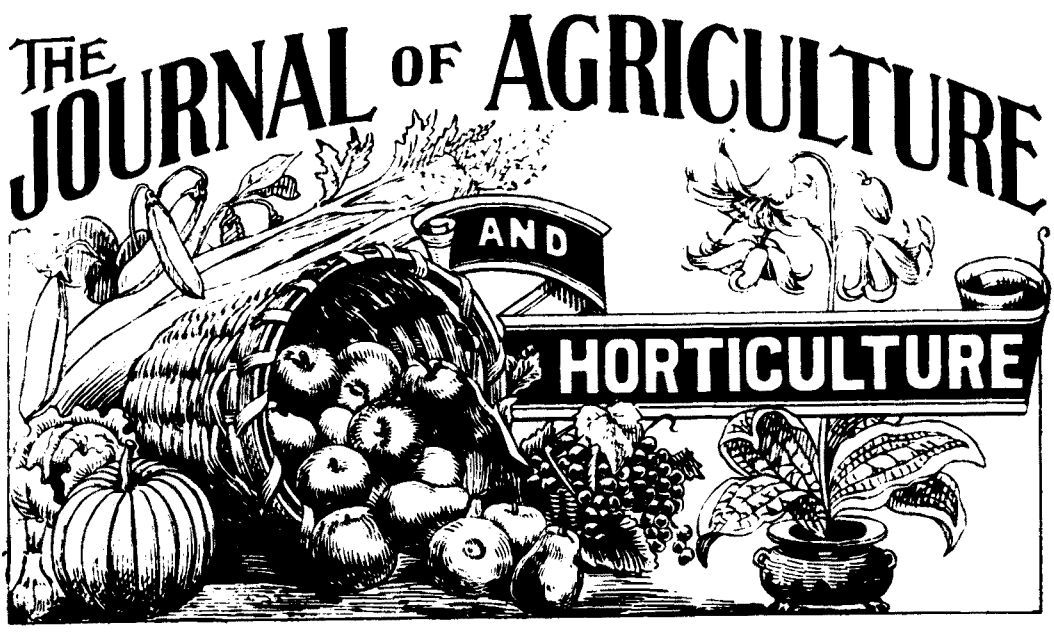
Technical and Bibliographic Notes / Notes techniques et bibliographiques

Canadiana.org has attempted to obtain the best copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

Canadiana.org a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- ☐ Coloured covers / Couverture de couleur
- ☐ Covers damaged / Couverture endommagée
- ☐ Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- ☐ Cover title missing / Le titre de couverture manque
- ☐ Coloured maps / Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- ☐ Bound with other material / Relié avec d'autres documents
- ☐ Only edition available / Seule édition disponible
- ☐ Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.
- ☐ Additional comments / Commentaires supplémentaires:

- ☐ Coloured pages / Pages de couleur
- ☐ Pages damaged / Pages endommagées
- ☐ Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- ☑ Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- ☐ Pages detached / Pages détachées
- ☑ Showthrough / Transparence
- ☑ Quality of print varies / Qualité inégale de l'impression
- ☐ Includes supplementary materials / Comprend du matériel supplémentaire
- ☐ Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from scanning / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été numérisées.



VOL. I. No. 1. JANUARY 1, 1898.

The Farm.

THE WHEAT GROWING OUTLOOK.

Whoever would say that there was a brilliant future for wheat growers would be regarded as a bold person. But, on the other hand, he would be a pessimist who contended that there was no possibility of the decline in wheat, which has been going on now for many years, being arrested in the least. In England the fall in the acreage of wheat has been steady and continuous. It is evident that wheat growing did not pay. About one half of the land is now under wheat that was used for that crop twenty years ago, and yet at the prices of that time wheat could now be most likely grown at a profit.

The fall in price has not been remarkable within the last few years as compared with the fall in earlier parts of the last quarter of a century. Some persons seem to think that the extreme limit of cheapness has been about reached in wheat, and that it must rise in value. There can be no doubt that the wheat zone in this continent is getting further and further from the seaboard and that freights must materially affect prices. As it is, the wheat growers of the Western States find it extremely difficult to get any money out of wheat growing, and the moment they abandon the crop for something more profitable prices will go up. The advance of towns upon the wheat growing areas is very considerable. Population is increasing faster than is the wheat area or the wheat yield. This means that either new wheat-growing regions will have to be opened up, or that the old wheat-growing regions will once more be developed, and in a profitable manner. There seem to be some signs of this tendency in the new regions to give out. They may be temporary, but they are sufficient to show what would happen if any serious contraction were to take place. In all probability wheat-

growing has reached the lowest point it is likely to touch, and there will be an increase in area and in profits in the future. The recent rise in price has probably induced many farmers to believe that what has happened once will happen again, and to increase their wheat sowings in consequence. The wheat question requires to be viewed in a very large way, and with some knowledge of what is going on all over the world. For example, it is said that news from four of the principal winter wheat states of America is not favourable. The usual acreage has not been sown, there has been a bad drought and the crops are doing badly. Out of twelve reports from Ohio, eight mention a decrease of area, two an increase, and ten out of the twelve describe the growing crop as precarious. Ten reports from Indiana speak of a contracted area. Five out of the ten reports from Illinois refer to a contraction. In Kansas there will be about as large an acreage as usual In Nebraska the winter wheat sown is one third less than last year. The farmer, who sees the importance of these details, would hardly compliment himself on his powers of discernment if he sowed less wheat this season than usual. A healthy rise, due to general causes must be good for the wheat grower and we think wheat growing in the future has a better outlook than for several years past.

WALTER G. BUNBURY.

THE WEEDS OF THE FARM.

Weeds are perhaps the worst enemies against which every farmer has to contend: there are many parts of the country over which weeds have always had full sway, and now that it is getting more cultivated every year, it is time that the weeds should be destroyed. There is no doubt that it is a tedious task to perform, since weeds spring up year after year, when we may think we have completely got rid of them. The great reason for this is that the extirpation of the weeds has been performed at the wrong period of the year, and it is to this point that I wish to draw the reader's attention. It is not generally understood how extremely important it is to keep a farm clean of weeds: a man should take a pride in keeping his farm in good order, and this is impossible if he does not keep an eye on the weeds, that are only too willing to spring up. There are many reasons why they should be destroyed: (1) they are robbing the soil of its plant food, both natural and applied: (2) they choke the crops among which they grow, and thus lessen the produce of these crops. This is an import consideration and brings to the front the great benefit of complete cultivation: the weeds entwine themselves round the young plant and hinder its growth. It is a great mistake to imagine that weeds cannot be destroyed, and a man has himself alone to blame if he does not take measures to prevent their growth. From a business point of view it is decidedly advantageous to destroy them. Supposing a farmer wishes to buy a larger farm than he has at present, as so often is the case with young men. If their old farm is in good condition, tidy, and free from weeds, they would obtain a better price than they could have otherwise obtained. Again, none but a slovenly farmer allows weeds to thrive: such a man does not only do harm to himself, but also to his neighbour, since the seed of the weeds is scattered by the wind and falls in neighbouring places to ripen, and grow up the following year. In some countries one can be prosecuted for allowing thistles to ripen their seed, and thus it might be in our country. There are two classes of weeds, namely (1) those that propagate themselves by their seeds, as do all annuals and biennials: (2) those that propagate themselves by their roots as perennials. Hence it follows that if the former are prevented from ripening their seed they must perish, and this is the great secret for their destruction. To destroy those of the second class, we must prevent them from breathing. This is a good way of looking at the question, but I will now ente

into it more throughly by quoting some of our best known weeds, giving a few methods as to their destruction.

Probably most will be familiar with the following: the Canada thistle, couch grass, wild mustard, wild flax, wild oat, ragweed, blue weed, and the ox-eye daisy. The Canada thistle is a very troublesome weed, being a perennial plant, and it is doubly to be feared, since it propagates itself both by its roots and its seeds. A hoed crop will prove useful in getting rid of it, since by unearthing it by means of the horse hoe during the hot weather, it must die. Another experiment has acted well, namely to cut the thistle about six inches above the level of the ground: the rain goes down the stalk and thus rots the roots. This however usually necessitates a bare fallow. Couch grass is another perennial plant and a difficult one to eradicate from the ground. A well known farmer in the province of Quebec was only the other day expressing his opinion on this obnoxious weed: he explained what a strong hold it took on the ground and how difficult it was to dislodge it. Almost the only way to destroy it is to plough the infected field early in June: then sow thickly with buckwheat, which crop tends to smother it When the wheat is in blossom, plough it under and sow thickly with buck wheat again. The following year it would be advisable to have a hoed crop, even if the general rotation has to be broken into. Wild mustard is an annual plant, producing a great quantity of seeds: it must be prevented from ripening its seeds. This can be accomplished by having a hoed crop, or if the plants are not too numerous, by pulling them out by hand. Wild flax is an annual plant, often found in crops of hay: if it is only in small quantities, it would be well to pull it out by hand, but it otherwise it would be advisable to convert the hay crop into a soiling crop, cutting it in its green state, before it has ripened. The wild oat is another annual plant, and since it propagates itself by its seeds, the only successful way is to prevent it from ripening its seeds. Rag weed is an annual plant, growing late in the season: on this account we often find it in stubble. If the infested field be a stubble plough it under, as early as possible, so as to destroy the plants before the seeds ripen. Blue weed is a biennial plant and is best destroyed by devoting the land to a hoed crop. The ox, eye daisy is a perennial plant found often in meadow pastures. If the infested field is in sod, it is best to turn it over, and sow corn the same spring. These are experiments that have been successful, and will I am sure prove so again. However, for land that is covered with weeds, a summer fallow is almost the only alternative, and coupled with frequent cultivation is sure to prove satisfactory. One should always be careful too about the seed we buy, to see that it has no inferior seeds in it: this displays an important part among our crops. Make the man from whom you buy your seed guarantee that it is free from the seeds of weeds.

G. ATKINSON.

BETTER PROSPECTS FOR FARMERS.

The grain markets in the United Kingdom are just now in a dull, not to say drooping state. It is hardly to be expected that they eventually reach a decided declining condition. The English and American markets have been acting and reacting one upon the other, with the result that the level of prices is slightly less than it was. For all that, however, wheat of the best quality is quoted as high as at any period during the past advances, and so is flour. This applies to to both British and foreign.

The English official average price of wheat was in the last return, a trifle higher than the week before, and so the slackness in trade, no doubt due to a

(1) And the cure is almost as bad as the disease; for the samples of grain are thenceforth full of buckwheat and unfit for seed—Ed.

great extent to the existing strike of engineers, has not yet affected home markets.

With but one exception these official rates show an advancing tendency for more than three months, during which they have advanced $1.74 per quarter. It is worth mentioning however that in January of this year the average was within 56 cents of what it was last month as will be seen from the following figures. January, $7.78: September, $8.34. These figures refer to home grown wheat sold in British markets.

Whilst New-York and Chicago influence the English markets a great deal, those centres have not been quite absolute. The relaxation of prices in England is no doubt mainly due to a considerable extent to the English farmers sending their wheat to market, with unusual rapidity. They appear to be acting on the old principle that a bird in the hand is worth two in the bush, and are inclined to take the improved prices, they can now obtain, without risking any fall. This is, certainly pardonable, taking into consideration the long and painful experience they have had in reduced and reducing values.

There has been sent according to a late exchange, to market, wheat of the present harvest totalling, up to 523,000 quarters, as compared with 443 000 in the corresponding weeks of 1896 and 197,000 in 1895. This years crop is admittedly smaller than last year's, and yet more grain has been sent for sale; many experts estimate this year's yield at about the same figure as that of 1895, which gives even a more striking contrast. The imports of foreign wheat are not half what they were two years ago in the short period since harvest, and they are 25 per cent under the limited supplies of last year. Flour, too, from abroad, is a lesser quantity, the figures being 326,000 sacks as against 535,000 in September twelve months ago. When the figures are placed in juxtaposition, there seems no reason for the temporary decline in the American markets, and the impression is that values ought to and will really go up again.

Probably it is, that the speculators are playing a waiting game for the moment.

English oats keep a steady business while American and Russian show a falling off.

The figures from France show a decline in every grain crop, but it is considered that the French rural classes will probably use less wheat, and consume more of other kinds of food, which are gradually growing less in taste, such as rye, buckwheat &c., &c. Then on the other hand the potato crop is not good, and it is just as likely that there may be a comparative scarcity in other quarters. Not much wheat may be expected to be imported by England from the Argentina if all the sensational locust stories are to be believed, but these may prove to be much exaggerated. There appears to be a general desire to get at wheat sowing, and it is quite probable that the whole of Europe including the United Kingdom, will cover an increased area with this grain, the idea prevailing that a fall of prices, to any large extent, cannot possibly occur until the winter of 1898.

The meat markets have latterly been dull owing to the supplies being in excess of demand.

Now the question arises are the English people congratulating the English farmer, or are they as a body grumbling at his change of luck? I trow it is the latter. The British Public has never sympathised in the past, with the altered conditions from year to year of the farmer, and it is hard to believe that the general public will tender any sincere congratulations more especially if the bettering of the farmers condition means an extra cent or two on the price of a loaf of bread. Now I take it that this would not be, nor is true of Canada, for in a young country like this, when any class of people seem to be moving from an unsatisfactory into a prosperous condition, it is, for the sake of the country alone, to be regarded as a matter of public congratulation; and I do not believe that any class are so generally congratulated and felicited, upon a change for the better, as the farmers. There is no gainsaying

but that the dawning of better times has struck the farmers before anybody else. One thing there can be no question about, viz: that the outlook from an agricultural point of view, has within a few months proved better than the outlook from any other. Because of this everybody seems thoroughly and heartily glad. The rest of the people are figuratively holding out their hands ready for a general shake with their rural friends over improved conditions. There is rejoicing on every hand, and I believe it to be sincere and unfeigned. This is as it should be. People with sense know that the foundation of all other pursuits is agriculture, and that for everybody else to be prosperous, the farmer must essentially be so. There is no other way for it. So that, even looking at it sellishly, everyone should be heartily glad to see the farmers' interests looking up.

In England, however, people are crying out about a slight increase in the price of the loaf, even though it benefits a large industry; and, what is worse there are some who are trying to make party political capital out of it. These people hardly carry out, even if they believe in, the adage of "live, and let live?"

W. R. GILBERT.

THE CORN CROP.

(Continued.)

ITS GROWTH AND CULTURE, by Frank T. Shutt, M. A., F. I. C.

We presented to the readers of this Journal in the September issue, the chemical data and the deductions therefrom that led us to advice the "glazing" period—and not earlier nor later—as the right stage of growth at which to cut corn, whether for the silo or for drying in stooks. We shall now make a further study of the chemistry or life history of the corn plant, in order to obtain information regarding the planting of this crop.

It will be remembered we pointed out that the larger part of the enormous gain in food constituents during the five or six weeks preceding maturity was due to the storing up of carbo-hydrates (starch, sugar, gums, &c.) These materials are manufactured by the plant from the carbonic acid that it absorbs from the atmosphere. They are, therefore, to be considered as a distinct gain; their production makes no direct draft upon the soil plant food. The corn plant, however, like all other forms of vegetable life, requires for its sustenance and growth certain supplies of mineral food and nitrogen, and these must be drawn from the soil. When these are furnished abundantly in available or soluble forms and the conditions of soil and climate favourable, growth will be robust. Without an adequate supply of mineral and nitrogenous food, the plant will be but poorly able to appropriate its atmospheric food. If the farmer sees to it that there is an abundance of soil plant food for the growing crop, nature will supply without stint from the air the greater part of that which largely constitutes in the harvested plant the material of feeding value.

Our chemical research has enabled us to say that it is more particularly during the earlier stages of growth—the first two months—that the corn plant takes from the soil the larger portion of its mineral matter and nitrogen. This fact clearly emphasizes the advisibility of planting in a soil rich in available food elements, of thorough tillage of the soil and of keeping the ground well cultivated during the early part of the season. Land thoroughly prepared, that is, in good tilth, and well manured furnishes large amounts of mineral and nitrogenous food to the young and growing crop.

First, therefore, we advise planting on rich soil ; it can scarcely be too rich for corn. Barnyard manure and woodashes will supply all the needed plant food. Corn grows excellently on a rotted clover sod, for the decaying clover roots furnish in assimilable forms just those elements, both nitrogenous and mineral, necessary for the nourishment of the young corn plant. Ploughing the soil in the autumn is to be strongly advised. It helps to make a mellow seed bed. Let it be remembered that a right physical or mechanical condition of the soil is very helpful towards a large and mature crop. Good tilth means an abundance of soil moisture, freedom for root extension and the liberation of food elements in forms that can be readily taken up by the young plant. We have only to add in this connection that corn does better on a somewhat light loam that on a heavy and clayey soil—though when sand largely predominates the soil is apt to be too poor for the best returns.

Secondly, always plant in drills or in hills, never broadcast. The latter method results in an immature crop, watery and deficient in feeding value, and bearing but few ears, and those very small. The corn plant requires plenty of room, both above and below ground ; space that all its foliage may be exposed freely and directly to the air and sunshine, room that its roots may find an easy and large area in which to forage for mineral and nitrogenous food. The most profitable returns can only be obtained by such planting. For the same reason it is not well to have the drills or hills too close, nor the plants too thick. With such varieties as are best suited to Quebec and Ontario, planting in drills three feet apart, with plants 2 to 3 to the running foot, will probably yield the maximum amount of good fodder.

Third, do not neglect cultivation in the early part of the season. The growth of weeds chokes the young corn plant and robs it of soil moisture and food that should be carefully preserved for its use. Deep cultivation is not to be recommended ; all that is necessary is to preserve a couple of inches of a dry earth mulch to retard surface evaporation.

Respecting the varieties to plant, we advise those only which will come to maturity before there is much danger from autumn frosts. The large Southern varieties should not be used ; they mature too late. Longfellow, Pearce's Prolific, Crosby's Early, Angel of Midnight, and others having about the same maturing period will in most localities give the largest yield of " dry matter ", in other words, of real cattle food, per acre.

TILLAGE, MANURES, &c.

We have seldom received a pamphlet containing more good sense than Prof. Shutt's brochure on the work carried on under his superintendence at the Government Experiment-farms ; and our appreciation of the value of the opinions contained in the pamphlet is by no means lessened by the fact that, in 99 p.c. of the *practical* part of the work, we can most heartily agree with the advice given as to the management of manure, the general treatment of commercial fertilisers (though we hate the use of the word in that sense), and the proper season of their application.

We only wish we could afford space to publish the whole of the pamphlet; but, failing that, we must content ourselves with eviscerating it, and giving in a condensed though we trust a lucid, easily apprehended form, a few of the main conclusions arrived at by the learned Professor in his " Evidence before the Standing Committee of the House of Commons on Agriculture " on the 11th June, 1897.

CULTIVATION.—In Britain, we say, of such and such a field or district, that it is not well "farmed"; and this is exactly the fault Professor Shutt finds with a great deal of the cleared land in Canada. We fear that a visitor from Scotland, from England, or from the best districts of Ireland, would say of the generality of the land in this province that it is not farmed at all. The one furrow is hastily turned over, the seed sown and provided a couple of strokes of the harrow cover the seed, it is left to itself to do the best it can: that is not "farming."

And what is the consequence of this scamping of the work? Let Mr. Shutt tell us: "The analysis of cultivated, and what we might call partially exhausted soils, shows that we have many soils in Canada which, though giving poor returns, have by no means been depleted of their plant food. This plant food, however, is "locked up," and what is specially needed is more thorough tillage in order to render that plant food more available, and that is the opinion reached after the examination of a considerable number of samples. We need to draw the attention of farmers not only to the use of manures and fertilizers, but also *to correct tillage*. They should be instructed in the reasons for ploughing and harrowing, etc., and taught that a good mechanical condition of the soil is necessary, in order that the plants may find a good and comfortable—seed and root—bed, and that the soil be able to conserve moisture during seasons of drought. I am convinced that many of our cultivated soils could be vastly improved in productive power, simply by tillage of a more thorough and rational character. The reasons for drainage, ploughing, cultivating, etc., should be well understood and carrried out, for it is by such means that not only the best mechanical condition and ratio of moisture of the soil is secured, but that the stores of locked up plant food are rendered available"

This need of "correct tillage" is what we have been trying to impress upon the minds of our friends for the last 19 years; and we are happy to say, in some districts, —Sorel, to wit—not without considerable success.

Professor Shutt lays great stress on the utility of deep-ploughing, in which we thoroughly agree with him, but with this proviso, that the depth be arrived at gradually; the deepening being always done before winter, and followed by a manured, hoed crop, and never by a cereal. In our own loved county of Kent,—the "Garden of England,"—in which deep-ploughing is (or *was* when we farmed there) almost invariably the rule, the above precautions are always observed, particularly on heavy land, in which 12 inches for the root-crop, and 9 inches for a clover-ley, are the usual depths of the furrow. Of course such depths are not attained by a light plough, drawn by a pair of ponies. "Tilth," is indeed an important factor in productiveness. How can roots work freely without a free, ubiquitous passage through the soil?

LIME.—"Lime," says Mr. Shutt very sensibly, "has its abuses as well as its uses;" and this may be illustrated by the fact that many of the farms in Glamorganshire, South-Wales, were, some 60 years ago, rendered almost unproductive by the constant repetition of liming without manure. Our tenants used to cart up hay, grain, etc., to the great iron-works at Merthyr Tydlvil, and bring back lime; the consequence was that the soil became so uncohesive that every grain-crop "went down" before maturity, the roots having no foot-hold in the, so to speak, rotten land. Fortunately, when things were pretty nearly at the worst, the writer's brother, who has passed some time in Norfolk, advised some of the farmers to try growing turnips, rape, etc., and feeding them off on the land with sheep, and this, being wisely adopted, and the use of lime abolished, had the effect of thoroughly restoring the original firm texture of the soil. The farm-leases all ran to this effect: "And A. B. covenants to dress the whole of the land with dung, *or lime*, every fifth year." Lime was cheap and handy; dung was scarce and bulky; hence, the land was ruined by too copious a use of the former.

Mr. Shutt recommends 40 bushels of lime to the *acre* (about 34 to the *arpent*) as a fair dressing; but, of course, a good deal depends upon the quality of the land, a heavy clay being grateful for 200 bushels an acre, as any Scotsman would tell us.

One invariable rule in the application of lime: keep it on the top. Lime sinks rapidly, and should always be harrowed, not ploughed, in. We cannot be guided by Scotch practice as to quantities, for as a Scotch tenant farmer is (or used to be) bound by his lease to lime his land at least one during its currency (19 years), he was always anxious to get it over as soon as possible, so as to reap the whole of the benefit expected from it before the expiration of his holding. Therefore, when Stephens, in his invaluable "Book of the Farm," says: "The *quantity* of lime that should be applied depends on the nature of the soil, the lighter soils requiring the less, and the stronger the greater quantity. On light turnip soils, some think 120 bushels per acre sufficient, whilst I have used 150 bushels with benefit. I have seen as much as 510 bushels applied to the acre of wheat land, with manifest advantage. But perhaps from 150 to 240 bushels may be considered average quantities, from the lightest to the heaviest soils. On weak moory soils, 75 bushels are enough with which to commence its improvement;" we may very properly say that we will be satisfied with lighter dressings, applied more frequently. On the whole, we are inclined to think that a dressing of lime, every five years, of 40 bushels on light and 50 bushels on heavy land, would be sufficient. In the South-East of England, where we used to farm, lime was rarely used in the form of burnt limestone, as chalk was always at hand. Twelve or fourteen great tumbrils (from 400 to 500 bushels) were laid on an acre, before Xmas, and the frost tumbled the chalk all to pieces by the spring.

COMPOSTS.—We have always held that the advisability of making composts depends entirely on the cost of the labour involved in their compilation. Here, labour is high-priced, to say nothing of the shortness of the season from harvest to frost. There cannot be much good from an application of less than 40 or 50 loads of compost to the acre, and this has to be carted twice, i. e., *to* the heap, and *from* the heap to the land: an awful lot of work! We confess we should rather be inclined to send an empty cart a few miles to buy a load of dung, than to spend the same time and labour in making composts; and, if our farm were too far from purchasable dung, a few cwts. of bone-dust or superphosphate would be very useful, particularly if they were used to grow rape to be fed off on the land by sheep; for, our "Delenda est Carthago" is, and always has been, ever since we began to write in this periodical, now nearly 20 years ago: GROW RAPE, AND FEED IT OFF ON THE LAND WITH YOUR FLOCK.

Wherever such "fertilising deposits" as muck, mud, marls, &c., are found handy to the homestead, they may be used as absorbents. Dried bog-earth, sawdust and other like materials scattered behind the cows and horses, save a good deal of urine that, for want of straw for litter, would inevitably be lost. This practice we prefer infinitely to the use of a liquid manure-tank, which, if properly constructed, is costly to build, and in most cases is allowed to become useless in a very few years for want of repairs. We must repeat here, what we have said before à plusieurs reprises, that we never met with a farmer who persisted in the practice of carting-out liquid manure on to his land after the experience of a couple of seasons. Plenty of litter, and other absorbents, carefully managed, ensures the combination of both liquid and solid excrements in one and the same mass, and all necessary plant-foods are then offered freely to the growth of the herbage, &c., on the land where it is spread.

BARN-YARD DUNG.—In the argument, pro and con, of rotting dung or using it in the raw state, Professor Shutt seems to thoroughly appreciate the importance of

having the plant food it contains in an easily assimilable condition. On heavy land, the rougher the state of the dung, the better; the reverse is true in the case of light soils; the reasons for this difference we need not enlarge upon. As for the loss during the fermentation of a mixen properly constructed, i.e., well compressed on a good bottom of earth, with 9 to 12 inches of soil on the top, and only turned over about ten days before being spread, we do not consider it to be worth bothering about. Quick work is what we want from it, as practically speaking, no sensible farmer dreams of manuring for a cereal crop in this province, where the summer-fallow is almost unknown, and though Mr. Shutt remarks: roots and other plants of long growth need not have the manure in so advanced a condition as cereals; still, as rotted or fermented manure certainly pushes the plant in its earlier stages more rapidly than raw manure, we should be inclined to give all roots, grown from seed, well prepared dung. Potatoes and maize will take it as raw as they can get it; but swedes, mangels, carrots, etc., like the "first-course" of their dinner well cooked; hence, the invariable custom in England of drilling in superphosphate with the seed of swedes, etc.

MIXENS.—And how about the seeds of weeds, so terribly prevalent all over the province? Is it not worth while to sacrifice a little plant food in our farmyard manure if by so doing we can destroy a large proportion of these enemies? We have heard some men of pure theory say that no heat producible in a mixen can kill the seeds of weeds: practice says just the contrary, and the first potato-field we planted at Sorel, some dozen years ago, proved, to our perfect satisfaction, that practice is right. Therefore, we say, make mixens and ferment your barn-yard manure; but, do so carefully, and do not let the manure get fire fanged.

HOW TO MAKE A MIXEN.—A dunghill having a breadth of 15 feet, and of four or five times that length, and of proportionate height, will contain as much manure as should be taken from one spot in manuring a field quickly. Suppose that 15 feet is fixed upon for the width, the first carts should lay their loads down at the nearest end of the future dunghill, in a row across the whole width, and these loads should not be spread very thin. Thus, load after load is laid down in succession upon the ground, maintaining the fixed breadth, and passing over the loads previously laid down. On frosted ground the bottoming is easily formed. After the *bottom* of the dunghill has thus been formed of the desired breadth and length, the further end is made up, by layer after layer, into a gradual slope upwards from the nearest to the farthest extremity. This is done with a view to effecting two purposes; one to afford an easy incline for the loaded carts to ascend, the other to give ease of draught for the horses to move along the dunghill to all parts, to compress it firmly with the carts. Every cart-load laid down above the bottom layer is spread around in order to mix the different kinds of dung together, and to give a uniform texture to the whole heap of manure. To effect this purpose the better, a man should be employed to spread the loads on the dunghill as they are laid down; the carters being apt to spread it as little as possible. When the centre has reached the height which will enable the dunghill to contain the desired quantity of manure, that height is brought forward towards the nearer end; though the centre will first attain the greatest elevation, as a slope at both *ends* is required—one to allow the carts to take up the requisite quantity of dung from one end, and another to allow them to come easily off at the other end. It is essential to have the whole dunghill equally compressed, with a view to making the manure of similar texture throughout. After the carting is over, the scattered portions of dung, and the thin extreme ends of the dunghill should be thrown upon the top, and trampled down, and the entire top brought to a level. Such a finishing to a dunghill is very generally neglected.

In winter, there is no possibility of covering the mixen with earth; neither does it

matter; for as, long as the temperature of the air is below 45°, there is not likely to be much activity in the interior of a dung-heap. But, when spring arrives, and the dung is not to be used at once, it would be well to throw a good layer of earth on to the top of the heep: it does not cost much to do, and is likely to moderate the rapidity of the fermentation. Ten days—or fewer in hot weather—turn the mixen; keep it level; break up the outside, and throw it into the middle, and believe us, you will not have the plants finding much fault with the cooking of the food you have laid before them. Mr. McMillan, asked Prof. Shutt: what would be the effect of leaving the manure to rot in the yard or under a shed all the summer? To this the reply was as follows:

"If proper precautions are taken to keep it moist and compact, the loss would not be so great as when allowed to lie about loose. There will be loss under the best conditions; the question is whether this loss is compensated for by rendering the plant-food in it more available. For certain crops and certain soils. I believe that this loss is more than compensated for by the increases assimilability of the fertilising element, left in the manure.

(*To be continued*).

HOUSE MATTER.

The great festival of the year, with all its pleasant associations, is now an event of the past, but memory will often bring back to us many little pleasing incidents which happened at this season, and these will help to cheer us on through the unknown future of the coming year.

The year 1897 will be remembered in history as The Diamond Jubilee of our good Queen, on which occasion was every effort brought out to make the event a pleasing one, and truly never before was the wonderful power of electricity shown in all its splendour and magnificence as on this occasion.

We must now turn our attention to the new year 1898, with all its future before us.

There will be the usual number of people who will form wonderful resolutions as to what they are going to do. The weak will, as usual, soon fall back into the old routine, while the strong, determined character will continue on the progressive road and find his or her reward in the end.

The long winter evenings will be a source of delight to the student, who will wrap himself up in his books, and never find time lag, but wonder how it has flown so quickly.

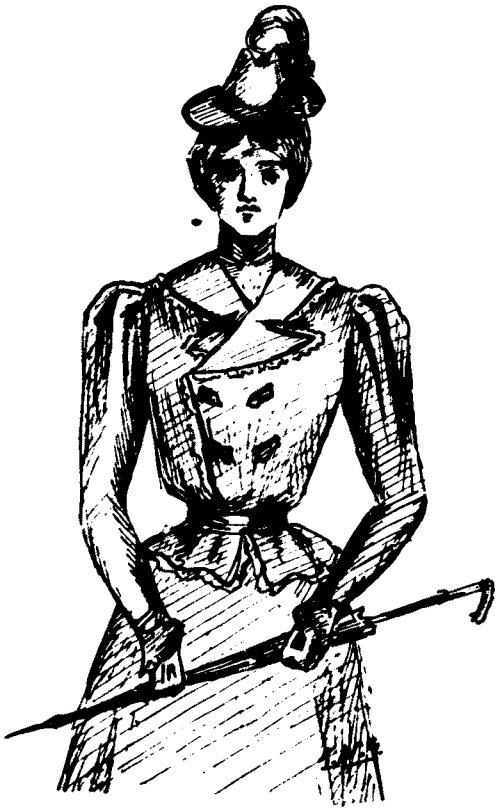
If some of the young people who live far back in the country, and find the evenings long, would turn their attention to some useful subject and read it up for future use, the evenings would pass quickly and to their profit.

Let the young folks on a farm take up and read the best way to make a little pocket money, so dear to young and old. There are many ways of doing this, it needs only a little courage and it is done. The raising of early chickens, for which there is great demand, and for which good prices are given, is one way, and as the real work and study how to do this are written by people who have made it a study and put it in book form for use, the matter comes to simply looking into some trustworthy journal and following out every detail. Let the boys and girls put their heads together and see what a little determination will do for them.

HOUSEHOLD ECONOMIES.

To mend agate or porcelain-lined kettles: for a small hole, cut a short piece of copper wire, pass one end through the hole, and flatten with an hammer on each side. Be careful not to strike the enamel or it may flake off. A few, well directed blows with a piece of iron held firmly against the opposite side, will insure success. For larger holes use copper rivets which can be found at the hardware store in different sizes. Pass the rivet through the hole from the inside of the kettle, slip over the end of the washer which comes with it, and with a few hammer strokes flatten the end down, observing the same precautions as with wire.

Rust spots often appear on linen for which the housewife, having exercised due precaution, cannot account. Test the blueing by adding some washing soda to it in a solution of water. If it turns a reddish color, it is Prussian blue, which is a compound of iron and becomes decomposed by the action of soap and soda, causing iron rust spots. To remove these spots, one of the most effectual methods is to spread the linen on the grass in a hot sun, saturate with lemon juice and cover thickly with salt. Repeat the process, if necessary.



ABOUT DRESS.

A sketch is given of the Russian *Blouse*, so very fashionable just now. If for out of door wear, it must be lined with a good stout lining which is made separate from the outside. The lining reaches only to the waist, and the fulness is gathered in and kept in place by a belt made of the same material for the outside.

The one from which this sketch is taken is made of purple velvet, with a very little frill of satin of the same colour, to finish off the edge.

The buttons are oblong and nearly cream-coloured; 4 or 6 are used, as they are only for ornament, the front of the blouse being fastened at the side with small buttons or with hooks and eyes.

It is hard to get accustomed to the small sleeves, but fashion has decreed and we must submit.

HOUSEKEEPER.

THE FLOCK.

RAMS AND TEASER.—Mr. Stewart, who usually writes good sense, for once fails to keep up his reputation when, in speaking of putting ewes to the ram, he advises that the ram should only have a few wives at a time! If he aims at spreading the lambing season over as long a period as possible, thereby keeping the shepherd without proper rest longer than necessary, he is right: but we hold that this intensely arduous season should be hastened over as quickly as possible, and to that end, we should do, as we always did when we kept a breeding-flock of 200 Hampshire down ewes, that is, give the ram at once the full number of ewes he is expected to serve.

Our practice was this: about 3 weeks before the season of putting the ewes to the ram, they were hurdled on rape. When the coupling time had arrived, a day before the ram was admitted to the fold, an unfortunate lamb-ram, called *a teaser*, was introduced to the harem, to prepare the sultanas for the visit of their lord and master. In order to prevent the poor wretch from seducing any of the brides from their allegiance, a piece of sack-cloth was sewn on to the breast of the teaser, which dropping over his fore-legs, effectively prevented any saltatory efforts on his part, but allowed him to rove about among the ewes and, by his constant inquisitiveness, to irritate their excitable temperaments. By this means, the females were brought into season with considerable contemporaneousness (Heavens! what a word, but we cannot find a shorter), and the number of ewes served by an active two-tooth ram exceeds all belief. As the brisket of the ram was invariably "ruddled," the ewes served could always be distinguished from the rest: these were removed for a time, and when all were served, the whole were put together again in case any should "return," i.e., come again into season. At the end of the third week from the beginning of the service, the ram was finally removed, so that there was no lingering in the lambing-time, the whole being over and done with in from 21 to 26 days. As we have mentioned before in this periodical, a shearling ram we hired, in 1852, from Jonas Webb, of Babraham, the great Southdown breeder, served 110 ewes for us in one season.

HOW TO RAISE BROILERS FOR MARKETS AT 10 CENTS EACH.

For many years we have tried to raise broilers for market and think we have had a fair success as well as good hopes for the future, and we wish for the benefit of your readers to let them know how things were done.

First, we had a pretty good stock of imported white Leghorns and Plymouth-rocks; also, some good brown Leghorns.

Secondly, they were well cared for, well fed, and had sufficient ventilation to furnish constantly pure and fresh air.

In all the buildings we had four hundred laying fowls, all being divided, and allowed ten hens to each cock in the breeding divisions, from these hens we had good fertile eggs.

As we could not depend on our good laying hens for the hatching and raising, greatly preferring letting them lay and not losing precious time, we were running only hot water incubators and brooders of our own make, hatching in March to sell them at the age of ten weeks.

They were well dressed, dry picked, weighing about three pounds a pair.

We sent them to a dealer and asked 75 cents a pair; we did not surprise him; he took all we had and asked for more, but at the next market we declined to sell at that

price, his offer was 90 cents, and at a dollar they would sell without any effort, but as you may see they were hatched in time to obtain good prices.

At that time, we had the visit of a reverend father O. M. I. of Montreal informing us that we could obtain one dollar and fifty cents, and at that figure we would not be able to furnish only one dealer in that city, and we had no difficulty to believe it; the fact is, that one dealer alone here in Quebec, would like to have one hundred couple per week, it was a little more than we could furnish, but it was encouraging, when we knew the low cost per lb. for producing this good and healthy meat.

To produce a broiler and sell it at the figure above mentioned, with the good and simple food I described in a preceding article, the cost of food at ordinary market prices would be, for an experienced hand, lower than ten cents for each chicken; but the figure of production for good ones, such as I refer to, will certainly be an easy matter to do for any one, provided feeding had been given at regular hours and they have been properly cared for. If you expect to be well paid for your services you must do in consequence or don't try anything, of course when we are new at this kind of work some will not succeed as well as others that are just beginners, but, after all, your experience will be there, and will serve you well to go ahead and make things progress.

Raising poultry is a kind of work like many other specialties, it demands a liftle courage, work, and pluck to obtain success in all industries; we must look sharp, and not fail by neglecting small details because they seem to be trifles. If we were in the place of our dear and small chickens, many times waiting and suffering on an unfit floor, improper ventilation, unwholesome food, bad water; or sometimes we don't examine if they are tormented by a great enemy that we call lice and other vermin, of which there are many kinds.

I will try to illustrate one day's work among our little fellows that if it is simply followed will push many things to success.

First, you ought to know that chickens rise early, you must be prepared in consequence. Now, the first thing to do for a beginner and for all in the morning, is to see to in caring for the young birds to ascertain yourself the temperature in the brooders; not less than 80° F. is required for the first days of their existence, until three or four weeks old; then, decrease to 70° F. at which they will do well, until they are five or six weeks old, after that age they do not want any more artificial heat unless your poultry house should be cooler than 60° F., but its temperature ought not to be lower than this last. In my experience, a place between 50° F. to 60° F. is a good place to run incubators; in that case a house that will maintain an even temperature without varying much is very desirable.

I consider that a poultry house that has a temperature good for incubators is very good for the raising of chickens.

In another article see: How to run incubators successfully.

I have departed from our subject a little, but now as you have seen that the temperature is right, pass with water and a shuttle made for this purpose; clean and rinse well the inside of the water-vessels, never leave them filthy, and the water will keep clean if the vessels are covered. Remark what I have said before. After you have served them with fresh water, clean the little feeding troughs and give the chickens only as much of the soft food as they want; in such a manner they will eat all and not waste food. Try to study this point in the feeding; small grain might be left in the troughs or, still better, throw it into the clean straw that has been chaffed to give them a chance to work a little for it. This also promotes exercise by which they will grow faster and be healthy.

Secondly, let them have coarse, clean, and dry sand, they need it to promote digestion; there are generally some places where you can get this sand, but for many reasons, I much prefer the one coming from the river, let it dry well in the sun, on boards, or other places to be gathered and kept in a dry place and employed when wanted.

We have found that the "fifty cigars box size" answers well that purpose, and will cost next to nothing.

Now, put on the floor of the brooders fine, clean, dry sand, about ½ inch thick; for that purpose I prefer the fine to the coarse, it is a better absorbent. Renew the sand when it is time, and don't let it take on a bad smell. For the chicken-yard I prefer chaffed straw to husks. When we feed with our cheap soft food, if some bits of good fall on the straw it will not stick and chickens can eat it without constantly swallowing chaff etc. with it, this last has also this advantage: it is a good absorbent, as any one can see for himself.

Now feed five times a day until the chicks are three weeks old; after that age, three meals, and good success must be yours. E. GAGNÉ.

The Horse

THE CANADIAN HORSE.

We have shown in previous chapters how the Norman or Carlovingian horse was developed in Europe by combining the blood of several of the best races of the day. We also tried to make clear the fact that all the so-called breeds of France, whether Norman, Breton or Percheron, were really only branches of the Carlovingian, modified in different provinces by their environments, but having the same blood in their veins. Hence, it matters little whether the first horses brought to Canada came from Brittany or La Perche. They probably came from both the above provinces, as well as from other parts of France, for settlers came, not only from Brittany and Normandy, but from Isle de France and other provinces.

The official document issued in 1638 by Francis I, relating to New France, states that settlers "must carry out as many as possible of all kinds of domestic beasts and birds." The first authentic record of a horse being taken to Canada was on June 20th 1647. He was brought from France in a ship that touched at Tadousac. On the 30th of June 1665, the Marquis de Tracy arrived at Quebec with a number of domestic animals, among which were several horses. After this, they were frequently brought over, as intercourse between the mother country and colony became more extensive. Mr. J. B. A. Ferland, in his "Cours d'Histoire du Canada," gives the following description of the arrival of the first horses in Canada: "Mais ce qui causa une grande joie parmi les habitants et un vif étonnement aux aborigènes, fut le débarquement de douze chevaux que le roi envoyait au Canada. A l'exception d'un cheval donné, près de vingt ans auparavant, à M. Montmagny, c'était le premier qu'on y voyait."

Mr. Edward Harris says the Canadian is a perfect model of the Percheron, on a small scale. The resemblance between the typical Canadian and pictures of the original Percheron is indeed striking, but the Percheron of today is a very different animal from what his pictures show him to have been when first he was produced for the "diligence" service. Mr. George Barnard of Sherbrooke, Quebec, thus describes the Canadian: — "Let me premise that a great variety of races exist in the Canadian breed, yet all clearly impressed with a certain general character. The broad, courageous-looking head, with ears far apart, thick neck, with general stoutness of frame, full breast and strong shoulders, with a round or, fleshy croup, the low-set muscles and large sinews, with those tough feet that know not disease, are distinguishing marks of the French Canadian breed." Mr Barnard states, in the article from which this is quoted, that the shagginess is due to climate and treatment. There can be no doubt about this, since French horses are no more shaggy than other breeds. The severe climate of Quebec is also accountable for their small size. But while exposure, and in many cases scant fare, have reduced them in size, it has added to their vigor and hardiness.

The American editors of Youatt, in speaking of the Canadian, say.—The Canadian horse, found in the Canadian provinces and Northern United States, is mainly of French descent, although many of the so-called and doubtless some of the fleetest ones are a cross between Canadian mares and thoroughbred stallions. They are a long-lived, easily kept and exceedingly hardy race, making good farm and draft horses when sufficiently large. In form many show Norman characteristics, also in qualities—but they are usually considerably smaller." These same editors also state that the Canadian was the only horse produced in purity on the American continent up to 1782.

Along the border line, between Quebec and New-York and the New-England states, the Canadian and Morgan have been bred together for years. The result has been to produce a horse of nerve, speed, hardiness and strength unsurpassed anywhere in North America. They are of course rather small, since the Morgans and Canadians are small breeds, but nevertheless they are excellent for general purposes. It has been said of them that they will draw anything that is loose at both ends. They usually make splendid drivers, many of them able to reach a three minute gait, and not a few can keep this up for a mile or more. One of these horses was driven across Missisquoi Bay, a distance of five miles, in twenty minutes, a rate of fifteen miles an hour.

When British troops were stationed at Quebec, Montreal, and other points in Canada, English thoroughbreds were largely used by the officers. Many of these were stallions and were often bred with Canadian mares, and many were left in Canada when the troops withdrew. This blood has undoubtelly been an important factor in producing some of the most speedy Canadians. It is probable that St-Lawrence and Pilot had some racing blood in their veins.

Wherever we find descriptions of the Canadian horse nothing but praise is written. The Encyclopaedia Americana says : " The Canadian horse is small, generally 14 to 14½ hands It is remarkably hardy, and has good temper and great endurance. It has admirable legs and feet, full and broad breast, strong shoulders, lofty crest, mane and tail abundant and wavy."

Frank Forrester thus describes him : "In Canada East, the Norman horse, imported by early settlers, was used for many generations entirely unmixed, and exists so yet (1870), stunted in size by climate and usage, but in no way degenerated, for he has the honesty, courage, endurance, hardihood, constitution and excellent feet and legs of his ancestors."

The Canadian is now a horse of the past ; he has been absorbed into other breeds, but has left his traces in disposition and physical characteristics.

CHAS. S. MOORE.

Stanbridge East, Dec. 4.

THE APIARY

DRONES.

The bee-keepers in Aristotle's time were in the habit of destroying the excess of drones. They excluded them from the hive—when taking their accustomed airing—by contracting the entrances with a kind of basket work. Butler recommends a similar trap, which he calls a " *drone-pot.* "

One of the modern inventions to destroy them is Alley's drone-trap, improved by J. A. Batchelder ; but it is much better to save the bees the labor and expense of rearing such a host of useless consumers. This can readily be done, when we have the

control of the combs ; for, by removing the drone-comb, and supplying its place with worker-cells, the over-production of drones may be easily prevented. Those who object to this, as interfering with nature ; should remember that the bee is not in a state o nature ; and that the same objection might, with equal force, be urged against the killing off of the supernumerary males of our domestic animals.

Soon after the harvest is over, or if there is a lull in the yield of honey, the drones are expelled from the hive. The worker-bees sting them, or gnaw the roots of their wings, so that when driven from the hive, they cannot return. If not ejected in either of these summary ways, they are so persecuted and starved, that they soon perish. At such times they often retreat from the comb and keep by themselves upon the sides or bottom-board of the hive. The hatred of the bees extends even to the unhatched young, which are mercilessly pulled from the cells and destroyed with the rest.

Healthy colonies almost always destroy the drones, as soon as forage becomes scarce. In the vicinity of Philadelphia there were only a few days in June, 1858, when it did not rain, and in that month the drones were destroyed in most of the hives. When the weather became more propitious, others were bred to take their place. In seasons when the honey-harvest has been abundant and long protracted, we have known the drones to be retained, in Northern Massachusetts, until the 1st of November. If bees could gather honey and could swarm the whole year, the drones would probably die a natural death.

How wonderful that instinct which, when there is no longer any occasion for their services, impels the bees to destroy those members of the colony reared with such devoted attention !

It is interesting to notice the actions of the drones when they are excluded from the hive. For a while they eagerly search for a wider entrance, or strive to force their bulky bodies through the narrow gateway. Finding this to be in vain, they solicit honey from the workers, and when refreshed, renew their efforts for admission, expressing, all the while, with plaintive notes, their deep sense of such a cruel exclusion. The bee-keeper, however, is deaf to their entreaties ; it is better for him that they should stay without; and better for them—if they only knew it—to perish by his hands, than to be starved or butchered by the unfeeling workers. Towards dark, or early in the morning—when clustered, for warmth, in the portico—they may be brushed into a vessel of water, and given to chickens which will soon learn to devour them.

Drones are sometimes raised in work-er-cells (150). They are smaller in size but apparently as perfect as the full-size drones, all their organs being well developed.

For the stages of development of drones see the comparative table at the end of this chapter.

We have repeatedly queried, why impregnation might not have taken place *in the hive*, instead of in the open air. A few dozen drones would then have sufficed for the wants of any colony even if it swarmed, as in warm climates, half a dozen times, or oftener, in the same season ; and the young queens would have incurred no risks by leaving the hive for fecundation.

For a long time we could not perceive the wisdom of the existing arrangement; although we never doubted that there was a satisfactory reason for this seeming imperfection. To have supposed otherwise, would have been entirely unphilosophical, when we know that with the increase of knowledge many mysteries in nature, once inexplicable, have been fully cleared up. "