinds, choice of soils, previous preparation and subsequent tillage. THE FRUIT GARDEN will in like manner deal with the cultivation and selection of the small fruits, embracing strawberries, raspberries, blackberries, currants, gooseberries, etc.; and under the head of THE VINEYARD will be found whatever relates to the cultivation of hardy grapes. THE KITCHEN GARDEN will contain whatever relates to vegetables for the table, and will prove, we trust, an interesting column to those whose floral tastes can still find beauty in a cauliflower. Those who from love of the beautiful, seek gratification in the cultivation of flowers, will not fail to be pleased with THE FLOWER GARDEN, where they will find many an old time favorite in close proximity to some new candidate for favor; and looking over THE LAWN may gather some valuable hints concerning flowering trees and shrubs, or methods of home adornment. THE GREEN-HOUSE will be filled with descriptions of the choicest exotics, with ample directions for their culture and propagation, whether their torrid habitat compels their confinement to the stove, or coming from more temperate regions they may be exhibited in the cooler conserva-

tory. THE VINEY will be devoted to those exotic grapes which in this climate can be most successfully grown under glass; and THE ORCHARD HOUSE to the cultivation of those tenderer fruit trees which are unable to bear the rigor of our Canadian winter. The attentive cultivator will thus be enabled to ripen in perfection the luscious peach, apricot, nectarine and fig, despite our chilling winds and biting frosts.

Thus distributing our suggestions under their appropriate headings, for the convenience of our readers, we intend to keep ever in the van of horticultural progress; and as in the past, so yet more abundantly in the future, to guide the inquirer, help the earnest worker, and contribute what we may to the horticultural progress of the country.

The Orchard.

The first subject that should engage the attention of the intending planter, is that of a suitable soil. Fortunately, a very large proportion of our arable land is well adapted to the growth of the apple, pear, and plum, the three fruits which are of the most importance in this climate. The peach can only be grown in the warmest sections, and will flourish only in particular soils. The cherry also has its climatic limits, though they are of much wider range than those of the peach, and has also its special soil. The apple, however, the staple fruit product of the country, is not so particular in its choice, but will thrive well in soils of various textures. The same remark will apply also in a large degree to the pear and plum. It is therefore quite possible for every owner of a homestead to supply his table with the most important fruits of the country from his own orchard.

Yet in every farm there is usually some variety of soil, some ground that is sloping or rolling, and some that is flat, some pieces that are well drained, and others that are wet; so that it is quite possible in selecting the site for the orchard, to choose that in which the fruit trees to be planted will thrive well, continue in health to a good old age, and produce fruit of the highest excellence, or that which will be productive of exactly the opposite results.

In choosing the ground for an orchard it is highly important to remember that none of our fruit trees are in the least degree aquatic in their habits, but that on the contrary they will not thrive long in land that is wet.

To negligence on this point, may be attributed by far the largest number of failures that have occurred in orchard planting. Hence we lay great stress upon this point and insist that the ground in which the trees are to be planted should be perfectly drained. By this, we mean not only the entire removal of all stagnant surface water, but of all water stagnant in the soil. If a piece of ground cannot be selected that is thus drained naturally, resort must be had to artificial drainage. Hence rolling or sloping land is more suitable for orchards than that which is flat. Usually hill-sides, sloping to the west, are the best locations for orchards, though the direction of the slope is not often very material.

Deep valleys, having in them only small streams of water, are bad situations for fruit trees. Usually the soil in them is saturated with the water that soaks into it from the higher ground, and in calm nights the cold air settles down into the valleys, killing frequently the buds and blossoms, while the trees on the adjacent slopes and even on the top entirely escape injury. On the other hand the borders of large rivers and lakes are often favorable situations, large bodies of water having an ameliorating effect on the temperature. Again an aspect that is sheltered from the sweep of prevailing winds, whether by the conformation of the surface of the ground, or by a belt of woodland, particularly of evergreens, enjoys an immunity from extremes of cold which often prove to be injurious to more exposed orchards.

We then arrive at the conclusion that an orchard should be planted only on perfectly drained soil, that a rolling or sloping surface is preferable to that which is flat, that the bottoms of narrow valleys are to be avoided, and that an aspect which is or can be sheltered from the sweep of high winds is to be desired. Of the preparation of the soil for the planting of the orchard we shall speak next.

Apples for Cooking.

An impression seems to have got abroad among some otherwise very good judges of fruit, that apples which belong to the class designated as "cooking" should be fit for nothing else. And what is worse, these good people seem to think that only second or third rate apples are suitable for cooking purposes. If we look over the list of apples usually entered for sale, the best twelve varieties for cooking, we will find in most collections only the largest, most coarse grained, and least flavored sorts; apples that no one would think he could possibly eat unless they were cooked, and having in reality only size to commend them.

But why should we value a poor apple because it can be made eatable by culinary art?—by dint of spicing and sweetening? If there were no high flavored sorts of the same season, which will retain their fine flavor when subjected to the process of cooking, then it might be pardonable to take a large, coarse and flavorless thing, and try to make something out of it for the sake of giving variety to the bill of fare. By way of illustration, let us take the *Esopus Spitzenburgh*. If this sort is shown as a dessert fruit all judges will agree, the specimens being satisfactory, in giving it the highest number of points, but if shown as a cooking apple, many judges will score it less than they would the *Cayuga Red Streak*. Now the truth is that while it is one of our finest dessert fruits, it is not surpassed by any variety in cultivation for cooking. The high, spicy, and delicious flavor is retained in all its richness after being cooked, and the fine taste, which has not been vitiated by expecting to find in cooked apple the combined flavors of cloves, cinnamon, and grated nutmeg, can not fail to be gratified with this apple, cooked without any spicing other than the delicate aromatic stored in the fruit itself, modified perhaps with a little of the purest white sugar to suit the taste.

Then there is the *Northern Spy*, another of our very finest dessert fruits, but at the same time one of our best cooking apples. It too, will retain its fine, sprightly, delicious flavor unimpaired by cooking. The same may be said of the *Swaar*, *Ribston Pippin*, *R. I. Greening*, *Porter*, and *Gravenstein*. Yet we venture to say that were these apples shown in competition as cooking apples against the *Colvert*, *Catasheca*, *Maidens Blush*, *Twenty Ounce*, *Gloria Mundi*, *Beauty of Kent*, and *Cranberry Pippin*, a majority of our fruit judges would score them second.

Some seem to have come to the conclusion that because an apple is excellent for dessert, it cannot be shown also as a cooking apple. But if it be also excellent for cooking, such a rule should not obtain. There are apples which are excellent for the dessert but which cannot endure the ordeal of fire. These, of course, should find no place in a collection of cooking sorts. Of these are the *Snow-apple*, *Early Joe*, *St. Lawrence*, *Melon*, *Swazie Pomme Grise*, *Mother*, and *Wagener*. But if an apple be excellent both for cooking and dessert, its value is so much the greater, and these qualities should be made known rather than kept concealed by ruling them out of the cooking class.

It is time there was some weeding out of these inferior apples which pass muster under the head of *Cooking Sorts*. We have plenty of good, nay much better cooking apples than most of those that are now classed under that head, which are also excellent for the dessert. Why then should we give the ground-room necessary to grow these second rate sorts, or the cellar-room necessary to store them, when we have better sorts that can do duty to better purpose in either capacity?

The Mexico Apple.

The *Agriculturist*, speaking of this apple, says:—"It originated in the town of Canterbury, Ct., and was widely disseminated from the nursery of the Messrs. Dyer all through Eastern Connecticut. It is a fruit of great excellence, and ought to be more generally cultivated. It is the best apple of its season we have ever found. The tree is hardy, a good grower, and on good soil, very productive. The fruit is of medium size, round, regular; surface bright crimson red, striped darker; dots, numerous, yellow-green. The basin is shallow, regular; eye medium, closed. Cavity acute, regular, stem long or medium, slender. The core is large, open, meeting the eye, seeds, numerous, angular pointed. The flesh is white, tender, fine-grained, and juicy. Flavor, sub-acid. Quality, best; season, August and September. It is a superb dessert apple, worthy of a place in any small collection or fruit-yard.

Dwarf Pear Trees.

We have for years practised a sowing of salt at the rate of six bushels to the acre, of gypsum (plaster of Paris) one bushel to the acre; of bone meal five hundred pounds to the acre, of coppers two hundred pounds to the acre, and where such applications have been made we have good healthy trees, little or no blight and abundance of fruit. On grounds not so dressed we have had blight abundant—blight on trees growing moderately, and blight on trees growing very little. Our soil is a clayey loam, not rich, and resting on a soap-stone (gypsum) shale, in which there is a certain amount of lime, iron and potassa.—*Cleveland Herald*.

Japan Clover.

The following account of this clover we clip from the *Mobile Register*: This plant, sometimes called Spanish clover, is one of the greatest boons that has yet fallen upon the South, and to whom we are indebted for it is a mystery that, most likely, will never be solved. The same plant grows in Japan. No one has the slightest idea of how it got over from Japan; but the most reasonable conclusion is that the seed, was brought across in something shipped from that country. Japan clover is a heavy grower and will shade out almost any grass or other species of growth. It is an air feeder, and therefore does well on almost any character of soil, though a rich clay soil suits it best. The rapidity with which it spreads is perfectly astonishing.

The Iona Grape.

P. T. Quinn, writing to the *Tribune*, says that the Iona grape, in New Jersey, is growing worse every year. Out of twenty five vines planted during the past ten years, but three are alive, and these have made such a very weak growth that they are not likely to survive the winter. His soil is heavy, but under good cultivation, and the vines of this variety have grown feebly, unwooded every summer, and have ripened their fruit but twice in ten years.

The Kitchen Garden.

We wish that the farmers of Canada could be induced to give a little more attention to the cultivation of vegetables. In the manifold labors of the farm, the little parcel of ground devoted to kitchen gardening is too often forgotten, or perhaps the grain fields and the meadow so absorb the farmer's thought and attention that the garden finds no place at all in his purposes. But it is to his interest, in many ways, to have a good garden well filled with choice vegetables, and well tilled. The products of such a garden are needed to give that variety of food which is essential to the best development of both body and mind. The care of the garden is needed, differing in the delicacy and unmuteness of its operations from the sturdier labors of the farm, to give that variety of mental and manual effort which is requisite to produce a symmetrical manhood. And to those who reside in the neighborhood of our thriving towns and villages, a well-conducted garden is, peculiarly, a paying thing.

Those whose daily avocations confine them for the most part in stores, or offices, or workshops, will find the garden give them a pleasing variety of occupation, pleasing alike to body and mind, and at the same time yielding to the table a large supply of agreeable and nutritious food. Upon such persons also we urge the cultivation of a garden, fully persuaded that they will find all their toil abundantly repaid in the enjoyment it will afford them, both while occupied in the care of it, and when partaking of the fruits thereof.

To aid our readers in the care of their gardens, we propose under this heading, to treat of the aspect most desirable for such a garden, the soil and its preparation, the varieties of the different vegetables that are best suited to our climate, and the treatment peculiar to each.

LASIANDBA MACRANTHA FLORIBUNDA.—In writing about this plant, Mr. Simms says he thinks it will some day be used as a bedding plant. I do not think it will answer that purpose so well as it will that of a decorative plant. In Messrs. Veitch & Sons' nursery, Chelsea, is to be seen a glorious specimen measuring nearly 4 feet high, 3 feet in diameter, a perfect pyramid in shape, and well furnished, having at the present time upwards of 150 flower-buds and 24 expanded flowers; the plant has been in flower more or less for the last six weeks, and a more beautiful object at this season of the year it is almost impossible to find. It supplies a color much wanted, and throws such a fine succession of flowers, that it will be found invaluable for the decoration of the stove or warm greenhouse. This plant was struck last March twelvemonth, and was grown under the following treatment: It was potted in equal portions of peat and loam, with a little leaf-soil and silver sand, was shifted as soon as the roots were well through the soil till it was in its present pot, viz., an 18-inch pot; it was grown in a temperature from 55° to 60° till June, when it was put in a cool house having plenty of air on night and day. In September the plant was moved to the cool end of a stove, where it remains at present, opening its beautiful flowers, most of which are 4 inches in diameter. Every one who has seen it exclaims, "What a beautiful plant!" I should advise all those who intend growing this fine plant to be sure and get the floribunda variety, as it is far superior in every respect to the one first cultivated.—*A. O. P. in Gardener's Chronicle*.

AMORPHOPHALLUS RIVERI.—This new and curious tropical-appearing bedding plant, introduced the past season, is likely to become a general favorite, on account of its luxuriant growth and rapid multiplication of the tubers. The small tuber which I procured last spring was planted in a large pot and kept there during the entire summer; but I think it would have succeeded even better in the open ground. The stem died down quite early this fall, although not exposed to frost, and upon turning out the roots I found not only the one large tuber planted, but quite a number of smaller ones, which had been produced at the ends of small, subterraneous stems, somewhat similar to our common potato. These small tubers are about an inch in diameter and about a-half to three-quarters of an inch thick. They ripen and become quite dry and hard while in the earth, and may be readily preserved through winter in any dry, warm place. At present these tubers command a high price, but they will soon be cheap and within the reach of all who may desire a plant with such a long name.—*Rural New Yorker*.

Planting Forest Trees

To the Editor of the CANADA FARMER.

SIR,—Among all the plans proposed for the improvement of the country, I believe there is none of more importance than a proper system of planting trees for use and shelter. I have seen several articles in THE CANADA FARMER on this subject, but they dealt mainly with the planting of line trees. With them I agree so far as they go, but shade trees are not enough; we want belts of plantations running east and west through our farms, to shelter from the north wind and to raise useful timber for building, fire-wood, and fencing purposes.

But how is this to be done? If left to the farmers it will not be done. Few of them know how to do it, and they have not time if they did, for the only time for planting in this country, is just when farmers need every moment for getting in their crops in spring, or getting their fall work done.

I would therefore submit that the matter is of such vital importance, that it should be taken up by our legislature, and by our county and township councils, and that encouragement be given for the planting of forest trees, suitable for the country. They could be planted by contract as is done in Scotland, and nurserymen could do it better and cheaper than the farmers could do it.

I would further respectfully submit that a portion of the surplus would be well spent in assisting and encouraging the planting of trees whether for use or ornament.

I suggest that the matter be taken up by the people throughout the country and that petitions be sent to the Assembly, praying for a practical movement in this direction. I may add that I have waited long in hopes that some abler pen than mine would have taken it up; but as none have done so, I write to try to make a beginning hoping that it will be taken up and carried forward successfully.

I am, &c.,

AN OLD FORESTER.

Agricultural Chemistry.

The progress which Agriculture has made among us during the comparatively short time that has elapsed since our country was one unbroken forest, is a matter of great and just pride to every Canadian. The soil enriched by the accumulations of untold ages, has readily yielded up its treasures to the industry of the husbandman, and the woods that so short a time since covered every hill and filled every valley throughout the length and breadth of the land, have given place to fields of grain, rich meadows, and pastures stocked with sheep and cattle.

This result has been brought about by the indomitable energy of spirit, and the unwearied and unflagging industry of our early settlers, and those who have succeeded them, and who, undeterred by the winter's cold, and undaunted by the labor required to clear and render fit for cultivation a country so thickly covered with timber, have, by sheer hard work, conquered the difficulties which beset them, and rendered Canada the prosperous land she now is.

While, however, we all gladly recognise the merits of those who have subdued and tilled the soil, and congratulate ourselves with pardonable pride on the advances that our country has made, we must not forget that a large measure of our prosperity hitherto has been due to the richness of our virgin soil. To this and to the energy of our farming population we owe almost everything. To scientific agriculture, comparatively little. This state of things cannot go on for ever. However fertile the soil may be, it is not inexhaustible; and unless due precautions are taken it may be rendered barren by injudicious culture. While the land is yet unweakened by successive crops, it signifies little comparatively speaking, how it is tilled. With ordinary industry and intelligence, the farmer is sure of an abundant harvest. This fertility has, however, a limit to its duration. That limit we are now in most places rapidly approaching. In some localities it has been reached—in a few it is passed. At this point it is that a knowledge of scientific agriculture—that is of the principles upon which the operations of husbandry depend, becomes of the highest practical value. Plants absorb their nourishment partly from the atmosphere, partly from the soil in which they grow. When they die and decompose they give back to the soil, not only those materials which they have borrowed from it, but also some of those which they have taken from the air. Hence, when vegetation is allowed to grow and to decay undisturbed, the soil year by year becomes richer and richer in those constituents which serve to build up the tissues of plants, as is seen, for example, in the rich vegetable mould of forests. This is the reason why freshly broken land is so fertile, and yields such ample crops with so little trouble.

But when the plants are not allowed to decompose on the soil where they grow, as is the case with cultivated crops, a very different state of things prevails. Each year a certain quantity of plant food is taken from the ground and carried away. Each year, therefore, finds the land poorer than the last, and unless some measures are taken to restore the lost materials, the soil will become exhausted, and unfit to sustain plant life.

It is the province of Chemistry to find out what substances are needed to build up each particular kind of plant, to tell us in what soils these materials may be found, what each plant takes away from the soil, and what it is necessary to add in order to repair this loss. Clearly, then, a knowledge of Chemistry is of the utmost importance to an agricultural people. It is true that experience teaches men in many cases the proper course to take. But experience is of no value when new conditions arise. In such a case the man who trusts wholly to experience will be at a loss, and though he may arrive at the truth it will only be by chance, or after repeated failures; while the man of science in the same circumstances can at once predict the result and inform him of the proper course. It is a great mistake to look upon scientific agriculture as something opposed to practical agriculture. Nothing is farther from the truth. Science can never be really at variance with experience, for it is from the results of experiment that all sci-

entific principles are deduced. In these pages, however, it cannot be necessary to say a word in defence of the study of the principles of Chemistry in their application to agriculture. These advantages are too widely known and too fully appreciated to need anything of the kind. It will be the agreeable duty of the Editor of this department of THE CANADA FARMER, throughout the new year on which we have entered, to set forth and explain, as clearly and simply as possible, these principles and their application to the different operations of the farmer and gardener, under the various conditions of soil and climate which are met with in different localities. We trust that the practical agriculturist will not only find this study of great practical value, but also that he will find himself amply repaid for his trouble by the new interest that it will give him in the wonderful changes that are constantly going on everywhere around him.

Entomological Department.

Insect Economy.

In applying the word "Economy" to insects, we do not intend to refer at present any virtues of frugality and carefulness that they may possess, though some species, such as ants, bees, and others, afford us most notable examples of thriftiness; but we use the word rather as a convenient term to express the position they occupy in the balance of life, as regards their noxious and beneficial qualities, their numbers, distribution, habits, modes of operation, and the ways in which they affect us and the rest of creation. The word "Entomology," or science of insects, covers, indeed, all we refer to, but it includes further such other matter as anatomical structure, classification, etc., which hardly come within the scope and intention of the CANADA FARMER. Now that this periodical is assuming a somewhat different form, and entering upon a new phase of existence, we propose, in this Department, to consider "Insect Economy" in all its branches, but more especially with reference to the interests of the farmer and gardener. We invite the co-operation of our readers, and beg that they will second our endeavor to afford useful information to the public by sending us specimens for investigation, and by correspondence on their observations and experiences of insect life. It is in the power of all to observe and record facts, and many a simple fact, if plainly and accurately stated is, we can assure the reader, of very great importance to the progress of science and the advancement of human knowledge.

The study of insects was not long ago looked upon as a trivial, if not a contemptible, pursuit; but few, we think, at the present day, certainly no Canadian farmer, can regard that knowledge as unimportant which has in view the defence of our crops from the frightful ravage of these tiny foes. People in general are apt to estimate the value and importance of anything by its size, and hence no doubt arose the former disregard of this pursuit, and perhaps too the prejudice against it. Now, however, insects though diminutive in size and often times inconspicuous in appearance, have forced themselves upon the universal attention of the inhabitants of this country by their enormous numbers and the destruction they are enabled to effect. We doubt if there is a single man, woman or child of any intelligence in the whole Province of Ontario who has not heard, for instance, of the Colorado Potato Beetle, and desired to see a specimen and know something of its habits; not a few, to be sure, in the western portion of the country would now give a good deal never to see another, and have no further curiosity to satisfy regarding the habits of the creature, unless it be to witness the effect of some more deadly agent for its extermination, than we have yet been able to procure.

It is often a subject of wonder why such creatures as the Colorado Beetle, the wheat midge, the plum curculio, the codling moth, and a host of other pests should be so numerous and so destructive as they are time and again now, and yet were so little regarded in the early days of the settlement of the country. The reasons, we believe, are not very far to seek. Some of our most injurious insects are importations from Europe; there they are kept in check by parasites, birds, etc., that have preyed upon them for centuries and that have kept up a balance of power, as it were. Here these insects, as well as our own indigenous species, have had suddenly afforded them a vast area of cultivated territory, replete with the

food that they require for their sustenance; millions of acres of land have been brought under the plough in the space of a very few years; everything has been done that the insects could desire for the rapid propagation of their race; food in unlimited abundance has been provided, birds and small animals that feed upon them have been ruthlessly destroyed, and the very nature of things has been in their favor. Insects increase by myriads in a single year, in a normal state of things, affording food to thousands of other creatures; but the animals that prey upon them are for the most part productive only to a very limited extent, and from their size and habits exposed to countless dangers. Thus the former increase in an enormously greater ratio than the latter, and so in a very few years become the plagues of which we have had such bitter experience. We have not been referring, of course, to the effect of beneficial or parasitic insects as a check upon their noxious fellows; but here too the latter have had an advantage. In the case of imported insects, the parasites have not always accompanied the first immigrants, notably so with regard to the wheat midge; and in the case of our indigenous pests the parasites have had to wait for the excessive development of their prey before they had the same opportunity of multiplying their race; thus the enemy has always been a march ahead of the avenger. In process of time, no doubt, when the country has become fully settled, and fresh areas are not from year to year becoming added to the cultivated territory, the balance between the noxious and the useful will become so established that the natural equilibrium will be but rarely disturbed, and the condition of America in this respect will correspond to that of Europe at the present day. Meanwhile, it devolves upon us to use all the resources that knowledge, and experience can afford us for the artificial restoration of the disturbed harmony of nature. Let us then, strive to add to that knowledge by observation and experiment, and record our experience so that others too may be the gainers by it. Thus shall we mutually benefit each other, and by united action rescue from these enemies, those crops and fruits that often now seem absolutely at their mercy.

New Beet-root Insect.

HETERODERA SCHACHTII.

Some time ago Professor Westwood showed to me a phial containing minute white bodies or knots attached to slender fibrous roots of some cultivated plant. I was not at that time acquainted with their nature, nor do I know at present whence these specimens were derived, but as they were most probably of British origin, and as their presence on the roots is undoubtedly a source of weakness to the plant, I think it proper to communicate here a notice, across which I have lately come, and which will probably throw some light on the matter.

Herr Gustav Kunster, of Vienna, published in 1871, a paper, from which I take some of the information which follows. The author directs particular attention to such plants of Beet (Runkelraben) as are distinguished from others by a darker tinge on the centrally situated leaves, and which exhibit the outer leaves spotted with yellowish grey and sometimes black marks. If such plants are lifted out of the ground, their slender fibrous roots will show soft, whitish, almost lemon-shaped knots of the size of a grain of sand, which knots cling to the rootlets pretty firmly. They are the females of a minute round worm, called *Heterodera Schachtii*, belonging to the class Nematelminthes. In Germany they are called Ribben-Nematoden, or Rubenälchen. They are very destructive to Beet in many parts of that country, causing the gradual death of the plants, the decay starting from the tip of the root upwards.

The remedies recommended for lessening their ravages consist in ploughing the fields in autumn, and in letting the ground lay fallow in rough furrows during the ensuing winter. It is further advisable to mix the parings and refuse derived from the roots with unslacked lime, to let the manure thus obtained rot together. This must then be applied to meadows only, but not to arable land. Roots intended for seed-growing should be deprived of the useless fibres as much as possible.

There are reasons to suppose that the attacks of this minute worm are not confined to Beet alone, but that Mangel, Turnips, Parsnips, Carrots, and other root crops—perhaps Potatoes as well—are liable to its ravages. Any facts which cultivators of the soil on a large or small scale may be able to adduce in reference to this enquiry will therefore be acceptable, and specimens or information which may be communicated to the writer will be dealt with on a future occasion. *Albert Müller, in (Eng.) Gardener's Chronicle.*

Rural Architecture.

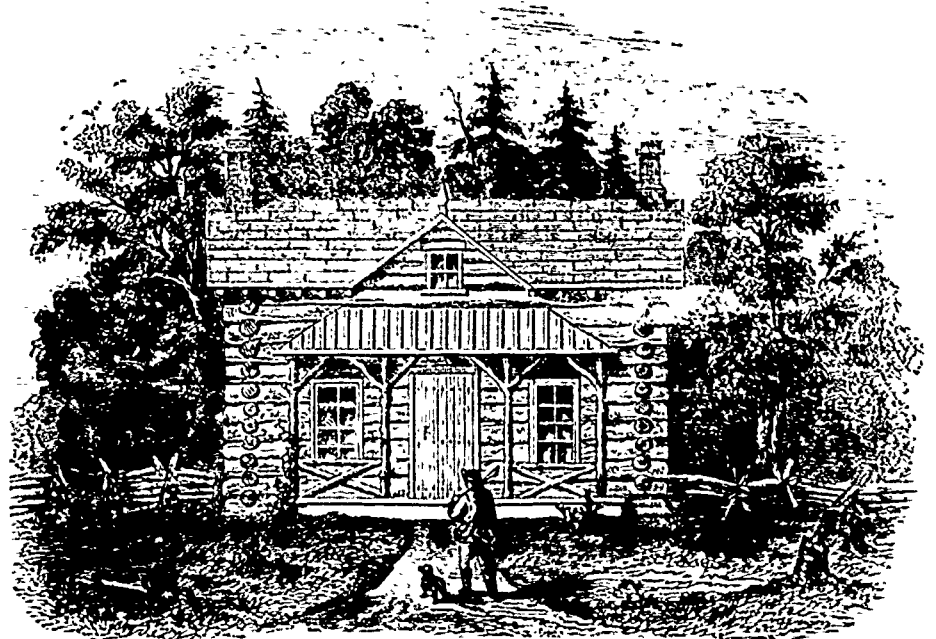
In no department of THE CANADA FARMER, under its new regime, do we hope to render more effectual assistance to our readers, than in that of Rural Architecture. A large proportion of the farm-houses and out-buildings in Canada, were erected under circumstances of great disadvantage, for they had to be run up, not as the proprietor would have desired, but as his circumstances at the moment, and the facilities at his disposal, permitted. Progressive improvements on the early styles of erection, has no doubt gone steadily on, and in every section of Canada commodious and picturesque rural residences are now to be found. It is not, however, to be denied, that there is yet immense room for improvement all over our country, the disadvantages of past days no longer exist, and we aspire to the honor of diffusing far and wide, more correct knowledge on the subject of elevating the popular taste, and exciting a more general desire for excellence in regard to it. Not a desire for lavish expenditure, but for the happy combination of good taste with judicious economy. We propose to publish in successive numbers, plans for the erection of every description of rural erection, with directions for the work, and wood-cut illustrations wherever necessary. Residences, farm-houses, laborers' cottages, barns, stables, root-houses, corn-houses, sheep-sheds, piggeries, poultry-houses, ice-houses, green-houses, conservatories, and all other erections pertaining to rural and village life, will duly appear in turn."

We heartily agree with Mr. Downing in his preface to his able work on rural architecture, when he says that "a good house is a powerful means of civilization. A nation whose rural population is content to live in mean huts and miserable hovels is certain to be behind its neighbors in education, the arts, and all that makes up the external signs of progress. With the perception of proportion, symmetry, order and beauty, the desire for possession awakens, and with them comes also that refinement of manners, which distinguishes a civilized from a rude and vulgar people. When smiling lawns and tasteful cottages begin to embellish a country, we know that order and culture are established." "The sentiment of Home, with its thousand associations, has like a strong anchor, saved many a man from shipwreck in the storms of life. How much the moral influence of that sentiment may be increased by making the house all that it should be, and how such an attachment is strengthened by every external sign of beauty that awakens love in the young, are so well understood that they need no demonstration. All to which the heart can attach itself in youth, and the memory lingers fondly over in riper years, contributes largely to our stock of happiness, and to the elevation of the moral character; for this reason, the condition of the family house—especially in this country, where every man may own a house—should be raised till it symbolize the best character and pursuits, and the dearest affections and enjoyments of social life.

Selection of a Site.

The first thing to be settled before proceeding to discuss designs for a house in country or town, is the selection of a suitable site. In choosing the site for a country residence, the importance of securing the very best within reach, cannot be over-estimated. You may rear a costly and elegant house, lay out walks, do planking, and employ the most ingenious artifices of the landscape gardener's art, and yet fail to cover the deficiencies of a poor site. On the other hand, with a really good site, you may erect commonplace buildings, pay little attention to the rules of art, and indulge in unnecessary parsimony, and yet have a home better and more attractive than the other, simply because of its surroundings of natural beauty. Use caution, therefore, in your selection. Examine all the places available for your purpose—ask questions freely—and seek advice from persons of taste and judgment. Ascertain whether the air is wholesome and pure, the soil gravelly or loamy, the water limpid and abundant, vegetation full and healthy, and the locality free from miasmatic influences?

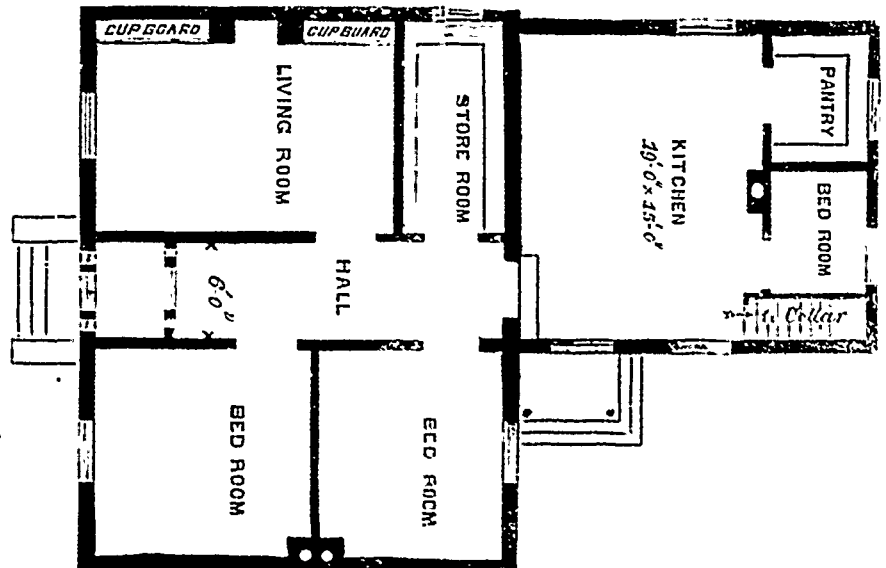
In his useful book on rural architecture, Mr. Lewis T. Allen says truly, that fitness for the purpose to which the house is to be applied, should be a governing consideration in determining its site. "The



house should so stand as to present an agreeable aspect from the main points at which it is seen, or the thoroughfares by which it is approached. It should be so arranged as to afford protection from wind and owner, may demand. If a site on the estate command a prospect of singular beauty, other things equal, the dwelling should embrace it; if the luxury of a stream, or a sheet of water in repose, present itself, it should,



storm, to that part most usually occupied, as well as if possible, be enjoyed; if the shade and protection of a grove be near, its benefits should be included, in time, any object in itself desirable, and not embarrassing to the main purposes of the dwelling and



its appendages, should be turned to the best account, and appropriated in such manner as to combine all that is desirable both in beauty and effect, as well as in utility, to make up a perfect whole in the family residence."

Style of Architecture.

Having settled the site on which his house is to be erected, a wise man will sit down and earnestly count the cost of the work he is entering upon. He will ask himself, What accommodation do I require? How much can I afford to lay out on my house? If his means are limited, he will attempt no ambitious imitation of a particular style, and will not impose upon the public with spurious examples of Italian or Gothic castles. No, he will endeavor to give a cheap cottage a tasteful and truthful appearance. He will have no showy ornaments and expensive carvings on the exterior, while the interior is badly planned, meagre and poor. His cottage will be well planned and tastefully built, so that every part will bear the impress of refined judgment, and will afford quite as much pleasure in its way as a spacious mansion; although not the same kind of pleasure, it will be perfect of its kind.

In determining what kind of a house to build, all builders agree that a simple square is the most inexpensive; the next form an oblong. The cost of a building is much increased where an irregular plan is adopted, although the irregular plan has many advantages, which will be shown hereafter. Those who desire to combine economy with good taste in building, should adopt a rectangular plan as capable of being cut up to the best advantage, combined with a pleasing exterior.

We shall give from time to time Designs for Houses of all descriptions, from the humble but comfortable log cottage up to the complete mansion for a large estate. We think we shall best commence our work, by giving in this number, designs of two most useful cottages, that appeared in the CANADA FARMER nine years ago, and from which a large number of houses have been erected in Upper Canada. We have often been urged to reprint them; and are glad of this fitting opportunity of doing so. The first design is of a house, which speaks for itself.

The second illustration we give on the previous page is of a small gothic cottage that can be constructed with stone, brick, or lumber. It is a dwelling suitable for a small family, the main building having a hall six feet wide running through the centre and entering the kitchen; on the left side of this hall is a large sitting room or parlor, 14x19, and store-room, 14x7; on the right are two bed-rooms, one 13x14 and the other 11x14; in the rear addition is a large kitchen, a pantry and bed-room. From the kitchen is a stair leading to the dairy and cellar, which should either have a brick or concrete floor, laid with a fall to the drain. If the kitchen flue is brought down to the cellar, it will materially assist in its ventilation. The walls of the cellar to the ground surface should be built with stone laid in water-lime mortar, and be at least 18 inches thick. None of the ceilings of the rooms should be under 10 feet high. The manner of laying out the interior may be as in the figure that follows the front elevation.

This figure shows the front elevation of the cottage which is situated on a raised terrace, and built with red brick, with white brick corners. The windowsills and the drips over the front door and windows, could be of dry pine, painted and sanded, but stone would be better. A small gable is raised over the front door, surmounted with a turned pinnacle, and having a simple piece of tracery fastened to the under side of the cornice, and in the centre of this gable is a small trefol window to give light and ventilation to the garret. The roof should project at least two feet over the walls, having tin eaves-gutters and down pipes to carry the rain water to the cistern. The shingles should be of dry pine, laid on four inches to the weather, and bedded in good hair mortar. The walls, if built hollow, a brick and a half thick, would be very dry and warm, and require no lathing on the interior surface. Round flues of glazed tile are much better than square brick flues, as they are safe from fire, and do not require sweeping.

The cost of a cottage of the above description would be about \$1,000. If built of timber, and boarded perpendicularly, or rough-cast on the outside, the cost would be about \$750. It must be borne in mind, however, that estimates are governed by style of finish and the price of material in a given locality.

Size of main building, 36x28 Kitchen extension, 21x22. Scale, 12 feet to the inch.

NEW SERIES

OF

THE CANADA FARMER.

The Publishers of THE CANADA FARMER have the pleasure of announcing the commencement of a New Series of this Journal, on a higher and more efficient scale than has yet been attempted in Canada.

The exhaustion going on in a large proportion of the farming lands of our country, from improvident culture, and the consequent inability to obtain crops equal to the averages of past years; the increasing cost of labor; the enhanced prices of all manufactured articles, without any proportionate increase on the prices of farm produce; and consecutive seasons of severe drouth—all at this moment unite in rendering necessary a prompt and vigorous effort on the part of agriculturists to maintain the high prosperity so long enjoyed by the farmers of Canada. The agricultural interest so vastly preponderates over all other industrial pursuits in Canada, and on its welfare so completely depends our material progress as a people that the best mode of accomplishing this end may well receive the earnest consideration of all classes as a national concern.

The conductors of THE CANADA FARMER entertain the conviction that the one true remedy for these passing difficulties is *better farming*. They believe that the same resolution and energy that enabled the brave early settlers to overcome toils and hardships now happily unknown, and convert the wilderness into cultivated farms and thriving towns, if now applied (with the better knowledge and simpler means of the present day) to the renovation of the soil and the general adoption of a higher system of tillage, would place the agricultural interests of our country in a far more secure and more profitable position than it has ever yet held. With higher cultivation greater variety of crops, improved implements, improved herbs and flocks, higher feeding, and heavier manuring, the Canadian farmer can overcome all difficulties present or prospective, and command success.

It is with the earnest desire and hope of promoting effectively this movement that the new departure in the history of THE CANADA FARMER has been resolved on. During the nine years of the publication of this journal, the most gratifying acknowledgments have come constantly from all quarters of the valuable service rendered by it to the cause of agricultural advancement. But it is believed that the time has come when a more systematic treatment of each branch of the Agricultural and Horticultural professions is demanded—when the suggestions of writers combining thorough scientific knowledge with practical experience will command earnest attention—and when intelligent farmers in all parts of the Dominion are prepared to consider candidly, and test practically, whatever may be shown to be advantageous.

With these views and intentions the new issue of the CANADA FARMER has been entered upon. The work of each month will be classified under the following departments:—

FIELD CULTIVATION
GRASSES AND FORAGE CROPS
FOREST, SHADE AND ORNAMENTAL TREE CULTURE.
HORTICULTURE—Including the management of the Orchard, the Flower Garden, the Kitchen Garden, the Conservatory, the Greenhouse, and the Vineyard.
AGRICULTURAL CHEMISTRY.
ENTOMOLOGY.
RURAL ARCHITECTURE.
DRAINAGE AND FENCING.
IMPLEMENTS OF HUSBANDRY.
FERTILIZERS
SEEDS AND SEED-GROWING.
THE BREEDER AND GRAZIER.
THE DAIRY.
THE HORSE AND STABLE.
THE VETERINARIAN.
THE POULTRY-YARD.
THE ATTIARY.

Each of these Departments will be placed in charge of a responsible Editor, thoroughly competent to deal with his special subject; and the publishers have the satisfaction of stating that they have already secured the co-operation of a body of eminently qualified writers—men who, they believe, will enter with hearty zeal upon their work, and seek to infuse fresh

ardour into the paths of Agricultural Industry. The names of many of these writers we are not at liberty to make public; but we may state that among them are those of our former able and experienced collaborators, Mr. D. W. Beadle, of St. Catharines, and the Rev. W. F. Clarke, of Guelph. Prof. Ellis, of the Ontario School of Technology, will preside over the Department of Agricultural Chemistry. The Rev. C. J. S. Bethune will deal ably, as in the past, with the interesting field of Entomology. Professor Smith, President of the Ontario Veterinary College, will edit the Veterinary Department. The Poultry Yard will be in the hands of a party eminently competent to deal with all its details. Mr. Anderson will take charge of Agricultural Implements. Mr. William Kauffman, the talented and experienced Architect of Toronto, will edit the Department of Rural Architecture, and furnish designs and specifications for the various illustrated structures. The regular editorial staff will include a number of other able writers; and we are promised, besides, valuable contributions in the several departments from a host of agricultural friends.

The new issue of the CANADA FARMER will be published twice in each month—instead of monthly as heretofore—and contain not less than 16 pages in each number, with a supplementary sheet when required. It will be printed in the best style and plentifully supplied with wood-cuts in illustration of the letter-press articles.

The first number is now out, and the second and third numbers will be issued immediately.

The subscription price will be ONE DOLLAR AND FIFTY CENTS per annum, *free of Canadian postage*, payable in advance.

Orders and remittances should be addressed to
THE GLOBE PRINTING CO.,
TORONTO.

Agents to obtain subscribers wanted in all parts of the Dominion. Terms of agency and sample copies sent on application.

The Canada Farmer.

TORONTO, CANADA, JANUARY 15, 1873.

In presenting the first number of our new Series in its improved form, we venture to ask for it from all interested in Agricultural and Horticultural pursuits their hearty support. In another column will be found the Prospectus for 1873—from which it will be seen that the work we have chalked out for ourselves is bold and arduous. We are ready to do all, and more than all, we have promised—if the men we write for will do their duty to us. In Journalism, as in everything else, the "sinews of war" are necessary to success—and if our farming friends will swell up our subscription list to even a tithe of what they could easily accomplish by a little exertion, we promise them an Agricultural and Horticultural Journal thoroughly efficient and worthy of their support.

ONWARD!

To one who can remember what Upper Canada was thirty years ago—who has watched its progress since then, and knows all the difficulties and hardships that had to be breast and overcome by the first early settlers and those who gradually followed them into the country—the progress accomplished in these brief years seems marvellous in the extreme. Thirty years ago, whole ranges of counties now covered with cleared farms, comfortable homesteads, thriving villages, and all the evidences of material and intellectual advancement, were one dense primeval forest. Toronto was a town of twelve or thirteen thousand people; Hamilton was a strip of houses with a hotel and a few wholesale stores; the whole population of the city of London might have been stowed away in the Tecumseh House of the present day; St. Catharines, Brantford, Galt,

Guelph and many others of our large and flourishing county towns, were but straggling villages; and as to scores of our thriving and well peopled villages, —the axe had not yet begun its war on the forest on the spots where now they stand.

Thirty years ago, railways were not; canals were yet unbuilt; steamboats had but begun to make their appearance. Schooners, batteaux, waggons and sleighs were the established vehicles of transportation—and mud roads the sole reliance.

Thirty years ago, men worth one or two thousand pounds were millionaires, and few and far between at that; banks were very humble institutions; and barter was the order of the day. Farmers drew their produce to "the front" from the farthest northern outposts of civilization and all between—and hard lines they often had of it, poor fellows, they and their horses. When they got at last to the front, wheat was probably 50 cents per bushel, barley 40 cents, peas 35 cents, oats 20 cents, and good beef three-half pence per pound.

Of the farmers in Upper Canada thirty years ago, and of the emigrants who have since come among us, an exceedingly small proportion were originally trained to agricultural pursuits. They came to the land of promise to push their fortunes, without experience, without money, with very little else, indeed, but stout hearts and the earnest determination to succeed in life, and they took to farming as the one great industry of the country.

And as a body they achieved success wonderful success. Perhaps in no country has a larger proportion of the men engaged in any single occupation won comfort, independence, and the means of educating and settling their families in life, than among the farmers of Upper Canada. Not only have they by sheer industry, won their farms from the wilderness, fenced and drained them, built houses and barns, and gathered flocks and herds around them—but they have made the county roads, studded the country with churches, school-houses and town-halls, and perfected a system of local self-government, unsurpassed in the world. All this they have done in the brief space of one generation—and while doing it, their labor on the soil, and that of their sons in the forest, has furnished four-fifths of the entire exports of the Province to foreign countries, as well as the chief basis on which our cities, towns and villages have grown so steadily in population, wealth and commerce. In fact, agriculture in its several branches, has been, and is now, the foundation on which rests the entire industrial fabric of Ontario. On its prosperity all classes depend—and with a good crop or a bad one, business operations, the abundance of money, and the social comforts of our whole people rise and fall, as do the waters of the sea with the flow and ebb of the tide.

In thirty years the farmers of Upper Canada have done what centuries have not been able to effect in European countries. And is it any wonder, that under the pressure of such circumstances, too many of our farmers have thought more of the necessities of the hour than of the future fertility of their farms—that their fields have suffered severely from over-cropping—that their live-stock has been inadequate in quantity, indifferent in quality, and poorly fed—that their fields have not been cleaned thoroughly or manured sufficiently—that on comparatively few farms has a clearly-defined plan of operations been chalked out and pursued—and that as the result, we have now all over the Province, weeds in abundance, light crops, poor pasturage, and totally inadequate supplies of winter forage? We may deplore these facts as they now press themselves upon us—but who is hardy enough to say that, under the pressure of similar circumstances, he would not have done precisely what these early settlers did?

We have been thus particular in sketching the agricultural difficulties of the past, and in claiming

heartly gratitude towards our early settlers for the great things they accomplished in spite of a thousand difficulties, because we desire to draw a clear line of demarcation between the agricultural past of Upper Canada and the agricultural future of Ontario. In recommencing our work of persuasion towards a vast higher and more profitable system of agriculture that now prevails, and in using earnest language as to the folly and waste of careless, planless farming—we wish, once and for all, to clear our skirts from the supposition by any reader that we could entertain a thought as to the men who made our country what it is, other than those of the highest respect and admiration.

But the past is one thing the future is a very different thing. What was a virtue twenty years ago, is indefensible now. What was temporarily profitable then, is ruinous now. Twenty years ago, the virgin soil was yet unexhausted—the price of land was eight shillings per acre; the necessaries of life were not half what they now are—and the cost of labour was hardly one-third of what it now is. The man who wants to make farming profitable now, must farm well. He must make live-stock the basis of his operations—he must watch the markets and diversify his crops to suit them—he must battle against the weeds as his father did against the stumps—and withal he must keep up the high fertility of his soil and raise large crops. To do all this has doubtless been always the better way; to do otherwise now and prosper, is impossible. It is our mission to urge this earnestly, continuously, in season and out of season, on the farmers of the Dominion and to point out the way that leads to the highest success. With the body of able writers who now form our Editorial staff, and the light gathered from contemporary publications in Great Britain and the United States, and the contributions of experienced farmers from all sections of Canada—we hope to discharge these duties with advantage to our country, as it certainly will be with zeal and industry. And if it shall sometimes appear that the style of husbandry we commend is beyond the reach of many Canadian farmers, we pray our friends to bear in mind that it is the duty of the journalist always to keep before the people a high standard of excellence, and (while dropping no word of discouragement as to a modified course) to excite a desire for the highest possible success. On our part we shall strive to keep ever before us—that with a large part of our farmers the rule must yet often be not what is best, but what is possible. But neither shall we forget that every man of us can do better, if he tries; and that that which may be difficult to adopt in whole, can easily be adopted in part.

Farm Book-Keeping.

Do you keep a record of your income and expenditure? And on which side of the ledger does the result of the year's transactions manifest itself? These are questions of first importance to every one dependent on his occupation as a means of living. Almost every successful man of business keeps a daily record of his transactions, and of income and expenditure; and is not a farmer, in his own occupation, as much a man of business as the merchant or trader? A faithful daily record of transactions is invaluable to the farmer, not merely in a direct monetary point of view, but also as reference for information and comparison of results from year to year. From it the farmer can readily ascertain the date of birth, sickness, or death of any animal on the farm, the symptoms of any complaint or disease that prevailed at any time, the remedial measures adopted, and the success that attended them. He can also find at any moment the exact price of any implement, or animal bought or sold; the dates of ploughing, sowing, reaping, harvesting, threshing, etc., in past seasons; meteorological character of the season; the nature and extent

of insect ravages, the number of men employed on the farm, the length of time occupied in accomplishing a given portion of work, the prevailing rates of wages, the scarcity or otherwise of labor, the number of loads of manure hauled to a particular field, and its results thereon; the use, extent and benefits of auxiliary fertilizers, besides a thousand and one other incidents and results on the farm, to which it is of the utmost importance the farmer should be able at any moment to make reference.

At the end of each year, with an exhibit of the financial operations of the farm for the preceding twelve months before him, the farmer can accurately learn his pecuniary position, and even should it only prove something akin to the picture old Ben. Johnson drew when he said "Income, £20; expenses, £19 19 6; result, happiness;" still the result is a happiness not merely to be measured by the mere amount of actual gain, but a satisfaction all the more intensified by the inward consciousness of having adopted every means and strained every energy to accomplish the most successful results.

It has been strongly advocated that the farmer should open a separate account for every field cultivated and for every animal on the farm, with a view of ascertaining the profit gained or the loss sustained on each. This has been strongly objected to, as altogether too intricate a system for general adoption, and involving a knowledge of accounts and expenditure of time that many farmers do not possess; but these objections have no application to a very large body of farmers of Ontario, and ought not to be applicable to our rising youths, who possess such excellent educational advantages which their fathers did not enjoy. We are persuaded there is hardly one young man amongst our agriculturists, who having once resolutely undertaken the daily work of transferring the occurrences of each day to paper, who will not, after a very short trial, anticipate with pleasure the quiet half-hour of literary work so necessary to success in the occupation he loves to follow.

Distribution of Trees by the Fruit Growers' Association.

The Directors have decided to distribute among the members in the spring of 1873, a tree of the Grimes Golden Pippin Apple and of the Clapps' Favorite Pear; in the year 1874 the Downing Gooseberry and Barry (Rogers No. 43) Grape. This distribution is made to all new members as well as old, who send in their annual fee of one dollar to the secretary, D. W. Beadle, St. Catharines, on or before the first day of March. These fruit trees and plants are sent to the members, without expense to them, for the purpose of testing their hardihood, productiveness and general value in the localities where the members reside, and new that the society numbers nearly two thousand members, scattered all over the Province from Ottawa to Windsor, the whole Province is made in this way an experimental fruit garden. The reports which are sent in by the members from time to time of their success or failure, will in a few years form most valuable statistics for the guidance of intending planters in any and every part of the Province.

In this work of testing fruits and ascertaining their value for cultivation in each County and Township, we believe the Fruit Growers Association of Ontario is quite in advance of every kindred Association in America or Great Britain. The Annual Reports are sought after, both at home and abroad, and although the number printed each year has been thought to be ample, yet the call for them has been much greater than the supply.

VEGETABLE AND FLOWER SEEDS.—Mr. J. J. H. Gregory, of Marblehead, Mass., is well known as one of the few leading seed grocers in this country. He was the original introducer of the Hubbard squash and many other of our new and valuable vegetables. All seeds from him are warranted fresh and reliable. His advertisements will be found in this number, and we invite attention to them. His illustrated catalogue for 1873 (now ready) will be sent free to all applicants.

Stock Department.

Introductory.

Believing that without an abundant supply of manure, there can be no really good husbandry, and that abundant supplies of manure can only be obtained by a large increase of the live stock maintained upon our farms,—we shall in the conduct of this department of the CANADA FARMER, urge earnestly and systematically upon our readers the adoption of every plan which will conduce judiciously to this end. Believing, further, that well-bred stock can be kept as cheaply as common stock; can be made fit for the butcher at a much earlier age; make better beef at any age; make more money at the pail, if selected with that view; and sell at any time of life, whether calf, yearling, or aged, at a vastly higher price than any description of common stock, we shall urge our friends to keep common stock only until better can be done, to keep grade stock rather than common stock; to keep thorough-bred stock, rather than grades; to keep pure-bred animals with old well-known descents, rather than short pedigrees, however good; and whichever of these classes they keep, to keep the best to be had of that class.

We shall advocate high-feeding of live stock of all kinds, but not over-feeding, and we shall do so because we are persuaded that to feed well, is not only best for the animal, but decidedly the most profitable for the farmer. We shall discountenance over-feeding in breeding stock because we are persuaded it is most injurious to the animals, because it reduces the contest in the showing to one of production of fat, rather than of natural beauty, vigor of constitution, regularity of production, and purity of descent; and because it is the heavy price breeders pay to win prizes at the shows (too often for inferior animals), and consequent (but possibly undue) popularity for their herds.

We shall give due attention to all kinds of domestic animals, and deal impartially with the several branches of each kind. We shall endeavor to note the movements from time to time in thorough-bred stock, the importations from abroad, the public sales at home and abroad, and the condition and progress of the principal herds and flocks of Canada. We shall also publish portraits of leading prize animals deemed worthy of that honor.

The Short-horn Breed of Cattle.

The following brief statement of the rise, progress and present position of the Short-horn family is condensed from a clever paper from the pen of Mr. John Thornton:—

The Shorthorn breed of cattle may be fairly called cosmopolitan. Its habitat is everywhere. From one small spot in Britain, its native home, it has spread through this country till it is found from John O'Groats to Land's End; everywhere in Ireland it prevails; to most parts of the globe it has emigrated; and the present year opened with an importation of three Shorthorn heifers and a bull by the Government of Japan.

There seems little doubt that from time immemorial the breed existed as a local race along the rich grazing valleys of the Tees, in the counties of Durham and Yorkshire. Noblemen and squires, with a thoroughly English love of good stock, kept up the herds on their estates with as much pride as their own pedigrees. Numerous are the local records of the excellences and feeding properties of these cattle, and of their capability of attaining enormous weight when at full maturity. Mr. Chas. Colling, of Ketton, county Durham, a man of great judgment and sagacity, and a follower of the great Bakewell, was the first to bring the breed prominently into notice. He collected the best specimens together, and by careful selection and breeding reared a herd of fine cattle, which arrived at maturity much earlier than had previously been known. His brother, Mr. Robert Colling, of Barmpton, was also an eminent breeder, and followed in the

same course. Both brothers at first used the same bulls. The former bred an ox of wonderful dimensions, whose live weight was 34 cwt., and the latter a white heifer of equal celebrity. The bull Favourite (252) was their sire. They travelled throughout England, and were exhibited in London, as well as at country towns. This circumstance, coupled shortly afterwards with the sale of Mr. Chas. Colling's herd in 1810, at an average of \$737 for forty-seven head, brought the breed into notoriety, and from the beginning of the century Short-horns began to spread until they may now be found in every county.

The breed is distinguished by its symmetrical proportions, and by its great bulk on a comparatively small structure, the ossal being very light, and the limbs small and fine. The head is expressive, being rather broad across the forehead, tapering gracefully below the eyes to the open nostrils and fine flesh-colored muzzle. The eyes are bright, prominent, and of a particularly placid, sweet expression, the whole countenance being remarkably gentle. The horns (whence comes the name) are usually short, springing well from the head, with a graceful downward curl, and of a creamy white or yellowish color, the ears being fine, erect and hairy. On touching the joints, the skin is found to be soft and mellow, as if lying on a soft cushion. In animals thin in condition a kind of inner skin is felt, which is the quality or handling indicative of those great fattening propensities for which the breed is so famous.

The Ketton herd was of this character, the knuckles or shoulder points being rather strong and somewhat upright. Many of the earlier breeders sought to remedy the defects that some thought apparent in the Ketton stock, notwithstanding the public approval, as shown by the \$737 average, and the \$5,250 for the six-year-old bull Comet (155). Mr. C. Mason, of Chilton, Durham, improved the shoulders of the cattle in his herd, somewhat at the sacrifice of the hind-quarters; and Sir Chas. Knightly, in more recent years, was also very particular about the fore-quarters. During the last quarter of a century fashion has run high, and there has been a constant adherence on the part of breeders to particular strains of blood, producing different characteristics of the same breed. In some strains, style and elegance have been successfully cultivated; the beautiful head is carried erect, the horns incline upwards, the body has become elongated, and the shoulders have somewhat retained their uprightness; the whole animal bearing a most stylish attractive look. By other breeders massiveness and symmetry, with sloping shoulders and a great disposition to heavy flesh, have been studied and attained. The adjudications in our recent show-yards have been made to animals of the greatest substance, whose form has nearest preserved the type of the earlier Short-horns, without the coarseness of their shoulders.

The system pursued by the most eminent breeders is that of allying animals of the same strain of blood. One breeder readily sells his bull calves for \$3000 each, and several calves have sold at over that price. Another lets his bulls for the year at varying rentals, from \$500 to \$1500 each. The most effective method of producing good animals seems that of close breeding, or as it is termed in and in, so long as robustness, size, and constitution are maintained.

The Herd Book has been the mainstay of this carefulness on the part of the breeder. Brought out in 1822, by Mr. George Coates, in his old age, it was continued by his son, at whose death it was taken up by the present editor Mr. Strafford, by whose persevering labors it has reached its 19th volume, which was published last year with a record of 30,347 numbered bulls, and a proportionate number of cows.

The value attached to the best specimens has of late years become almost fabulous. The late Mr. Whitaker, said in 1829 that \$10,000 would not purchase ten of the most select animals in the country. That price now breeders have been known to steadily and calmly decline for one animal. Farming has become a more fashionable pursuit, and many leading men of the country have stocked their own estates with pure-bred cattle, while the retired merchant has amused his leisure hours with model farming, and found a pleasant relaxation in breeding short-horns. The demand has consequently exceeded the supply; prices have risen, and breeders of the more fashionable tribes have endeavoured to keep up the supply by offering portions of their herds, which have sold at enormous averages.

The preponderance of the breed at the meetings of the Royal Agricultural Society of England has been remarkable. The result of seven years, ending in 1852, was 702 shorthorns against 211 Herefords and 357 Devons; and for the last ten years the number exhibited have been 1476 short-horns, 574 Herefords, 472 Devons. At the leading markets and fairs, except

perhaps in the south-west, they comprise the majority; and it is estimated that there are more short-horns bred, fed, and grazed in England than all the other breeds put together.

The great milking properties of this breed have made them equally serviceable to dairymen and graziers. Of late years complaints have been frequently made that short-horns are not good milkers. This has doubtless been correct in many instances, and has arisen, not from inherent defects, but from the pernicious effects of forcing young animals into a condition of premature fatness. There are, however, animals of all strains, capable not only of making their own calves fat, but of giving several quarts of milk daily in addition.

One great advantage of the short-horn is its marvellous efficacy in crossing and improving other breeds. In Scotland many of the native black herds have been crossed generation after generation, until the characteristics of the short-horn are remarkable. In Wales the "coloured beast," as the short-horn is called, is gradually working upon the Castlemartins and runts, and pure-bred herds are to be found in the south as well as the north of the Principality. The marvellous improvement in the Irish cattle has become proverbial. Even the Isle of Man boasts its pure herds; whilst the Orkneys and Shetlands are not destitute of pedigreed bulls.

But it is to the New World that the greatest importations have been made. America imported pure short-horns upwards of fifty years ago, and every year numbers of cattle leave our shores for the States. Spirit and enterprise have been rewarded, and the offspring of animals imported a generation back have of late years found their way back to our own herds. The vast area and rolling plains of the Western States are affording fine fields for grazing and breeding, and what has for years been done in Australia, where numberless bulls and also heifers have been sent, is now being practised in the Far West. Canada too, with its fields five months white with snow, finds the purest pay the best.

New Zealand has also its breeders and importers; and, coming nearer home, we find France took thirty years ago some of our best cattle, and one of her first acts after the late terrible calamity was the importation of four pure-bred short-horn bulls. In Germany several pure herds are to be found, and short-horn bulls have been used among the native breeds of Russia and Bessarabia, and even in Egypt. It is in the prepotent powers of this impressive race that its great value lies. Its adaptability to all climates and soils, its marvellous faculty of growing and fattening, at the same time, its maturity at an age when other cattle are considered but half-grown, its faculty of raising its own offspring with a bountiful supply of milk, insure its great and permanent superiority.

The short-horn has been called the "Universal Intruder." Wherever Britons colonise, the short-horn makes his home. In many a distant land, where the English tongue is unknown, his influence is extending, and he undoubtedly is the great means of transmitting to other times and other nations that great national institution, the "Roast Beef of Old England."

English Management of Sheep.

From the Live Stock Journal.

Americans might take valuable lessons from their English cousins on sheep management. They make a large account of the mutton as well as wool. High feeding there is the road to success. An English sheep farmer will usually keep about one sheep to an acre, and these of the heavy mutton breeds. He begins in September to feed peas, barley, and oil-cake with turnips. His extra food not only adds weight to the sheep and increases the value per pound, but enables the farmer to keep many more sheep and to produce a great increase of manure to raise larger crops of grass and roots. The English farmer more closely imitates nature in the food he furnishes to his sheep, and keeps up the succulent food the year round. He does this by raising abundance of turnips and mangels for feeding as soon as grass gets tough and dry. The extra price he obtains from the extra quality of his mutton, pays all the outlay for oil-cake, grain, etc. The most important point to study is the fact, that he keeps up a constant and rapid growth by means of succulent food and the addition of a little grain at the proper time, so that his lambs will weigh at the same age, fifty per cent more than those of the same breed kept by an ordinary American farmer.

Their roots are grass laid up for winter use. Our corn crop is substituted for the English turnip crop, and although our corn is much more nutritious,

we do not produce as good a result in beef or mutton as they do with roots; and this is owing to the fact that the roots are in a succulent, soluble state, while our corn is hard and dry. If our corn could be ground and softened by cooking, and then fed with coarse food to give bulk, we could, no doubt, surpass the weight produced by turnips. But our system of feeding is more defective in this, that we depend too much upon the sheep getting their own living in pasture, for the whole season, from early spring to late in the fall. Thus they are scantily fed much of the time, and come into winter quarters very inferior to those kept on the English system.

Another point of importance: The English sheep farmer seldom, if ever, keeps any old sheep. He has learned practically that the digestive system is most active before the animal reaches maturity, and that more weight is produced by the same food than after maturity; consequently he makes mutton the great source of income, and sells as soon as they reach the prescribed weight. The breeding ewes are turned at about three, and the rams not kept beyond four years. The regular profits of a flock of 300 sheep, as given by an English writer, may surprise some of our sheep farmers who do not make one third the amount from the same number. He says:

"The income from such a flock would be from 75 draft ewes fattened to weigh, say about 140 lbs. dressed weight, about \$20, and the wool will come to \$5 or more; the 75 he teds would weigh about 120 lbs., but would cut more wool, which would be worth more per lb. too, and the mutton would be worth a cent or two more per lb., so that they would make altogether more, but say the 150 fat sheep make in wool and mutton \$25 each, and there is \$3,750, and the wool from the 150 breeding ewes and the 75 ewe teds, which would not be shorn off them till about the first week in June, which would bring in another \$1,000 or thereabout.

"The breeding ewes are not put to turnips till the pastures are bare, and they do not get as many as they would eat, because it grows the lambs too large before they are born and produces difficulty in yearning; it is usual to give oat or barley straw, instead of hay, while ewes in lamb are eating turnips or swedes, and early crops of rye and vetches are grown to put the ewes to alter lambing, that milk may flow, etc. On some farms, the hurdles are in use all the year round, for forage crops are penned off all summer, enough of the hurdles being removed daily to give a fresh bit of ground and herbage.

"After the sanfoin or the rye-grass, etc., is mowed, and the aftermath has grown a week or two, the lambs are weaned, and they lie till the end of August or beginning of September, when they are put to turnips; for in the English climate, early white turnips are brought to be fit for penning off by this time, and swedes are not eaten till about the close of the year. The turnips as well as the swedes are cut with a machine, and given to the sheep in troughs; and these troughs, and racks for holding hay, are moved daily, so that the land is manured regularly all over—for if any of the turnips are wanted for the cattle at home, they are taken, so that the sheep lie on the ground while eating what are left.

Polled Angus Cattle.

Polled Angus or Aberdeenshire cattle, are attracting considerable attention in the north of Scotland both as "fancy" and marketable stock. They resemble, in many respects, the Galloways, natives of the south of Scotland, but are regarded by many best versed in such matters as a distinct breed. The attempts to cross the two breeds have not resulted satisfactorily. The breeders of this black Polled stock have multiplied of late, and the breed is steadily gaining ground as prime beef. Among those who breed Polled cattle, are Sir George Macpherson Grant, of Ballindalloch; Mr. M. Combe, M. P., and his cousin, at Easter Skene; Mr. Morrison, of Bogruce; the Earl of Airlie, Mr. Skinner, of Drummin; Mr. Walker, Portlesken, etc.

The points of a thoroughbred Polled Aberdeen and Angus bull or cow can be seen in their color being glossy black, a clean cut head, with not too great a length between the eye and nose, the former bright and prominent, and a good breadth between the two; the chest ought to be full and deep, legs short and clean-boned, and supporting the body easily although firmly. The back must be straight and level, from which the ribs must spring with a gentle and easy curve. The tail must hang straight, with no protruding from behind, and finished off with a plentiful tuft of hair. Regarding the skin, it must be soft and pliant to the touch, and covered with a crop of luxuriant and silky hair. Of course, between the cow and the bull a difference must exist in the formation

of the head, which in the former ought not to partake of the broad bullet shape which that of the latter possesses, but has to be of a more elongated shape, in the shoulders, which ought to be sharper at the top; the cow also is not so broad across the chest. In both cases horns are inadmissible; and the animal being well and firmly set on their legs, should walk with an easy, springy, and "thoroughbred" looking action.

The Polled breed, for their bulk, weigh heavier than Short-Horns and their crosses, and command the largest prices as beef cattle. They are hardy and well suited from their light make to stand rough and hilly pasturage, and will thrive in a climate where Short-Horns, still less Ayrshires, could not come so fast to maturity.

In the rearing of pure Polled stock one caution should ever be present with the breeder, and that is, never to commence a herd by breeding from a cow that may seem to have all the points of thorough breeding, yet at some previous time may have accidentally or otherwise been served by a Short-Horn or cross bred bull; for however pure any other Polled bull may be to whom she is afterwards put, the risk always is that she may throw calves with a cross-bred strain in them.

And now let me say one word about crossing these Polled cattle with other breeds. The end in view of this is simply the rearing of heifers and bullocks for the butcher *abme*; and in all cases let these be out of a black Polled cow and a well-selected Short-Horn bull, combining, by such intermixture, the neat figure and healthy disposition of the one with the size and bone of the other. Such come sooner to a marketable profit than any pure-bred animal, inasmuch as the excellences of two superior breeds are combined together in one.

The reverse has and is being tried—a Polled bull with a Short-Horned cow; but somehow from this no one seems hopeful of a satisfactory result. Moreover, in all such crosses of different breeds, no one ought to go farther than the *first cross*, as after that a decided coarseness of style appears—long legs and "weedy appearance," and none of the good feeding properties so desirable in an animal that is to be of any profit to the farmer.

I remarked before that the authorized color of the Polled Aberdeen and Angus cattle is black, yet in many cases we find them with a strain of brown down the back, and about the ears.

In the rearing of the young, and the general treatment of this breed, the same rules hold good as with others.—*Cor. London Field.*

Cooking Food for Stock.

We have asked our readers for facts in answer to this question, and we are pleased to give the following statement of Messrs. Dewey & Stewart, of Owosso, Michigan, who fitted up their apparatus for this mode of feeding, nearly five years ago and have practiced it ever since:—

"We cheerfully comply with your request to furnish you the facts in reference to the economy of cooking for stock. We will state that our farm contains 700 acres, and we generally feed a hundred head of cattle on grass in summer, and we fatten each winter about forty head of cattle in stable. We raise forty to fifty acres of wheat, twenty to thirty of oats, twenty of corn, and three or four acres of Swedish turnips. Our engine is five horse, boiler something more with engine attached to its side. And this threshes our grain, cuts and steams the fodder, pumps the water, saws the wood and does the churning, and thus is very handy to have on the farm. We have three steam boxes holding 100 bushels each, and one of these filled with cut straw and chaff, with 200 pounds of bran worth 75 cents per hundred, evenly mixed, moistened with water, packed in solid and well steamed, will feed sixty head of store cattle three times for one day, all they will eat. Fattening cattle are fed extra. In this way we can feed all our straw and corn stalks, and poor hay, if we have any, with a little grain or bran, turn it all into quick, active manure to stimulate new crops, and can keep much more stock and at one-third less expense than in the old way. Our stock comes out in better condition in spring, and we have no doubt from our experience, that there is a saving to us of fully one-third in the cost of wintering our animals. In feeding hogs we find that two bushels of corn, ground and cooked, is a little better than four bushels of shelled corn. We have proved this by the best test we can give it. We have no hesitation in saying that our confidence in the economy of this mode of feeding strengthens with each year's experience, and we believe it is destined to be practiced much more extensively in the future.—DEWEY & STEWART.—*Live Stock Journal.*

How to Feed Hogs.

I advise farmers to get out of the old rut in disposing of their corn by feeding it to hogs in the usual way. Shell, grind and cook; shell and soak, or soak in the ear, all the corn you feed, except what you feed for a few days when the corn is soft, just from the mill. And this is the best season of the year to feed freely, as the corn is sweet and easily masticated, and the weather is of the right temperature. As soon as the corn becomes hard, soak it in tubs or large troughs. To see the difference in feeding soaked and dry corn, after feeding the soaked a few days, give the hogs a feed of dry corn and see how long it will take to eat it up. In feeding early, your hogs are ready for market before very cold weather comes.

After cold weather comes, be sure and grind all your feed, omitting the cobs; cook the meal, and feed a little warm. Were it not for freezing in tubs, it would be just as well to use cold water. Have the feed not too thin, but give drink by itself. Into the soaked corn (either in the ear or shelled), and also into the cooked meal, put a little salt and saleratus, or good strong ashes, care being taken not to use too much of these condiments—only enough to cause the feed not to sour in the stomach. *No dry corn should be fed to a hog or pig at any season of the year.* If soaked or cooked it is readily masticated, and thus all the nourishment obtained. If fed when dry and hard, there is much waste.

No farmer should think of carrying his hogs through the winter on any other than corn meal, either dry or cooked. When the expense of cooking seems to be too much, feed the meal by mixing each feed with water, and then only use water enough to wet thoroughly.

The best formed sows only should be saved for breeders. And when one such is found and proves to be a good mother, keep her, even four or five years. From the young sows select only the very best. These should be wintered on ground feed, in warm and well lighted clean pens. At two or three weeks old the pig should be taken to find their way into the feed troughs. If milk can be had, all the better. These sows and pigs are fed two months on meal or soaked corn, and should drop their pigs in March or April. The sows and pigs are then put into separate pastures, and have all they can eat of soaked corn (no meal) until December. They are now seven to nine months old, and weigh 250 to 350 lbs. gross. The sows will do very well on clover pasture alone until fall. In December again commence to breed. Use no inferior boar. In this way the stock will keep improving. One litter a year is better than two.—*C. G. T. in Country Gentleman.*

Corn-Cob Meal For Stock.

We have fed a great deal of corn and cob-meal to both horses and cows, and never discovered any injurious effects from it. Our own opinion, is however, that it does not pay to grind cobs with the meal to feed horses. We had rather feed the corn meal alone with hay or steamed straw; but we had rather have the corn and cob meal for milch cows. We believe the distension of the stomach which is produced by feeding the ground cob with the corn meal is an advantage over feeding clear meal. Some dairymen claim that milk is largely increased by feeding boiled cobs to cows. We once heard a farmer of considerable experience say that he believed sixteen quarts of boiled cobs equal to four quarts of corn meal as a milk producing feed. We shall be glad to publish the experience of others in response to our correspondent's inquiry.—*Rural New Yorker.*

LIQUID EXCREMENT.—A cow, under ordinary feeding, furnishes in a year 20,000 pounds of solid excrement, and about 8,000 pounds of liquid. The comparative money value of the two is but slightly in favor of the solid. This statement has been verified as truth over and over again. The urine of herbivorous animals holds nearly all the secretions of the body which are capable of producing the rich nitrogenous compounds so essential as forcing or leaf-forming agents in the growth of plants. The solid holds the phosphoric acid, the lime and magnesia, which go to the seeds principally, but the liquid holding nitrogen, potash, and soda, is needed in forming the stalks and leaves. The two forms of plant nutrient should never be separated or allowed to be wasted by neglect.

The farmer who saves all the urine of his animals, doubles his manurial resources every year. Good seasoned peat is of immense service to farmers when used as an absorbent, and the stalls for animals should be so constructed as to admit of a wide passage in the year, with generous room for peat to be used daily with the excrement.

Poultry Yard.

Introductory.

The success which has attended poultry keeping in Canada of late years, the number of persons engaged in poultry breeding, and the benefits to be derived from a practical knowledge of poultry culture, not only to the farmer but to all classes of the community has induced us, in commencing a new series of the CANADA FARMER, to constitute this subject a Special Department. As a general thing, poultry does not receive the same care and attention that is bestowed upon other farm stock, and yet there is no stock kept that will bring in a larger or more immediate return than poultry, managed as it should be. In England the rearing of poultry engages the attention of all classes of the people, and but few persons have any idea of the large sums of money invested in fowls, and the profits realized by those who devote time and attention to the subject. Notwithstanding the rigour of our winters, poultry raising may be made as remunerative a branch of business in Canada as in England. It is true we cannot without great care and attention succeed in producing chickens as early in the season as English breeders do, but the dryness of our climate and warmth of our summers amply compensate for this, and are more conducive to health, growth, and early maturity. Whether engaged in them by the amateur who breeds to profits and feather for exhibition purposes, or the farmer to supply the market or his family with the choicest description of food; no branch of stock-raising is more remunerative or finds a readier market than poultry.

With a view to familiarize our poultry readers with the different breeds of fowls, carefully written descriptions of each variety will from time to time appear, illustrated by well executed wood-cuts. Practical articles on the rearing and management of each class of domestic poultry will be given. The amateur will be informed how to breed for the exhibition pen, and the farmer how to produce the largest, most economic and best table fowl, as well as the best egg-producer. Space will be devoted to the reports of our Provincial and local Agricultural poultry shows, and those of other countries when of interest to our readers will not be overlooked. To the lover of the dove-cot and aviary we will render the best information we possess or can procure, and thus give him substantial aid in the difficult task of pigeon breeding. Carefully considered replies will always be given to enquiries on poultry and pigeon matters, and communications on these subjects will be gladly received.

Having thus briefly sketched the course intended to be pursued in this department, we would endeavor forcibly to impress on the minds of the farmer and amateur the benefits to be derived from poultry breeding. Owing to some reason, farmers and many others look upon fowls as worthless in a commercial or pecuniary point of view; they are, in many cases, tolerated on the farm to act as scavengers only, rather than kept to the end that profit may be realized from them. This is an erroneous idea. We have not only within ourselves a large and increasing demand for all the poultry brought to market by the farmer, but the amateur and fancier also meet with a ready sale for their surplus stock. In the United States—than which no other country has within the last few years made greater progress in poultry breeding—a ready market at highly remunerative prices is also to be found. Why then not take advantage of it?

PERIODS OF INCUBATION.—Swan, 42 days; parrot, 40 days; goose and pheasant, 35 days; hens and all gallinaceous birds, 21 days; pigeon, 14 days; canary, 14 days; duck, turkey and peafowl, 28 days. The heat required is 104°.

Technical Terms.

As the conductor of the Poultry Department of THE CANADA FARMER, for the year 1873, intends to go systematically and earnestly to work in all that concerns practical poultry-raising—he deems it desirable that the technical terms to be used in his articles should be clearly understood by all his readers. We therefore, re-produce here a glossary of such terms, which, with the aid of the accompanying illustration will afford the beginner a competent knowledge of the chief terms in constant use among poultry experts:—

Beard.—A bunch of feathers under the throat of some breeds, as Houdans or Polish.

Breed.—Any variety of fowl presenting distinct characteristics.

Brood.—The family of chickens under care of one hen.

Broody.—Desiring to sit or incubate

Carriage.—The bearing, attitude, or "style" of a bird.

Carcunculated.—Covered with fleshy protuberances, as on the neck of a turkey-cock.



REFERENCES.

- | | |
|-------------------------|--|
| 1 Comb. | 14 Wing-coverts, forming the "bow." |
| 2 Face. | 15 Secondaries, lower ends, forming the wing or lower butts. |
| 3 Wattles. | 16 Primaries, or flights, not seen when wing is clipped up. |
| 4 Deaf-ear or ear-lobe. | 17 Point of breast bone. |
| 5 Hackle. | 18 Thighs. |
| 6 Breast. | 19 Hocks. |
| 7 Back. | 20 Legs or Shanks. |
| 8 Saddle. | 21 Spur. |
| 9 Saddle Hackles. | 22 Toes or claws. |
| 10 Suckles. | |
| 11 Tail-coverts. | |
| 12 True tail feathers. | |
| 13 Wing bow. | |

Chick.—A newly hatched fowl. Used only till a few weeks old.

Chicken.—This word is often applied to any age indefinitely until twelve months old.

Clutch.—This term is applied both to the batch of eggs sat upon by a fowl, and also to the brood of chickens hatched therefrom.

Cockerel.—A young cock.

Comb.—The red protuberance on the top of a fowl's head. (No. 1, see plate).

Condition.—The state of the fowl as regards health and beauty of plumage—the latter especially.

Crest.—A crown or tuft of feathers on the head. The same as top-knot.

Crop.—The bag or receptacle in which food is stored before digestion. Can be easily felt in any fowl after feeding.

Cushion.—The mass of feathers over the tail-end of a hen's back, covering the tail; chiefly developed in Cochins.

Deaf-Ears.—The folds of skin hanging from the true ears; same as ear-lobes. They vary in color, being blue, white, cream-colored, or red. (No. 4).

Dubbing.—Cutting off the comb, wattles, &c., so as to leave the head smooth and clean.

Ear-lobes.—Same as deaf-ears.

Face.—The bare skin round the eye. (No. 2).

Flight.—The primary feathers of the wing, used in flying, but tucked under the wing out of sight when at rest. (No. 16).

Fluff.—Soft downy feathers about the thighs, chiefly developed in Asiatics.

Furnished.—Assumed the full characters. When a cockerel has obtained his tail, comb, hackles, &c., as if adult, he is said to be "furnished."

Gills.—This term is often applied to the wattles, and sometimes more indefinitely to the whole region of the throat.

Hackles.—The peculiar narrow feathers on the neck of fowls, also found in the saddle of the cock. In the latter case they are called "saddle" hackles or feathers; hackles alone always referring to the neck feathers. (No. 5).

Hen-feathered, or henny.—Resembling a hen in the absence of sickles or hackle-feathers, and in plumage generally.

Hook.—The knee or elbow-joint of the leg. (No. 19).

Kill.—A word sometimes used to denote the breast bone.

Leg.—In a live fowl this is the scaly part or shank. In a bird dressed for table, on the contrary, the term refers, as is well known, to the joints above.

Leg-feathers.—The feathers projecting from the outer side of the shanks in some breeds, as Cochins.

Mossy.—Confused or indistinct in marking.

Pea-comb.—A triple comb, resembling three small combs in one, the middle being the highest.

Pencilling.—Small markings of stripes over feather. These may run either straight across, as in Hamburgs, or in a crescentic form, as in Partridge Cochins.

Poult.—A young turkey.

Primaries.—The flight-feathers of the wings, hidden when the wing is closed, being tucked under the visible wing composed of the "secondary" feathers. Usually the primaries contain the deepest color all over the body, except the tail, and great importance is attached to their color by breeders.

Pullit.—A young hen. The term is not properly applicable after December 31, of the year in which a bird is hatched, though after used during the early months of the next year.

Rooster.—An American term for a cock.

Saddle.—The posterior part of the back reaching to the tail, in a cock, answering to the cushion in a hen; often however, applied to both sexes, cushion being more restricted to a great development, as in Cochins, while "saddle" may be applied to any breed. (No. 8).

Secondaries.—The quill-feathers of the wing which show when the bird is at nest. (No. 15).

Self-color.—A uniform tint over the feather.

Shaft.—The stem or quill of a feather.

Shank.—The scaly part of the leg. (No. 20).

Sickles.—The top curved feathers of a cock's tail. Properly only applied to the top pair, but sometimes used for one or two pairs below which can hardly be called tail-coverts. (No. 10).

Spankling.—The marking produced by each feather having one large spot or splash of some color different to the ground.

Spur.—The sharp offensive weapon on the heel of a cock. (No. 21).

Squirrel-tailed.—The tail projecting in point of a perpendicular line over the back.

Stag.—Another term for a young cock, chiefly used by Game fanciers.

Strain.—A race of fowls which having been carefully bred by one breeder or his successor for years, has acquired an individual character of its own which can be more or less relied upon.

Symmetry.—Perfection of proportion; often confounded with carriage, but quite distinct; as a bird may be nearly perfect in proportion, and yet "carry" himself awkwardly.

Tail-coverts.—The soft, glossy, curved feathers at the sides of the bottom of the tail. Usually the same color as the tail itself. (No. 11).

Tail-feathers.—The straight and stiff feathers of the tail only. The top pair are sometimes slightly curved, but they are always nearly if not quite straight, and are contained inside the sickles and tail-coverts. (No. 12).

Thighs.—The joint above the shanks; the first joint clothed with feathers. The same as the drumstick in dressed fowls. (No. 18).

Top-knot.—Same as crest.

Trio.—A cock or cockerel, and two hens or pullets
Under color.—The color of the plumage seen when the surface has been lifted. It chiefly depends on that of the down seen at the root of every feather.

Vulture-hook.—Still projecting feathers at the hock-joint. The feathers must be both stiff and projecting to be thus truly called and condemned. (See cut of vulture-hock drawn from a Brahma pullet).



Wattles.—The red depending structures at each side of the base of the beak, chiefly developed in the male sex. (No. 3).

Web.—This term is indefinite expressing a flat and thin structure. The web of a feather is the flat or plume portion; the web of the foot, the flat skin between the toes; of the wing, the triangular skin seen when the member is extended.

Wing-bar.—A line of dark color across the middle of the wing, caused by the color or marking of the feathers known as the lower wing-coverts. (No. 14).

Wing-horn.—The upper or shoulder part of the wing. (No. 13).

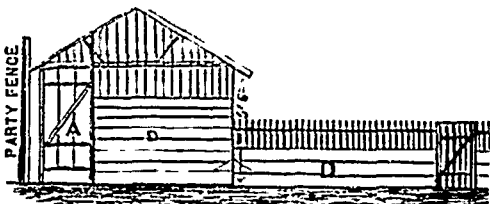
Wing-butts.—The corners or ends of the wing. The upper ends are more properly called the shoulder-butts, and are thus termed by Game fanciers. The lower similarly, are often called the lower butts.

Wing-coverts.—The broad feathers covering the roots of the secondary quills. (No. 14).

Plan of a Poultry House.

A comfortable shelter for poultry, apart from other kinds of stock is desirable upon every farm, for while access to the barn yards and cow sheds in the day time is worth very much to fowls, especially in winter, still it is a bad plan to allow them to roost anywhere and everywhere they choose, as they are not only exposed to inclement weather, but a regard to cleanliness and order will demand that they be assigned to quarters of their own.

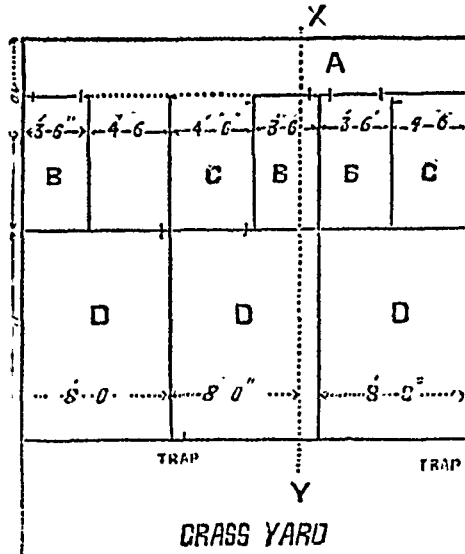
In this and future numbers we purpose giving plans of poultry houses suitable to the mechanic the city dealer or other person not possessed of farm buildings, and who desire to keep fowls for domestic purposes, in the construction of which economy and convenience shall be more prominent considerations than ornament.



The accompanying plan shows a poultry house with covered and gravel runs, and grass yard, which for warmth and comfort of the fowls in the winter season as well as suitability to the Canadian climate cannot be surpassed. In the plan given, room is provided for about eighteen or twenty hens and three cocks, but it is capable of extension, in a direct line, to afford accommodation for any number of fowls and breeds that the owner may think fit to keep; always bearing in mind, however, to devote a space of about ten feet square, at regular distances for hatching rooms; these rooms may also, when not thus used, be devoted to the storing of grain for food for the fowls. The yards may also be increased in size to such extent as the space devoted to poultry keeping

will admit of. A square plot of ground might thus be surrounded, with space for an artificial pond of water left in the centre, for the use of water fowls.

In the inside elevation the interior arrangement of the building may be seen; the gates which lift off from two cleats instead of hinges, are left off to show the covered run, with glass front more clearly. In the part C. there is no flooring, and it ought to be kept well covered with fresh clay or wood ashes, to prevent vermin, and from which, as well as the roosting places, the droppings should be removed daily. Grain may be thrown into this run during severe weather, and soft food and water may be placed in the passage outside the bars, through which



it can be easily reached by the fowls. No windows in the back wall are required or necessary, the light admitted through the glass front of the covered run being sufficient.

The building may be constructed of rough inch lumber, and batted on the outside; the roof may be battened or shingled; a shingled roof is of course the more preferable of the two. Ventilators ought to be erected on the top, at distances of about fifteen feet apart, to insure good ventilation, an essential not to be lost sight of in all plans of poultry



buildings. The yard fences may be made of laths, and nailed to pieces of inch by inch and a half stuff, secured to posts driven in the ground, and of any height, from four feet upwards, as may be rendered necessary; Hamburgs and other of the smaller breeds of fowls necessitating the construction of much higher fences than do Brahmas or Coelins, &c.,

There is much to be said in favor of this plan of a poultry building. The fowls can at all seasons, and in all kinds of weather, be seen without going out of doors in front of the covered run, or having to pass through the roosting places, the yards running alongside of the latter, a thing much to be desired in this Canadian climate, especially during the winter season.

Feeding for Eggs.

A writer in the *Working Farmer* gives the following advice with reference to the feed of fowls for producing eggs, or for fattening purposes:—

“Hens cannot produce eggs unless their food contains the elements of which the egg is composed. The kind of feed that is offered to hens must be determined by the object to be attained in feeding them. Hens intended for the market should be fed on that kind of grain which is known to contain a large percentage of the fatty or oily substances. But hens kept as layers should be fed on that kind of grain which contains a larger share of the albumoids or egg-producing elements. In addition to the essential quantity of albumen required in the organism of the fowls, the laying hen requires an extra amount of ovation—the white of the hen’s eggs being about 12 per cent. of albumen and this must be furnished in her feed. By referring to a chemical analysis of the different cereals, it will be seen that corn contains the greatest amount of fatty substances, while wheat contains a larger amount of albumen than any other cereal. To fatten hens, therefore, feed corn. To procure eggs, feed wheat. Meat once a-day, in winter, will prove beneficial to laying hens.

“I allow my hens free access to troughs always kept well filled with wheat screenings from the mill. If allowed to choose their own time for eating, hens will eat often and but little at a time—never too much. Chickens should be furnished with plenty of limestone gravel. Some say pure water is essential to laying hens; I prefer to giving them milk, as that fluid not only serves to moisten the food, but also contributes albumen, which goes far to the formation of the egg.

“Of course the kind of food when there is not much variety, will have a special effect on fowls, animals or men; but we doubt whether this rule of selecting fatty or oily grains to produce fat, and other grains containing “albumoids” in abundance to obtain eggs in preference to fat, is a rule which sagacious poultry breeders will generally heed. A far better rule, in our judgment, is to let the flock select their own food as much as possible—that is, let them have access to such food as is known to suit them; let them have all they want of it, and the “albumoids” and the “fatty and oily substances” which it is deemed they should possess, will not be slow in forming part of the chicken economy. The idea of feeding wheat as a specialty for eggs, is probably about as correct as feeding egg-shells to produce other egg-shells. Some think it extremely important that lime, in the form of oyster or clam shells, or of pounded bones, should be given to fowls, or they will lay soft-shelled eggs. These substances make good grinding materials in the operations of the gizzard, but whether if digested, they take on form of egg-shells more readily than they assimilate to flesh and feathers, and bone, is not yet demonstrated in our judgment. But if one article of food is a specialty for a certain part of the fowl—the egg-shells or the albumen for instance—then we should know what to feed to produce feathers, or the horny material which enters into the beak and claws, or the skin, or the eyes, or the intestines. Some Brahma chickens have a ridiculous habit, after parting with their down, of running about several weeks stark naked or nearly so; cannot something be fed them to produce feathers at the right time, or something else to protect them against the heat or the cold? The answer of course is in the negative, and we strongly believe that the same is true as to what food will operate as a specialty for eggs or fat. A fowl’s gizzard is a chemical laboratory in which the nature of things is very materially and rapidly changed and appropriated for purposes which we cannot know very definitely. Fowls eat some things, which if they consulted our tastes, they would be sure to discard—things which cannot be mentioned always to ears polite, but it will embarrass chemistry to discover any trace of them in the eggs or the flesh. The best rule is to feed them with what they like and plenty of it, and that of course includes a large variety. Let them choose their food where it is possible. They certainly tire of special articles when confined to them week after week, just as human beings do, and it is then that they go to eating eggs, or feathers, or even each other’s flesh, and disgust their owners by refusing to lay eggs, or to grow large and fat. It is more science than they can stand; but give them a variety to choose from, and consult their own tastes to an intelligent extent, and that wondrous internal manufactory to which their food is consigned will, as a rule, not fail to build up the hen in all her departments to the full gratification of her owner.

The Dairy.

Introductory.

In all civilized countries, and in all ages, the right management of the cow and her produce has been a practical study of surpassing importance, but in the present day, and in Canada, it would be difficult to over-estimate the large degree in which this most useful animal contributes to the comfort, the physical vigor, and material prosperity of the whole people. Without the delicious milk, butter, and cheese she so abundantly supplies, man, woman, and child would be stripped of half their most enjoyable luxuries. Only think of porridge without milk, coffee without cream, bread without butter! The tea cup upset, puddings done for, Cheddar and Stilton no more! No cow—no calves; no cow—no oven; no cow—no veal, no beef, no oxtail! Without our cow, what should we do for leather? Without her hair, what should we do for plaster? Without her horns, what should we do for combs, jack-knives, and umbrella handles? Without her hoofs, what should we do for horn-buttons? Without her bones, how could we manufacture super-phosphate?

But these are only the direct gains to mankind from this invaluable animal. That her indirect services are also of incalculable moment is seen at once, when we recollect that the growth of our field crops, the advancement of our agricultural system, the success of our farming operations, are all mainly dependent upon the cow. Good husbandry cannot be maintained anywhere without abundance of manure. With the low prices of farm-produce in North America, artificial manures can be used only as an auxiliary force; on barn-yard manure we must almost solely depend, to maintain the fertility of our fields, and the profit of grain crops. Whatever conduces, therefore, to increase the number of our live stock; to improve the quality of our cows; to increase the quantity and quality of their milk products, and thereby render high feeding increasingly profitable, is worthy of earnest consideration by every member of our body politic.

We are satisfied that in the extension and improvement of our DAIRY SYSTEM is to be found the readiest and most effective lever for placing the agriculture of Canada on a firm and profitable basis! Sheep husbandry, and the raising of horses and hogs, largely conduce to the prosperity of the farming interest, and can be made much more so; but the traffic in them is not capable of very large expansion, like that in cattle.

The demand for butter and cheese is unlimited, so far as Canada is concerned; for with our cheap lands, varied forage crops, abundant spring water, cool climate, and cheap timber for housing the stock, we can defy competition in any market. What is needed to make this demand permanent and lucrative, is to raise the quality of our dairy products to the highest possible point. We have the animals, and abundance of the best food for them. What we want is skill, energy, accuracy, and scrupulous cleanliness in milking, manure turning, and packing. There is no shape in which our farm produce can be sent to the foreign market in so condensed a shape, so safely or so profitably, as in dairy products. It is of unspeakable importance that the traffic should be extended to the utmost limit, and but one thing can secure this—the high character of the commodity. A first-rate article always brings a very high price, high prices induce high-feeding and careful attention to the cattle; better feed and greater care bring better calves, better milk, and an enriched manure-heap; enriched manure secures heavier crops, more forage, more cows, and more prime butter and cheese for the foreign market. There is hardly a farm in the

land that might not be made to carry profitably twice the amount of stock it now bears; and on a vast proportion of farms with efficient management and sufficient capital, a much greater increase might profitably be made. When the census was taken in 1861, twelve years ago, there were in Upper Canada 1,015,328 head of horned cattle, and in Lower Canada 816,972 head, or in all 1,832,300 head. At the same period the total quantity of cultivated land in private hands was 10,855,854 acres, and of bush land 12,874,471 acres. It follows, that there was then in this country but one head of horned cattle for every thirteen acres of land in private hands, of which six acres were cultivated, and seven bush land. In filling up this huge vacuum, there is room for millions of more cattle, and thousands of cheese and butter factories; and an annual revenue from foreign countries as yet undreamed of.

In the new series of the CANADA FARMER, the Dairy Department will be a special feature. It will be our duty to press earnestly on the public mind the special importance of this branch of our agricultural industry, to take a deep interest in all that concerns its welfare—and to labor zealously for its improvement and extension. Starting with carefully prepared papers detailing the most approved systems now in vogue, and showing the condition and prospects of the trade at the present time,—we shall take up our parable on the weekly movements of the trade, and keep our readers thoroughly posted on all its vicissitudes.

Cleanliness in Milking.

The manner of milking in the Channel Islands, the home of the Alderney, is peculiar and has the merit of cleanliness, at least. Milking and straining the milk is done at one operation; the milkmaid with her tin pail, linen strainer, and sea-shell, proceeds to the pasture; seating herself beside her cow, she thus completes her arrangements; the linen strainer is securely tied over the narrow-mouthed tin bucket, and placing the large shallow shell on the strainer, she vigorously directs the streams into the shell; overflowing the shallow brim, the milk passes through the strainer into the receptacle beneath; the shell being used simply to prevent wearing a hole in the linen strainer.

Pounds of Milk for a Pound of Cheese.

We have been furnished by Frederick Haas, foreman and manager of Ebenezer Worth's cheese factory, on Brandywine, Chester county, with the following average for one season, of the number of pounds of milk required to make one pound of cheese in each month. Very careful weights and measurements have been observed at this factory.

April.....	9.47	August.....	8.97
May.....	8.93	September.....	8.49
June.....	8.85	October.....	7.61
July.....	9.09	November.....	7.03

They find the loss of weight in the curing process is $\frac{3}{4}$ per cent. They have a per cent. glass for ascertaining the quality of milk, which from ordinary cows is found to yield about 10 per cent. of cream.—*Philadelphia Practical Farmer.*

Training a Heifer to Milk.

Cows usually become addicted to kicking when heifers, from being milked by abusive milkers. I have never seen an old cow become a kicker unless abused. Instead of cows being averse to being milked when giving a large quantity, I have ever found it the reverse. When pasturage is good, and cows come home at night with udders distended with milk, they seem grateful to have it removed. Milking a heifer for the first time requires patience, for they will almost invariably kick. In such a case, put a broad strap around her body, just in front of the udder, and buckle it up moderately tight, and as soon as she gets quiet (for she may dance around a little at first), take your pail, sit down and go to milking, for she is as helpless as a kitten. Do not attempt to use a rope instead of a strap, for it will not answer. This is a much better method than tying the legs, etc., as it does not hurt the animal in the least. A few applications of the strap, with plenty of patience and kindness, will cure the most obstinate case.—*Correspondent Rural Home.*

How Often Should Cows be Milked?

The following from the Irish Farmers' Gazette, is worthy of consideration:

Regularity in the milking of cows is of as much importance as regularity in feeding them. In a state of nature, the cow is relieved of its milk a great many times each day. A calf allowed to remain with its mother will help itself seven or eight times a day. Under such circumstances the udder of the cow will remain small, and if allowed to retain the milk secreted during twelve hours febrile symptoms are likely to be produced. The practice of milking cows more than twice in the twenty-four hours causes the capacity of the udder to be greatly increased, and probably helps in maintaining the lacteal secretion long after pregnancy has taken place. When, however, by an artificial system, the cow has been enabled to retain her milk without inconvenience for twelve hours or so, she ought to be milked regularly every day at the same hour. When the time for milking arrives, the udder usually becomes distended to its utmost capacity, and if it be not speedily removed, the animal suffers considerable pain. Cases of fever, the result of allowing animals to remain too long unmilked, are, indeed, by no means of unfrequent occurrence. It is especially necessary to attend to this point for some days after the animal has brought forth its young, for during that period very little irritation of the lacteal organs is likely to bring on that most fatal of maladies, fever. If milking be too long delayed, nature will try to help the poor animal. An absorption of milk into the blood will to some extent take place, and that which remains in the udder will become deteriorated. When neglect to milk a cow at the regular time is repeated several times, the secretion of the fluid is permanently checked; and there are many cases where by such neglect an animal has become dry in less than a month.

Drying Cows.

At this season many cows are "dried" of their milk. Circumstances have been so unfavorable for milk cows during the present summer that cows which usually "hold out" through the winter already give indications of a disposition to withhold the usual supply. There is great difference in cows in this respect. Some will "dry up" in eight or nine months from the time of calving, under the most favorable circumstances, while others continue to give a good mess up to the time they come in. This is owing partly to habit as well as to a difference in character as milkers. We have seen cows that continue in full milk for four years without intermission. It is a very severe tax on the system of a cow to milk her up to the time or within a short time of calving. She ought to have at least two months in which to rest, and to build up the bony structure of the calf. If not allowed such respite the constitution and general health will suffer. The calves would be smaller and longer in attaining their growth.

The cow which has two months or more to recuperate during winter is in better condition for the next season, and though she may not give quite as many pounds of milk during the year, its quality will be richer, and it will be more nourishing and healthful as an article of food. It is doubtful if the production of milk for the year is not worth more if the cow goes dry two months than if she is milked as long as a drop can be got.

Farmers are sometimes not sufficiently careful to look after the udder. It is thought that as long as the cow has to be dried the milking is of very little account, and if some milk is left in the udder it does not harm. This is a great mistake. The proper way is to allow a longer interval between milkings, but to draw it clean every time, and this should be continued until no more can be obtained. If a small quantity is allowed to remain in the udder it is soon changed into a foul and offensive matter, and engenders disease.—*Vermont Record and Farmer.*

MILK ADULTERATIONS.—It is stated that out of 500 samples of milk tested by Prof. Chandler of New York, 470 were diluted, and then adulterated with something to make the article look like real milk. These samples were from middlemen. On these compounds, innocently purchased for pure milk, it is estimated that the middlemen's profits were \$9,000,000 per year. In other words, the producers' sales of real milk in New York amount to \$3,000,000 per annum, and that of the milk peddlars, (middlemen,) by their "extension" process, \$12,000,000! We shall have a reform some day.

Veterinary Department.

Introductory.

During the nine years it has been the duty of the editor of this department to advise the farmers of Canada, through these pages, on matters connected with the health of their live stock, various occasions have arisen where he is happy to believe the warnings and suggestions and remedies given have been attended by the most salutary results over the province. During these years the quantity of live stock has largely increased, and the average money value per head has also risen far above what it was. New distempers and diseases have also come amongst our stock, requiring prompt attention and skill in their treatment. The Veterinary Department of an agricultural journal is yearly acquiring higher interest and more practical importance. In the new series of THE CANADA FARMER we shall strive to meet this increased responsibility with increased devotion to our work.

Disease of the Lymphatic or Absorbent System in the Horse.

There is one disease of very frequent occurrence amongst a certain class of horses in this Province, affecting the lymphatic or absorbent system, and it is known by a great variety of names as farcy head, shot of grease, big leg, &c., the proper definition however of this disease is inflammation of the lymphatics.

Before describing the various symptoms, we deem it advisable to briefly notice the absorbent system, and the nature of the disease can be more readily understood. This system is formed of an immense number of small vessels which are distributed throughout the greater part of the body, and in connection with these vessels, are numerous glands, which in some parts of the body are collected together, forming a lymphatic ganglion.

The lymphatics have derived their name from the fluid which they contain, and they empty their contents into the venous circulation. They are also called absorbents, because they absorb or take up a great part of the effete matter or waste of the tissues, and convey it to the circulation, where it leaves the body by means of the various excretory organs. Some of these vessels also absorb another fluid which enters the circulation, not for the purpose of being carried out of the system, but for the special purpose of renewing and enriching the blood, and imparting to it many of the necessary constituents for the building up of the various tissues of the body.

The set of vessels which perform this important function are designated the lacteals, and are so named from the white milky-looking fluid they contain, now these vessels originate in the small intestines and in their course to a large canal, they pass through numerous glands called the mesenteric glands. As the process of digestion goes on, this milky fluid, the chyle, is formed, and the lacteal vessels absorb it and carry it to the circulatory system.

In the normal condition of the body, this process goes on in a regular and healthy manner, and in horses that are highly fed and hard wrought, as a natural consequence, a large amount of chyle is formed for the support of the system, and so long as the waste of the system counterbalances the supply, the animal remains perfectly healthy, but it is wonderful to notice how simply and how quickly a diseased condition may be brought about. For instance, the horse is wrought hard, and fed largely during the whole week, on Sunday he is allowed to rest, and he is still given the same amount of rich stimulating food, and a great quantity of chyle is naturally formed, more than the lacteal vessels can properly accommodate, the various glands are irritated, the irritation extends backwards, attacking the superficial glands of the thigh, and an acute and severe disease is established.

Possibly the attendant on going into the stable on a Monday morning, is very much astonished to find his horse extremely lame, and he is very likely to imagine that the lameness proceeds from a sprain, or some other injury. There are other causes that may

bring on this disease, but the one we have just alluded to is the great exciting cause, and hard wrought, and highly fed horses are peculiarly liable to this complaint.

The symptoms are very well marked, and very often of an alarming character. When the hind leg is affected, a swelling appears, on the inside of the thigh, which is exceedingly painful, the least pressure with the hand, will cause the sufferer to immediately hit the limb, the swelling extends towards the hock, in the first place, as a small corded line, the lymphatics only are affected, but in a very short time the whole limb becomes swollen, and it is with the greatest difficulty the horse can be made to move.

As the disease arises from a constitutional disturbance there are also prominent constitutional symptoms developed, shown by shivering or rigors in the early stage, followed by quick breathing, hot mouth and a full bounding pulse, the patient generally remains standing, as the effect of lying down or rising increases the already extreme pain, the swelling of the limb increases, and the pain may possibly somewhat subside. Very great mistakes are frequently made in the treatment of this disease, by parties ignorant of its nature, and blisters and irritating liniments are applied to the limb which greatly increases the irritation. The nature of the disease readily explains the course of treatment that ought to be pursued.

The inflamed and painful parts should be diligently fermented with warm water for an hour or two which gives wonderful relief, and a smart purgative should also be given, as six to eight drachms of Barbadoes aloes, whenever the bowels are got to move freely, the irritation ceases. The neutral salts should also be freely used, such as the preparations of potash, which from their action on the kidneys increase the absorbing powers of the lymphatics, the patient should be kept perfectly quiet until the acute symptoms abate, after which he may be given moderate walking exercise, the leg well hand-rubbed, and the diet should consist principally of mashes for several days.

If this disease is not immediately relieved the effusion is apt to become organized and a permanent thickening of the leg is the result.

A horse that has suffered an acute attack is very liable to a recurrence, and should be closely watched for sometime. Inflammation of the lymphatics can easily be prevented by simple measures. When hard worked horses have to remain idle for a day or two, they should have a less quantity of food than usual.

Heaves, or Broken Wind.

Broken wind is a disease that prevails to a very great extent among the horses of this country, and although not of a fatal character it greatly impairs the usefulness of an animal, and materially depreciates his marketable value.

As regards the pathology or true nature of this complaint, a number of theories have been brought forward, and unphlysema of the lungs has long been looked upon as the origin of the distressing symptoms, but the real cause or nature of this disease we believe is impaired nervous influence.

The lungs and stomach are largely supplied with nervous influence by means of a great nerve (pneumogastive), which is liberally distributed to these parts, and when the great centre of digestion becomes affected through injudicious feeding, it necessarily impairs the nervous force.

The great exciting cause, therefore, of broken wind is partial or impaired digestion.

In farm horses how often do we see it follow the continued use of dusty clover hay, chopped food, etc., which abnormally distends the stomach and bowels, and affects the nervous power.

We have often known of young horses, healthy in every respect, turned into the barnyard for the winter months, and fed on inferior hay, pea-straw, etc., and in the spring were suffering from broken wind, yet had never exhibited any appearance of organic disease of the lungs.

It occasionally, however, results from other causes as a sequel of severe cases of strangles, or follows a prolonged attack of inflammation of the lungs.

This troublesome complaint would be of less frequent occurrence if proper care was exercised in the feeding of horses—by giving nutritious food in moderate quantities and at regular intervals, and by not subjecting horses to rapid exercise when the stomach is too much distended.

Broken wind is rarely seen in cavalry, hunting horses, etc., and their freedom from it is entirely due to the regular and careful mode of feeding.

Broken wind is an affection that is usually easily detected, and the distressing symptoms are increased by sudden changes of temperature. The heaving or quick lifting of the flanks is readily noticed after sharp exercise, the inspiratory movement is quickly performed, while expiration takes place slowly. Another characteristic symptom is a prolonged and hacking cough, easily excited by pressure on the larynx, or sudden changes of food or temperature, when the disease is confirmed it becomes altogether incurable, but the very worst case can be benefited, and the distressing symptoms relieved by proper attention to feeding, regular exercise, with an occasional dose of laxative medicine.

There are certain medicines, as various kinds of sedatives, which temporarily relieve the breathing, but all powerful drugs must be used with caution. The iodide of potassium, or bicarbonate of potash in dram doses, morning and night, will frequently give great relief.

Horses affected with heaves are sometimes severely drugged for the purpose of deception when exposed for sale; where such is suspected to be the case, the horse should be given a good drink of water, or allowed to eat a few pounds of hay, and then subjected to rapid exercise, when the true nature of his complaint may be easily detected.

Care of Horses and Colts, in the Straw Yard.

Now is the time, to derive the full benefit from small regular feeds of grain, amongst straw yard stock. We believe, horses will live longer, and do better—provided they are not worked—in a straw yard all winter with sheds to feed under, and shelter them from storms, than they will if kept stabled. And they will do more work when spring time comes. But to ensure good health, they must have shelter, and a little grain every day, mixed with chaff, and if a few pulped turnips are added the feed will be much better, and a better condition also sustained. Horses so kept will never have swelled legs. Their coats will be rough and long, but nature gives this for their protection. Plenty of salt, with a little wood ashes, always within their reach placed in a box or trough, will be the best money expended that any farmer can lay out. About the last of March or first of April, the teams may be taken up, stabled, and moderately fed. Their own coats will "roll off them" in sheets, and they will thrive amazingly. But then they must be regularly exercised, or worked, or sickness will follow. Good teams so treated will be fat and in fine condition when spring work is over, whereas those wintered in a hot stable, and worked occasionally, will fall under the same exertion.

Nature requires a rest; both in the animal and vegetable kingdoms, and hence the principal reason for the benefit derived; but you must never work animals so treated in the straw yard, during the winter months. If you do, they will sweat freely and be sure to take cold. You must calculate beforehand, how you will be circumstanced, as to work for your teams, before you determine to follow this course. Pull off their shoes; it prevents accidents from kicks, but never on any account let "them out for a run" as it is called. Their health prompts a gallop, and having no shoes with corks on them, they will assuredly slip and fall, and probably be lamed.

Everyone has noticed how long brood mares usually live, and how healthy they are in their old age. I believe this, in the mares, is due to the winter's run. Notwithstanding that during the summer they are often subject to double the demand of work, and a colt sucking, yet many are sound and fat at twenty years old. In feeding grain there must be chaff mixed with it, or the greediness of the horse will cause half of it to be wasted by swallowing without mastication.

Another thing that must be most carefully observed is, not to stable the horse in the fall if you mean to turn it into the straw yard during the winter. If you do, he will assuredly take cold. Also never turn horses into the same yard with horned stock; both will probably suffer.

Seeds and Seed Growing.

Harvesting, and Cleaning Seed.

From a very interesting paper, recently read by Professor Buckman, an able English agricultural authority, before the Marlstone Farmers' Club, we make a few valuable extracts on the harvesting and cleaning of seed. Treating of cereal grasses, he says:—

"These, when destined for seed, should be selected on account of the evenness of the crop, and true to variety, as each variety of corn, of whatever kind, will present great differences as to periods of ripening, and quantity and quality of the crop to be derived from it, according to the differences of soil it may have to contend with. Oats are seldom true to sort, for, as I have shown by experiment, these are derivative plants, and are very readily acted upon by different circumstances—the differences of geology in a single field, as one part of clay and another part sand—may result in a crop of corn widely differing in specific gravity, a fact tested by the weight per bushel, and in the one there may be elements of declension to wild conditions, and in the other a further departure from the wild original. Hence, therefore, to mix these two samples in crop seed tends much to that unevenness which one sometimes observes, both as regards the time of ripening and the resultant grain, and which is sure to be prejudicial to the quantity as well as quality of the crop, as, if the one waits until the whole be ripe, the early ripened examples shed their best and heaviest grain. If cut before the later ones are ripened there will be a mixture of much light grain, and hence a deficiency of weight per bushel.

In grain seed we have seldom much to complain of as regards weed admixture, as seeds of weeds are mostly smaller and lighter than those of any kind of grain, and consequently separated in winnowing. However, we occasionally meet with "dirty" grain seed.

Fodder Grasses.

The seeds of these are so small and weedy, and artificial pasture is so little attended to, that seeds of these are indeed the commonest source of weed reproduction; and from want of attention to pure seeds, this rotation usually provides enough weeding for employment in very succeeding crop. As in "seeds" they selves are left to propagate, the following table calculating the reproductive powers of some of the common weeds, will well enough illustrate a proverb, alas! too true: "One year's seeding, seven year's weeding"

Seed samples	In a single plant	Remarks.
Black mustard	9000	Common about farms
Charlock	4000	
Shepherd's purse	4600	An agrarian weed
Foals parsley	0000	
Dens de lion	2040	Every where too frequent
Stinking chamomill	40650	About manure heaps, from whence it gets to turnip fields
Mayweed	45000	
Sow thistle	15000	An agrarian, mostly with garden culture
Groundsell	6500	
Corncockle	2240	In vetches, corn, &c.
Common dock	13000	In fields, meadows, and by road sides.
Red poppy	50000	
		On sandy soils

The facts just inserted upon apply with still greater force to seeds of our agricultural Papilionaceae, as these are so much smaller. The table I now append, is the result of a careful examination of several packets of clover seeds from different seedsmen shows the number of weeds found in them:—

Alsike clover, 7,600; Cow-grass clover, 18,400; Broad clover, 56,720; White Dutch clover, 96,900

Economy of Purchasing Pure Seeds.

From this table we see the enormous fecundity of our common weeds, so that allowing weeds to seed in any crop furnishes work to get rid of them for many succeeding years. If farmers sufficiently consulted their own interest they would most carefully avoid the cheap and dirty seeds of all kinds, for the cheaper now they have ultimately to make up for it, not only in the deficiency of crop, but the everlasting after-expenses to get rid of those weeds they themselves have planted. The difficulty of getting grass seeds perfectly pure must be admitted by all; still, if farmers make up their minds to get them so, and will pay a little additional first cost, the matter is simple enough, and even if they are not able to analyze seeds with the requisite amount of care, I should contend that the subject of pure seeds is as important as that

of pure guano, and consequently that each agricultural society should have an officer attached whose duty should be that of analyzing seeds.

Now, if we take up the inquiry as to the number of weed seeds we may thus sow to an acre of ground, and then reduce them again to the quantity per yard, we shall see at a glance that it will be enough of weeds to cover the ground, and as these weed seeds are paid for, and from their being the plants natural to the soil, will readily grow without any, even the slightest care, but still more so with a prepared soil, it is no matter for wonder that we so often see a patch which should be clover, a mass of plantain and other weed plants of no feeding value occupying the soil, and fattening themselves at the expense of the food which, in the shape of manure, was destined for the growth of the intended crop.

Fertilizers.

Sewage Manure.

Sewage in its economic application to agriculture is a subject of vast importance in every country, and particularly in so purely an agricultural country as Canada. As yet, the difficulties which have beset this question, have not been felt here, simply because public sewers have not been introduced to any great extent, but have been mainly confined to a few of our largest towns. In England, where the sewerage system has been most extensively and scientifically carried out, and attempts made to transform the sewage into a transportable article of merchandise, instead of allowing it to pass off as waste matter, contaminating the supply of water, and changing pellucid rivers into offensive, dirty streams, it is a matter of infinite regret that no satisfactory system of effecting this most desirable end has been as yet discovered. It seems to be proved that almost all the really valuable constituents of sewage are held in solution and not in suspension, and it is therefore much to be feared that this enormous waste of the richest fertilizing elements will go on, unless some means can be devised for effectually preventing it. Sewage irrigation, however, has been introduced in many towns in the old country with wonderful results. For instance, Mr. Hope, whose farm at Romford, England, promises to become a rival to the world renowned one at Liptree, states that he has grown 80 tons of rye-grass per acre, and will soon obtain 100 tons, being able to keep four cows per acre, whereas in the best parts of Cheshire it required two acres at the least to keep one. Professor Cerfield asserts that of the whole nitrogen escaping with the water, 40 per cent went off with the crop, 10 per cent was lost in the drainage, and the remaining 50 per cent was left in the soil, furnishing food to the plants after the sewage water was discontinued. If this statement is correct, it clearly indicates the vast importance of sewage irrigation, whilst it further demonstrates the enormous national loss that is yearly sustained by allowing even the effluent water containing valuable fertilizing salts of the sewage system to pollute rivers, streams or lakes. Previous to the introduction of the sewage system, the "excrements" of dwelling houses, together with vegetable refuse and ashes, were put into covered middens or dust bins, carefully preserved from the rain and at stated intervals carried away in the waggons of the farmers, thus furnishing a most potent and valuable fertilizer. We see no reason why similar arrangements should not be made throughout our Canadian towns, and an important addition would thus be made to the limited manurial power of the country. Sewage irrigation of course must necessarily be of limited extent, and confined entirely to the immediate neighborhood of the towns employing it; but the former system could readily be made applicable and available in almost every centre of population, and with the best results from sanitary, commercial and agricultural points of view.

ESTIMATED VALUE OF SOOT — A genuine economist claims that one of the best fertilizers, going constantly to waste, is soot. "It is as valuable as guano and should be carefully saved at least twice a year. You will find soot contains a large amount of ammonia, and on this account is very beneficial to nearly all kinds of plants. Apply it to the soil about the roots and not to the leaves or stems; or twelve quarts of soot dissolved in a hoghead of water makes an elegant liquid manure."

Artificial Fertilizers.

There cannot be a question of greater interest to the agriculturist than the abundant supply of good manure; and there is no fertilizer that comprises within itself so many elements of goodness as well made farm yard dung. Unfortunately, however, the supply of this priceless manurial agent is far too limited on every farm; and it therefore behoves the farmer to be constantly on the outlook, and ever straining his ingenuity to discover some auxiliary manure that will approach as nearly as possible the inimitable good qualities of well rotted farm yard dung. Phosphatic and ammoniacal manures have of late years been largely used in this connection, the former on root and the latter on cereal crops, with varying success—in some instances with profitable results, and in others at a dead loss. And the reasons for such success and failure are equally various. The article manufactured may have been, as is indeed but too frequently the case, an imposition, or the soil to which the artificial fertilizer has been applied was already rich in the predominant elements the fertilizer contained; or the season was too dry to produce the requisite action; these or other equally fatal causes, either singly or in combination, may have produced failure, whilst success has been attained from a directly opposite phalanx of circumstances. Those farmers who have used these artificial fertilizers with perhaps only a moderate amount of success are too apt to institute comparisons between them and farm yard manure; but it must ever be borne in mind that the latter is a complete, perfect manure, whilst super-phosphate—the most common of artificial manures—is only a partial fertilizer, and its successful application to the soil necessitates some familiarity with agricultural chemistry. Indeed, without such chemical knowledge and its practical application in ascertaining the peculiarities of the soil, the use of artificial fertilizers partakes very much of a hap-hazard experiment, because unless all the requirements of a plant are present in the manure applied, it will not thrive as it otherwise would do, and the farmer, meanwhile, is in reality incurring an expensive and useless expenditure. Considering the costliness and liability to imposture the farmer is subject to in the purchase of these undoubtedly most valuable auxiliaries to an increased product from his farm, we would advise the employment of a properly qualified analytical chemist, who, either as the salaried officer of a Riding agricultural society, or on the payment of a small fee by a member of such agricultural society, or in some other way to reach the end desired, would be bound to make analysis of the various manures and soils to which the manure is to be applied, purchased or proposed to be purchased by farmers, so as to enable them to use these various fertilizers with that advantage it is so desirable to attain.

Bone Dust.

The *Millicades*, bound for London, has on board a shipment of 100 tons of bone dust, prepared for exportation in an altogether novel manner and one which promises to come into extensive use. The manufacture of bone-dust and other animal manures has, it seems, greatly increased in Melbourne since meat-preserving occupations commenced; and as the Australian farmers have not yet got into the way of using artificial fertilizers to any great extent, it has been getting more and more difficult, year after year, to find a profitable market for the manure produced. Considerable quantities of it are sent to the Mauritius and Ceylon, where it is advantageously used in the growing of sugar and coffee; but this outlet has not proved sufficient, and efforts have lately been made to introduce the manures into the English market. To facilitate this trade, an apparatus has been contrived for compressing bone-dust into half its original compass, reducing it at the same time into a form very convenient for shipment. By means of strong pressure, the crushed bones are moulded into cakes of six inches square and three inches thick, something like flooring tiles, each cake weighing a little over six pounds. These bone-dust tiles are just adhesive enough to admit of their being handled freely—thrown about like bricks, if necessary—and are yet so free, that when required for use they can readily be crushed, or melted by the application of a little hot water. A ton weight of the manure measures 26 cubic feet, and contains 252 of the cakes. If the consignment by the *Millicades* is well received, the export of compressed bone-dust will, it is expected, prove a valuable addition to the commercial resources of the colony.—*The Melbourne Argus*.

Horticultural Intelligence.

Western New York Horticultural Meeting.

GATHERING AT GENEVA.

(Editorial Correspondence of the Canada Farmer.)
GENEVA, N. Y.

The Horticultural Society of Western New York appointed its annual meeting at this place, and though the fruits and flowers of summer are now gone, and the air is no longer balmy with the breath of flowers. Yet Flora and Pomona's votaries now find better leisure to gather in earnest council. Such gatherings as these are always pleasant, and when they are graced by the presence of such veterans in pomology as Downing, Thomas, Barry and Elliott, the hours are filled with words of wisdom, by which the neophyte may be greatly profited.

That we might gather up for the readers of the CANADA FARMER such words of wisdom as might seem to be interesting and valuable to them under the peculiar exigencies of our climate, we were induced to leave the sanctum, and with visions of snow-drifts in which railway trains lie buried, and engines disabled by frost-burst pipes, we started forth to attend the gathering. But we have been most happily disappointed by the reality; comforts abounded on every hand, and attentive officials only seemed to vie with each other in contributing to the traveller's pleasure.

In good time we reached Geneva, in company with many others. Arrived here, we were first greeted by a stiff chilling south-westerly wind, struggling to take us off our feet, but the kindly welcome we soon received made us quite forget the wintry blast. What gives such a cordial tone to the greeting of these horticultural men? Communion with beautiful forms and colors in gardens and orchards, and feeding on delicious fruits, must give a tone to heart and soul. To see these men as they come together, you would think them a band of brothers, reared under the same roof-tree, and bound together by all the loving associations of home and fire-side, who, long separated, have met once more to look in each other's faces and talk of "auld lang syne."

The meeting was called to order by the President, P. Barry, Rochester, at 12 o'clock, and after the transaction of some routine business, the reports of the various committees were read. That of the committee on native fruits was very interesting, particularly a part relative to the results obtained by Mr. Fox, of San Jose, California. It seems that having a quantity of Belle Lucrative pears which he could not sell, instead of feeding them to his hogs, as they do their Bartlett pears in that country, he planted them, and raised a large number of seedlings. These have already begun to show fruit, and many of them have the most striking resemblance to such well known fruits as Easter Beurre, Flemish Beauty, Onondaga, and the like. So exact is the similitude that the skilled pomologists of the committee could hardly be persuaded that they were seedlings, until becoming sufficiently ripe to be tested with the knife, they were found to be quite different in flavor from the pears to which they bore such striking outward resemblance. Thus far none of these seedlings bear any resemblance to the mother that bore them, and some new points are raised as to the influence of the seed-bearing parent on the progeny. Only a portion of the seedlings have yet borne fruit. It is expected that for several years new individuals will be showing fruit, and the developments that will be made are being watched with considerable interest. It is only by such experiments, made by numerous individuals, carefully conducted and reported, that we can hope to arrive at some knowledge of the laws that govern the production of new varieties. We stand to-day only at the entrance of what seems a most intricate labyrinth, but by and by, after patient study and many experiments, we shall learn to thread its mazes.

The report of the committee on native trees and plants was read by T. C. Maxwell, Geneva. It was more especially confined to the less known but valuable varieties of evergreens, some of the them interesting from the newly assumed form of growth, as

instanced in the Pendulous Hemlock, a variety of our well known graceful Canadian Hemlock, putting on, if such a thing be possible, a yet more graceful habit of pendulous beauty. Some of the evergreens had adorned themselves with tracings of gold or of silver, and these perpetuated by propagation have become fixed habits of variegation, with which we may adorn our grounds in novel winter coloring.

In the discussion which followed the reading of this report, it was elicited that the white-flowered Double Dentzia Crenata had proved to be a pure white, and made a most charming companion to the one we now have, which has white flowers tinted on the reverse of the petals with pink. All these additions to our list of hardy ornamental shrubs are matters of interest to planters in Canada who wish to make their homes attractive.

Garden Vegetables.

The committee on Entomology not being ready to report, the subject of garden vegetables was taken up. In TOMATOES there was a general expression in favor of "General Grant" as a good firm-fleshed, high-colored, productive, medium ripening variety. Mr. Elliott, Ohio, thought that "Hathaway" gave him on the whole the most satisfaction on account of its very agreeable flavor.

The best SWEET CORN for general purposes is the twelve rowed variety that has been long in cultivation. There are earlier sorts, but they were not thought to be as fine flavored. Stowell's Evergreen was mentioned, as being valuable for its late maturity, helping thus to extend the sweet corn season. There were others, however, who preferred to lengthen the season by later plantings of the twelve-rowed variety, considering that much finer in quality.

In GARDEN PEAS much praise was given to McLean's "Little Gem" and "Advancer." Dr. Ryder said that he had tested twenty-six varieties and gave the preference most decidedly to McLean's "Advancer," in point of quality. "Carter's First Crop" was considered to be the earliest pea, and on that account to be valuable for market gardeners.

BEETS.—Mr. Elliott was very much pleased with the "Egyptian." He considered it to be the best small earliest table beet. It was from four to five days earlier than the "Bassano." Dr. Sylvester spoke in very high terms of the "Hatch" beet.

POTATOES.—The discussion turned chiefly on the qualities of the "Peerless." Dr. Ryder thought it was very nearly as good as the "Push Blow," and it was very generally conceded to be twice as good a cropper. Dr. Sylvester had ascertained by experience in raising them that the flavor is much better when grown on a dry soil, than when they are raised in damp ground. Mr. Van Duzer had not thought it to be a good table potato, but others thought that it must be that his had been grown on damp or heavy soil, or had been too heavily manured with coarse unfermented manures. Inquiry was made concerning Campbell's "Late Rose," to which Mr. Willard replied that he had found it to be good, but not as good as the "Early Rose," though it equalled it in point of productiveness. Dr. Sylvester could not see why any one should grow Campbell's or any body's "Late Rose," when the "Early Rose" was so fine for table use, not only during the summer and fall, but all winter and spring, even until the new potatoes were fit for the table.

PARSNIPS.—Mr. Elliot and others gave the preference to the "Student" over the "Hollow Crown," believing the fibre to be finer and the flavor not so strong.

BEANS.—A good deal was said in favor of the black-seeded "Wax Bean," the pods being tender and brittle, and remaining so for a long time. Others spoke of a white-seeded variety of the "Wax Bean," possessing all the good qualities of the other as a snap or string bean, and being preferable to use as a shelled bean. Mr. Beville said that he was aware that these beans were quite popular, that the pods did remain tender and brittle for a long time, but that in point of flavor they were, to his taste, much inferior to the old red-eyed "China." Dr. Ryder spoke of a speckled variety of the "Wax Bean," but that gentleman had not seen it. For table use as a shelled bean, the "Large Lima" was conceded by all to be the richest and best. Unfortunately there is a very considerable part of Ontario where the season is too short to bring this delicious bean to maturity. It is necessary, in even the most favored parts, to start the Lima on bits of inverted sod in some sheltered sunny corner, in order

to get them as long a season as possible. When the beans are to be grown, with a view to trial to try the "Wax Bean."

Atlanta Peaches.

The truth given to this subject having been fully explained to the members, I asked Dr. Sylvester to speak of his new seedling peaches. In reply, he stated that "Atlanta" required careful thinning of the fruit in order to secure size and flavor; that the fruit itself was in all respects fully equal to Crawford's Late, and ripened four or five days after that variety.

Pears for Market.

The chief interest of the evening session was the paper by E. B. Elliott, Ohio, on pears for market; in which most of the leading varieties were passed in review, and their value to the orchardist carefully noted. Through the kindness of Mr. Elliott, we shall have the pleasure of placing the paper entire before the readers of the CANADA FARMER. The opinions of a gentleman so well qualified to judge of the value of these varieties of pears are entitled to great weight, and his paper will be read with more than usual interest. After listening to this instructive essay, a vote was taken for the six most profitable market pears. The following varieties received the highest numbers, viz: Bartlett, Beurre Clairgeau, Duchess d'Angouleme, Howell, Beurre d'Anjou, and Lawrence.

The remainder of the evening was taken up in listening to a carefully prepared paper, read by Mr. Willard, Geneva, on the pear blight. He urged as his opinion, after a somewhat extended survey of the leading pear orchards of the United States, that pear trees growing in a perfectly drained sub-soil, were comparatively free from blight; and that it was a matter of great importance to those planting pear orchards, to secure a location where the sub-soil was porous. A discussion followed, from which it appeared that the pear blight had been found to be very severe in some of the most thoroughly naturally-drained soils, such, for instance, as the gravel-ridge on which St. Catharines stands. The subject was left at last, no nearer solution than when the discussion began; and the pear blight yet remains one of the most perplexing questions in pomology. Yet it was maintained by those who have had considerable experience, that the growing of pears for market can be made as profitable as the cultivation of any of our fruits, notwithstanding the casualties resulting from pear blight.

Some remarks were made upon the present prices of apples, and it was stated that in New York city good Spitzenburgh and Northern Spy apples sell, at retail, for more than the best Havana oranges. Hence it was inferred that growing apples should be, at least, quite as profitable as growing oranges. It was also stated that large plantations of Almonds and of the English Walnut had been made in California, and that in a very few years we would get our best nuts from the Pacific coast.

Our Insect Enemies.

The meeting listened with great satisfaction to the reports of the entomological committee, and though nothing of any special value to our readers was advanced, yet there is a grim sort of satisfaction in learning that our horticultural friends here are compelled to battle with the same insect enemies that give us so much annoyance. We may therefore hope to benefit by their experience, and when they succeed in finding some patent method for their quick and sure destruction, we shall be in haste to chronicle it for the benefit of our friends and readers.

As the matter now stands, the task savors considerably of labor, yet Mr. Chapin, Bloomfield, N. Y., says that with a pole, having a hook on the end of it, he is able to get all his wormy apples picked off during the month of July, from his orchard of ninety acres, at a cost of twenty-seven cents per acre. This, however, did not include the cost of hauling the gathered fruit out of the orchard and casting it into a pond of water, where they would be perpetually submerged. Some member suggested that the labor and expense of taking the apples to the pond might be avoided by keeping in the orchard a herd of hungry swine to eat up the fruit as it is pulled off from the trees. It was generally conceded that the collin worms of the first brood come out of the apples before they fell from the trees. Hence it was necessary to pluck them off in order to get the worms. The apples in which the collin worms are domiciled can be easily detected, in July, by the saw-dust-like castings which can be

seen in the blossom, and of the fruit. It is necessary to go over the orchard and pluck off the affected fruit two or three times in order to secure all the worms.

Dried Fruits.

The remainder of the session was occupied in the investigation of several methods of drying fruit, and examining the samples of dried fruit exhibited. It is claimed that two pounds of this dried green sweet corn is equal to six cans of Winslow's corn; and that two oz. of the dried tomato, when soaked and stewed, make as much on the table as a three pound can of canned tomato, the latter costing twenty-five cents, the dried costing only half as much. By these drying processes, fruits of all kinds can be prepared and sent to market in any part of the world, at any time of the year, and much that now goes to waste, because of its perishable nature and an over-stocked market, is saved both to the producer and the consumer.

Fine Specimens.

An interesting feature of these meetings is the collection of new apples and pears which is placed upon the table. These fruits are always largely contributed by Ellwanger & Parry, Rochester, and their collection on this occasion numbered forty varieties of apple, and forty-two varieties of pear. Several of these varieties of pear were of good size and attractive appearance. The Beurre Gris d'Hiver was not sufficiently ripe to be tested, but it had every appearance of being a very fine fruit. The well known Easter Beurre, Beurre d'Arenberg, and Beurre d'Anjou were very well grown and showy. The Jones was very fine flavored, but the fruit is not large enough for market purposes. "Dr. Hunt" had a fine, high necked-like flavor, and "Dr. Lindley," though not as high flavored, was very good; but both these are only for the amateur or private gentleman's garden, on account of their diminutive size. "Louis Nilmon" was a large and showy fruit, but not in condition to be tested. Its size and appearance are very decidedly in its favor, and it may be a valuable market fruit. "Hericart de Fleur" was another showy, good looking pear, which would probably bring good prices in a city market.

There were very fine samples of Beurre d'Arenberg, Winter Nelia, and Easter Beurre, brought to the meeting by Mr. A. R. Bennett, Brantford, who was requested to attend and represent our own Fruit Growers' Association at this meeting. The samples brought by him were very fine indeed, and compared very favorably with the samples brought from other places. Indeed Canada need not hesitate to show her fruit anywhere.

The meeting was brought to a close in the afternoon of the second day, a most pleasant gathering, made doubly pleasant by the kind attentions of the residents of Geneva, who showed us and all no little kindness.

Miscellaneous.

Fresh Meat from Texas.

In the summer of 1871 we gave our readers an account of the arrival of the steamer "Fire-Fly" at this port, from Galveston, with a large amount of fresh beef, which had been slaughtered in Texas twelve days previously. This pioneer vessel demonstrated the practicability and success of the experiment. We had some of the beef on our own table, which proved of the best quality, and we laid it on the stall of one of our prominent victuallers, alongside of his own, killed the day before, and he admitted there was no difference. The plan was to utilize the steam on the vessel to drive fresh air continually through large ice boxes, or refrigerators, reducing its temperature before entering the meat room containing 100,000 lbs. of beef, more or less. This was thus kept during the voyage, under a low temperature, and it could not be otherwise but that it should arrive as fresh as if just killed. Crowds, both rich and poor, wanted on the "Fire-Fly" to buy the beef at half rates, and the demand was so great, the police had to be stationed to preserve order. Since that, the enterprise has been not only suspended, but abandoned. The steamer "Francis Wright," with 200,000 lbs., has lately arrived, but encountered extraordinary gales on her passage, and especially off Cape Hatteras, so that 57 out of 130 fires in the boiler gave way during the storm. Notwithstanding this, after 13 days, the officers reported the meat in excellent condition. The cargo was finally lost, but another ship will immediately take her place.

Feed the Quails.

It farmers and others desire to keep up the supply of quails, they must look to it, as we have told them many times, to the feeding of the birds during winter, at least when the earth is covered with snow and they are deprived of all means of getting food. Pheasants live upon the buds and young branches of fruit trees and the soft leaves of evergreens, and can keep themselves alive in this way; but the quail does not, and must die in very cold weather when snow prevails. Not all the prohibitory laws in the world will save this beautiful, friendly and excellent bird, unless it is artificially fed by the farmer and all others who have the opportunity. A large spot should be made in the snow at a proper distance from the outbuildings, which should be twice-a-week supplied with screenings of any kind, spelt corn, oats, buckwheat &c. They become very tame and are very good friends to the farmer, in destroying injurious insects in their season. No respectable farmer will trap the poor birds at such a season, even if the law did not punish it; but on the contrary, will assist in this inexpensive way of multiplying the bird to be hunted or killed only in the proper season. Remember it is a severe winter, snow and sleet, and to which the quail succumbs, and no prohibitory laws against shooting it in the proper season, will increase its number in the face of these destroyers.

Irish Emigration.—According to the Registrar-General's return, the emigration from Ireland during the quarter ending 30th September, was 16,733. The births for the same period were 32,532, and the deaths 19,676. The decrease of population for the quarter amounts to 2493.

New York consumes in a year 450,000 head of cattle; Philadelphia, 300,000; Boston, 170,000; Brooklyn, 100,000; Baltimore, 150,000; Pittsburgh, 90,000; Cincinnati, 110,000; St. Louis, 150,000; Chicago, 170,000; and other cities and towns, 190,000. Total, 2,040,000.

SALE OF THE ESTATE OF MURIE SCOTLAND. The estate of Murie, beautifully situated in the County of Gowrie, and extending to about 1000 acres, has been purchased by our townsman Mr. Francis Molson, who lately acquired the adjoining estate of Errol, of which Murie was originally a part. The sum paid for Murie, we understand, is £78,500, bringing up the price of the two properties to £190,500. *Daily Advertiser.*

Milton Wickensham, of Newlin, informs the *County Record* that he had twelve cows this last season that made 2274 pounds of butter for which he received \$803. 07; their twelve calves brought \$91.74, and from the milk with the help of about sixty bushels of corn, 3000 pounds of pork were produced which was sold for 7 cents a pound, bringing \$210. The total gross receipts aggregating \$1,107.81.

The best method of tanning sheep-skins with the wool on, for use as door-mats, rugs, &c., is as follows: Take the skin upon a board with the flesh side out, and then scrape with a blunt knife; next rub it over hard with pulverized chalk until it will absorb no more. Then take the skin from the board, and cover it with pulverized alum; double half-way over with the flesh side in contact; then roll tight together and keep dry for three days, after which unfold it and stretch it again on a board or door, and dry in the air, and it will be ready for use.—*American Artist.*

RELATIVE VALUE OF DISINFECTANTS.—The comparative value of the leading disinfectants in use, for disinfecting liquid manures, is thus rated by the Chemical Department of Public Health at Dresden:

Chloride of lime with sulphuric acid	100.0
Chloride of lime with sulphate of iron	90.0
Leach and Leach's powder	85.0
Carbolic acid-disinfecting powder	80.0
Sulphur lime	80.0
Alum	80.0
Sulphate of iron	75.0
Chloralum	70.0
Sulphate of iron	65.0
Potassium permanganate with sulphuric acid	60.0

A Scrap Book.—Every farmer should keep a book in which to paste agricultural scraps. Every one, in reading a paper, will see a number of things which he will wish to remember. He will perhaps see suggestions, the value of which he will desire to test, or hints which he will want to be governed by in future operations. And yet, after reading the paper he will throw it down and will probably never see it again. In such a case all the valuable articles will be lost. To prevent such a loss, every reader should clip from the papers such articles as he desires to preserve and remember, and paste them in a scrap book. Such a book, at the end of a year or two, will be very interesting and valuable.

England will want, in the twelve months between September, 1872, and September, 1873, 100,000,000 bushels of wheat from foreign fields. She is now receiving 5,000,000 bushels per week, of which a considerable share is from France, where the crop has been excellent.

SHOES, ONE FOR EVERY MAN.—A correspondent of the *Boston Herald* states the case as follows:—"As I have worked twenty-four years at blacksmithing, and claim to be master of my trade, I will give my opinion in regard to shoeing. In the first place turn the shoe as usual, only a little thicker at the toe; then weld together at the toe, and put a calk on the toe about an inch long and one quarter inch high; heel calk the same. In setting, care should be taken to keep each claw in its natural position, that is, spreading them as the ox would usually stand, and also at the shoe well. Put six nails in each half of the shoe. I have had cattle in this way that was driven through a river twenty times a day, and did not lose a shoe for weeks, when it shod the common way, they would soon become lame."

FARMING IN ILLINOIS.—A Philadelphia man wants to know about farming in Illinois—where large farming could be best carried on. Well, Illinois is a big State, rather irregular in form, shaped like a badly formed Hubbard squash, is 370 miles long and 200 miles broad, contains 162 counties and about 35 million acres, more or less. If he wishes to buy, he can purchase 500 acres, more or less, for a little more than the cost of the improvements. I applaud his resolution to come and stay a year before purchasing. It would not hurt him to stay two years, and learn how the Illinois farmer grows corn and oats at 20c. the bushel, cattle at 2½c. and hogs at 3c. a pound, is taxed ten per cent. on the assessed value of his property, pays for a mile when he takes the train, hauls water two miles when it is dry, gets slaughtered in his own door-yard when it is wet, harvests with the mercury at 110° in the shade, and feeds his cattle with the thermometer at 34 below zero.—*Cultivator.*

AUSTRALIAN PRESERVED MEAT.—Victorian papers still report operations carried on to a moderate extent only, and the factories still waiting for an improvement in the state of the fat stock market. The price of sheep was expected to come down shortly, and at the same time late advices from the English market have been encouraging. Under these circumstances preserving was thought likely to be resumed on a large scale at an early date. The shipments for the four weeks ending September 23, when the stocks kept on hand by the different companies must have got very low, amounted to only 234,809 lbs., valued at £7,525. The shipments in the last four weeks of August amounted to 1,047,633 lbs., valued at £33,977. The fluctuations which the business seems to be subject to in these, the early years of its development, have been trying to many of the companies, and it is only the very substantial ones that have held their position. The Western Company, at Colac, was kept in full swing by preserving beef, rabbits, kangaroos, and poultry, until the latter end of September, when, in consequence of the excessive drain on the resources of the district, the supply slackened considerably. It is the intention of the proprietors to devote special attention to the preserving of wild fowls in canisters at the termination of the close season, for which, with rabbits, the English agent holds out a prospect of good and profitable demand.

RAIN AND HEALTH.—Without doubt it is not conducive to health to be rained upon and to suffer the chillings which the wearing of moist clothing entails. Without doubt a swampy condition of the ground is not conducive to health; and, notwithstanding, as the returns of the Registrar-General show, the present rainy season in London is a season of almost unparalleled healthiness. The reason appears to be that the purification of the atmosphere, which is brought about by the rain, far outweighs in sanitary effect the disasters due to damp clothing and damp dwellings, whilst the very perfect drainage of London insures it against being converted into a swampy area in the most rainy of seasons. When Tyndall horrified a West End audience by persuading it that the stuff off its clothes, which was floating in the theatre of the Royal Institution, and which he illuminated by the electric light, consisted mainly of organic germs, he drew a moral lesson of doubtful utility in recommending the use of cotton-wool as a shield against the germs of disease. The proper purifier of the atmosphere is the rain. This is patent enough to the circumstanced who, by dint of washing a garment in water, is able to rid it of every trace of solid and fluid particles, and even of vapors, which it may happen to contain; and, indeed, to every one who has observed the freshness and clearness of the atmosphere after a shower of rain, the importance of this purifying action of the rain ought to be suggestive.—*British Medical Journal.*

Advertisements.



I am the first to introduce to the public the following: American Turban Squash, Marblehead Mammoth Cabbage, Mexican Sweet Corn, Phoenix's Watermelon, and many others.

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This season I have a new and excellent variety of squash, new varieties of corn, three fine cabbages, and other choice new vegetables for my customers.

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As stated in my Catalogue, all my seed is sold under three warrants—1st: That all money paid shall reach in full. 2d: That all seed ordered shall reach the purchaser in full. 3d: That my seeds shall be of the best and true to name.

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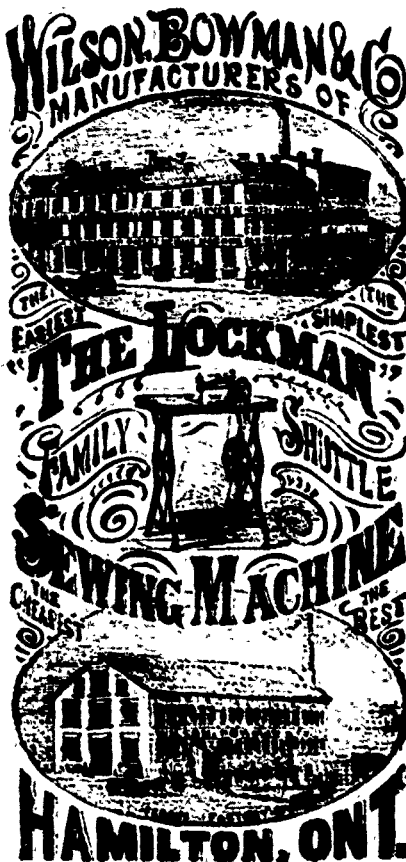
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