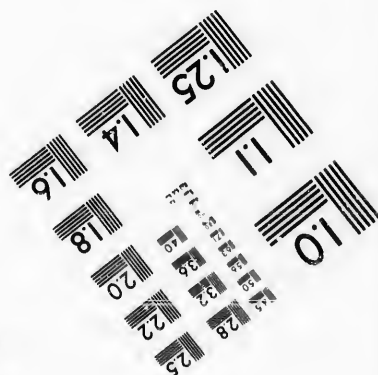
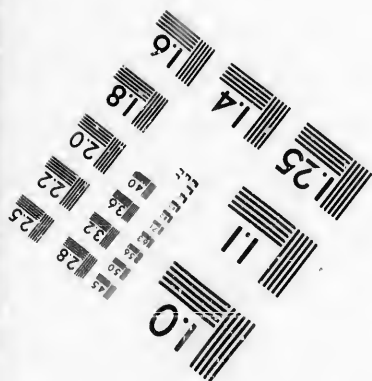
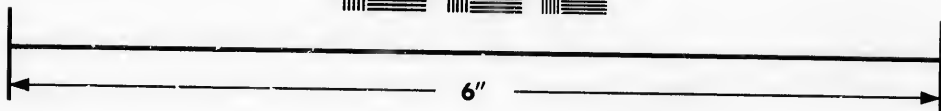
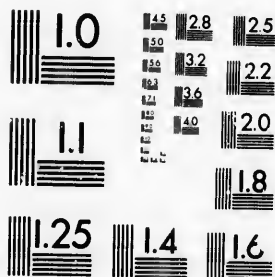


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503



**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques



© 1986

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. 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 filming, are checked below.

L'Institut a microfilmé 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 filmage sont indiqués ci-dessous.

- | | |
|--|--|
| <input type="checkbox"/> Coloured covers/
Couverture de couleur | <input type="checkbox"/> Coloured pages/
Pages de couleur |
| <input type="checkbox"/> Covers damaged/
Couverture endommagée | <input type="checkbox"/> Pages damaged/
Pages endommagées |
| <input type="checkbox"/> Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée | <input type="checkbox"/> Pages restored and/or laminated/
Pages restaurées et/ou pelliculées |
| <input type="checkbox"/> Cover title missing/
Le titre de couverture manque | <input checked="" type="checkbox"/> Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées |
| <input type="checkbox"/> Coloured maps/
Cartes géographiques en couleur | <input type="checkbox"/> Pages detached/
Pages détachées |
| <input type="checkbox"/> Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire) | <input checked="" type="checkbox"/> Showthrough/
Transparence |
| <input type="checkbox"/> Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur | <input type="checkbox"/> Quality of print varies/
Qualité inégale de l'impression |
| <input type="checkbox"/> Bound with other material/
Relié avec d'autres documents | <input type="checkbox"/> Includes supplementary material/
Comprend du matériel supplémentaire |
| <input type="checkbox"/> 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 | <input type="checkbox"/> Only edition available/
Seule édition disponible |
| <input type="checkbox"/> Blank leaves added during restoration may
appear within the text. Whenever possible, these
have been omitted from filming/
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 filmées. | <input type="checkbox"/> Pages wholly or partially obscured by errata
slips, tissues, etc., have been refilmed to
ensure the best possible image/
Les pages totalement ou partiellement
obscurcies par un feuillet d'errata, une pelure,
etc., ont été filmées à nouveau de façon à
obtenir la meilleure image possible. |
| <input type="checkbox"/> Additional comments:/
Commentaires supplémentaires: | |

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						✓					

The copy filmed here has been reproduced thanks to the generosity of:

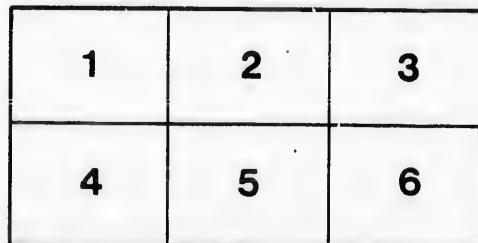
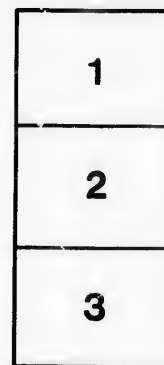
Législature du Québec
Québec

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shell contains the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Législature du Québec
Québec

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaît sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

15

SUGGESTIONS

FOR THE

SUB-DIVIDING AND MANAGEMENT OF A FARM

IN THE

SEIGNIORIES OF LOWER CANADA,

WITH

PLANS AND DESCRIPTION

OF

A FARM, DWELLING HOUSE, DAIRY, FARM YARD, AND
FARM BUILDINGS.

PREPARED FOR THE LOCAL EXHIBITION AT MONTREAL, MARCH, 1855.

BY WILLIAM EVANS,

SECRETARY AND TREASURER, BOARD OF AGRICULTURE, LOWER CANADA.

PLAN OF FARM GENERALLY ADOPTED UPON THE SEIGNIORIES OF LOWER CANADA.

The accompanying Plan of a Farm, No. 1, is that which generally prevails throughout the Seigniories of Lower Canada, and rarely exceeds from three to four arpents in width, while it extends to from twenty to over sixty arpents in length, as the case may be. This arrangement might have been very suitable at the first settlement of the country, when the population were few in number, and means of communication difficult, except along the courses of the rivers; but under the present circumstances of Canada, I conceive this plan is very objectionable, and necessarily involves a considerable waste of time and labour in the cultivation of farms of this form, that are out of all reasonable proportion long, in comparison to their width, and generally with the house and farm buildings situated at the extremity. As, however, there is not a probability that any material change can now be introduced in this defective arrangement, it only remains for us to adopt such improvements as may be in our power, in the division, draining, and general management of these farms. With this view I give a Plan, No. 2, made out in accordance with my suggestions on this subject, published many years ago in my Treatise on Agriculture. The Plan No. 2 shows the alterations I then, and now, submit for consideration.

PROPOSED SUBDIVIDING AND FENCING OF FARMS.

Fencing, next to implements and suitable buildings, is in most situations indispensable to the profitable management of arable land. On all arable farms on which cattle and sheep are pastured, the ease security, and comfort, which good fences give, both to the owner and to the animals themselves, are too evident to require particular notice.

The situation of fences on a farm depends upon a variety of circumstances, as the extent of the farm, the inequalities of surface, the nature of the soil, and on the course of husbandry to be followed.

Canadian farmers have almost invariably divided the cultivated part of each farm by a fence, through the middle from one extremity to the other, making each division about the square of one arpent and a half in width, the road of communication to the different parts of the farm and pasture being along this dividing fence. The first change I would propose as to fencing would be, that *in every case* where the farms would not exceed four or even five acres in width, the middle fence should be removed to the one side or other, and the road of communication to the different fields, and waste lands, if there are any, enclosed by this fence on the one side of every farm.

The rotation that may be adopted, should be the rule for dividing a farm into fields. A farm of supe-

rior soil, or even of moderate quality, might be divided into six fields of nearly equal size, if circumstances will admit of doing so advantageously; but on some farms where the lands are not of the same quality, and where they are broken by portions unfit for cultivation, it would be well to separate each quality, particularly any part unfit for cultivation, and incapable of profitable improvement, should be fenced off for pasture, if of an extent to make it worth while to do so. If, in regularly dividing the arable land of a farm, an acre or two of a different or inferior soil should happen to mingle in the same field, it might be readily improved at a slack time of the year. If such spots be of a light quality, some of the strong soil contiguous could be carted on it, and if the prevailing soil of the field be light, the plan may be reversed. When small portions of an enclosure are low, the cleaning of drains, or other earth, might be carted on it, in many cases, at an expense that would be repaid by one crop; but I would by no means recommend the expenditure of *one shilling* in the improvement of lands, where there is any doubt of the expense being refunded.

On farms of a light quality of soil, the cultivatable land might be divided into nine fields of equal size, subject to the same exceptions as those above explained. Two or three small enclosures would be necessary near the farm buildings, for horses, calves, pigs, &c. These fields might, in the first instance, be separated by open ditches for carrying off the surface water. These open ditches should be hollowed out in such a manner that the plough might cross them without difficulty; and the earth taken out should be carted off to hollow places, spread on the surface of the land, or placed in a heap for compost. There would then be no danger of these drains filling up from the sides falling in; they would look well, answer the purpose for which they were intended, and the grass might cover the slopes to very nearly the bottom of the drain. One of the greatest defects in Canadian draining is that the sides are cut nearly perpendicularly, and the earth taken out is suffered to accumulate upon the banks of the drain, hence along the edge of the drains the land is highest where it ought to be lowest. If these centre drains were properly formed, and the line drains kept in good order, to carry off the water from them, it would not be difficult to manage the remainder of the draining on ordinary farms. Sufficient drainage is the first improvement that should be attempted on every farm. To attempt to cultivate and manure land that is not sufficiently drained, is only a waste of labour and manure. I shall not in this short notice allude to under or covered drains, however convinced I am that under or thorough draining might be profitably introduced; if, with regard to cross fences, cedar posts or pickets were permanently fixed in for each cross line of fence, the rails might be removed to wherever required, with very little trouble. It

would seldom be necessary to keep up more than two or three cross fences in summer, as I shall hereafter explain. On the first proposed division of a farm into six fields, three would be under grain and green crops, and, if necessary, a part in summer fallow, the other three fields would be in meadow and pasture. On the second division of nine fields, three would be under grain and green crops, and perhaps a part in summer fallow, and six fields in meadow and pasture. In each case adhering strictly to the principle of rotation of crops, and convertible husbandry. This division of farms would answer for Upper Canada.

The live hedge fence of England is a great improvement to the appearance of that country, and is the best sort of fence that could be adopted there. Whether it would be equally well adapted to this country, is a matter on which there is some difference of opinion. I have very little doubt that hedges might be successfully cultivated here, and become good fences in half the time which they take to come to perfection in England. The native thorn here is very suitable for fences, and there are so many other kinds of trees or shrubs that might be mixed with the thorn, that there could be no difficulty of rearing good fences in most situations; and the rapid growth of these kinds of plants, in this climate, would be very favourable to the introduction of live hedge fences. They might be planted alongside the present rail fence on the level of the soil, not raised over it, and when sufficiently grown, the rail fence could be removed. The principal objection that I see to these fences, would be the danger of their preventing a free current of air to grain crops, and producing too much shade; but these injurious effects might be prevented by keeping the hedges trimmed constantly to the height of about four feet. This trimming would also prevent the snow from breaking them down so much as it otherwise would. Trimming hedges *annually* would not cost more than repairing fences of wood, and it will be necessary, at no distant period, to find a substitute for wood fences. Live hedge fences would be a great improvement to the appearance of this country, if they would not produce any injurious effect on corn crops in the hot, moist weather we occasionally have in summer. In order that hedges may grow luxuriantly, and soon become fences, it will be necessary to prepare the ground on which the plants are to grow, previously to their being planted. This will be best effected by ploughing or digging deeply the proposed line of fence, manuring it if necessary, and planting on it a drill of potatoes. After the potatoes are taken out in the latter end of September, will be the best time to plant the hedge; and if wild lands be convenient, there can be no want of plants that will form a good hedge, though they may not be all thorn. If hedge fences should be found to succeed well, thorn plants may be produced from

seed, as in England, to supply the demand, at a cheaper rate than taking up wild thorns.

Stone fences might be constructed profitably where the materials are often to be found enumbering the land

ROTATION OF CROPS, &c.

The distribution of crops, and plan of their succession, is one of the first subjects to which all farmers require to direct their attention. Whatever little regard has been hitherto paid by farmers to a proper rotation of crops in Canada, it is now a point on which their profits depend more than on any other. The kind of crops to be raised are determined in a great measure by the climate, soil, market and demand.

It has been found by experience, that besides the general exhaustion of humus or vegetable food produced by vegetation, especially those plants with farinaceous seed, each kind of crop has a specific effect upon the soil, so that no care or manure can make the same ground produce equal crops of the same kind of grain, for any length of time, without the intervention of other crops. Whether this be owing to any peculiar nourishment necessary to each particular kind of plants, or because plants not indigenous degenerate in a foreign soil, the fact is certain with respect to most crops usually raised. This points out the advantage of varying the crops, according as they are found to succeed best after each other. In general, all kinds of grain succeed best after a crop which has been cut before the seed has ripened, or the stem is dried up. Those plants which have a naked stem with few leaves thrive best after leguminous plants, which have more succulent stems, and which bear their seeds in pods, as peas, beans, tares, or vetches, or after succulent roots which strike deep into the ground, as carrots, parsnips, beet roots, and even potatoes. From this circumstance, confirmed by universal experience, the different systems of rotation have had their origin, taking the nature of the soil into consideration.

In the British Isles, where farmers have to pay heavy rents on short leases, there might be some excuse or justification for farmers deteriorating the lands by severe cropping; but here no such necessity exists, and consequently no such justification. Farmers are proprietors, and if they exhaust the soil by tillage beyond the point consistent with good management, they will be sure to pay dearly in the end for every crop forced from the land unreasonably. A farmer who is a proprietor, cultivating his own land with skill and experience, if he understands the quality of his soil, and state of his fields, will know what crops are most likely to grow well in each; he will know what is most in request, both for his own use and in the market, and he will act accordingly. But if he allows his land to be impoverished for want of rest or manure, or to run wild with weeds, he does not exercise the experience, judgment or activity necessary to make his profession and pursuits profitable, whatever his skill or experience may be.

The system of rotations is adapted for every soil, though no particular rotation can be given for any one soil which will answer in all cases. In some situations much depends on the kind of produce for which there is the greatest market demand; indeed, this will influence rotations directly or indirectly in every situation. But whatever the system of rotation that is followed, if the several processes of labour which belong to it are properly executed, land will rarely get into a foul or exhausted state, or at least, if foul or exhausted under a judicious rotation, matters will be much worse when any other system is followed.

The particular crops which enter into a system of rotation must be such as are suited to the soil and climate, varied by local circumstances, such as the proximity to towns, where there is generally a demand for potatoes, carrots, turnips, hay, &c. In a thinly peopled district, peas, beans, tares, hemp, flax, summer fallow, clover and timothy might be interposed between corn crops on clay soils, and potatoes, carrots, Indian corn, clover and timothy, on dry loams and sands. A variety of plants, such as peas, tares, hemp flax, Indian corn and carrots, might occupy a part of that division of a farm which is allotted to green crops, and on good lands, well managed, these plants might be grown to prepare the soil for grain, without perhaps resorting to summer fallow, except very rarely.

A farm of strong, rich soil, divided into six fields or enclosures, might have half the farm under different species of cereal grasses, or grain crops, peas, beans, tares, roots, or plain fallow; the other half under cultivated herbage, meadow and pasture. The rotation and distribution of crops might be the following:

One field or division, equal to one-sixth of the arable land, to be under wheat, if the soil is suitable, and the wheat a variety that will resist the fly; if not, barley or oats should be substituted. The wheat is to succeed green crops or summer fallow, and the land, with this crop, or any other crop substituted for it, to be seeded down *invariably* with clover and timothy, or other grass seeds. Second field, or one-sixth, ploughed in the previous fall, after pasture, to be in peas and oats, or perhaps all oats. Third field, or one-sixth, (following after oats and peas the year before,) to be manured with beans, peas, potatoes, carrots, and mangold wurtzel or turnips; and should the farmer be unable to find manure for the whole division, he may fallow the remainder, or sow tares, or some other green crop that he might plough in as manure if necessary. This last division will be prepared for wheat or barley the ensuing spring, and be seeded down with whatever crop is sowed. The other half of the arable land, comprising three fields or divisions, should be in meadow or pasture. One field or division, equal to one-sixth of the whole, coming annually into tillage, to replace the division

seed sown down yearly with the crop of wheat or barley, as before stated.

On farms of light or sandy soils, divided into nine fields or enclosures, the tillage should not exceed one-third of the arable land, or three fields in tillage, and six in meadow or pasture. By this rotation the land would be under grass six years out of nine, instead of three out of six, as in the first rotation, the management and course of cropping for the part in tillage to be the same as that laid down for the rich or clay soil, varying the distribution of crops to suit the quality of the soil, and introducing Indian corn in this rotation.

It may be expedient to vary from these rotations. The experienced farmer will understand when and in what manner it will be prudent to do so. I believe, however, that the more nearly the rotation adopted in Canada is conformable to these general rules, the more certain will be the profitable improvement of agriculture. This system of convertible husbandry is the most suitable to the present circumstances of this Province, and of British America. Under this course of husbandry the lands would be constantly in good heart, capable of producing abundant and excellent crops, and though the largest portion may be under cultivated herbage and grass, I am well convinced the gross produce of the land, and the farmer's profit, may be augmented two or three fold, if the produce be judiciously applied, and the rearing and feeding of cattle, for the dairy and the shambles, extensively introduced. Peas, beans, tares and roots may be raised in this rotation in great abundance, for feeding cattle and hogs, and a greater quantity and better quality of grain produced in one year, than under the present system of farming can be produced in two.

No food, no cattle; no cattle, no dung; no dung, no corn; is a maxim that ought to be fixed in every farmer's mind.

Not to repeat the same kind of crop at too short intervals, is a rule, with regard to the succession of crops, that ought to be strictly observed. Whatever may be the cause, whether it is to be sought for in the nature of the soil, or of the plants themselves, experience clearly proves the advantage of introducing a diversity of species into every course of cropping. On new land, or land that has been pastured several years, before it is again brought under the plough, there may be less need of adhering steadily to this rule; but the degeneracy of wheat, and other corn crops recurring upon the same land every second year for a long period, has been generally acknowledged.

Wheat, it is supposed, cannot be grown in perfection, on an average, more frequently than once in every five years on the same land. Beans, peas, potatoes, carrots and red clover, that may be called green crops, become in many instances less productive and much more liable to disease, when they come into

the course, upon the same land, every second, third or fourth year. What the interval ought to be has not yet been ascertained, and from the great number of years that the experiments must be continued, to give any certain result, probably cannot be determined until the component parts of soil, particularly the sort of nourishment which each species of plant extracts from the soil, have been more fully investigated. All good farmers will, however, avoid overcropping, or treating land in any way so as to exhaust its powers, as the greatest of all evils.

A new system of cultivation has been lately introduced in England, by which it is said that large crops of wheat are produced in succession annually, upon the same land. The whole of the land is cultivated, and the wheat sown in drills three feet apart. While the wheat is growing, the intervals between the rows are deeply and frequently cultivated with the spade, and immediately after the crop is reaped wheat is sown in rows upon the cultivated intervals, without the application of any manure. The crops thus raised for several years in succession, are said to be as large as if the whole of the land had been sown. This circumstance can only be accounted for by supposing that the deep and frequent stirring up of the soil, and exposing it to the atmosphere, has a very beneficial influence, and counteracts the ill effects produced by repeating the same kind of crops upon the same soil for many years in succession. This system, however, is not likely to come into operation in this country under the present circumstances of abundance of land, with a high price for labour.

I do not pretend, in this short notice, to do more than submit what I conceive to be the most judicious plan for sub-dividing ordinary farms, and a simple outline of the rotation of cropping which might be introduced. This plan of draining and rotation is not alone suitable to farmers in the Seigniories, but may be introduced on farms of every description, and in every section of the country. Whatever may be the system of sub-dividing, draining, and rotation of crops adopted, it must have a vast influence upon the actual profits derived from farming.

Where there is not a proper rotation of crops observed, it is not possible to keep land in proper condition, or profitable cultivation; and with a proper rotation carried out, upon land sufficiently drained from superfluous moisture, sufficient manure may generally be obtained, and profitable crops produced. I understand that a proper rotation implies that all the manure that can be made upon a farm shall be judiciously applied at the most suitable season.

As regards the natural productive powers of the Canadian soil, it is, I am persuaded, generally equal to that of any country on earth, and, with judicious cultivation and management, crops of every species and variety, usually grown in England and France, might be produced in Canada in great perfection, with perhaps the exception of wheat, which latterly

has become very liable to injury by the ravages of the wheat fly, though there are some varieties of wheat that resist the attacks of this destructive insect. The climate and soil of Canada is also extremely favourable for the production of hemp; and all that is required to bring flax and hemp into extensive cultivation, is, that we should have mills provided to dress and prepare the fibre. The cultivation of these plants could not be introduced here to any advantage hitherto, in consequence of there not being mills to prepare the fibre. If parties were to purchase hemp and flax when produced by the farmer, it would encourage these productions, and make up, in some degree, for any deficiency in the crop of wheat from injury by the wheat fly. I would observe, however, that this insect is not confined to Canada, but is equally, if not more destructive, in many of the States of the Union.

It will not be expected that I should, on the present occasion, describe the mode of cultivating of the crops I have enumerated. I shall only say that all these crops may be produced in profitable perfection, provided a judicious system of cultivation is observed. Both the soil and climate are favourable for Agriculture, but the success of the Agriculturist mainly depends upon the skill and industry with which he practices his art.

It is an established principle of good husbandry, that whatever the rotation, land must be well drained, well ploughed, sufficiently manured, good and unmixed seed made use of, the crops kept clear of weeds, and every work executed in proper season. The live stock of every description must be well chosen, managed judiciously, and well kept; and the products of the dairy must be manufactured so as to insure the best articles of butter and cheese, and the highest prices of the market.

It may be expected that I should state the average produce in Lower Canada, but there is such a wide range in this average that I could scarcely venture to do so, with any pretensions to accuracy. Products depend so much upon a variety of circumstances, of soil, cultivation and management, that you may see in one field an excellent crop, while on the next farm the crop is poor and scanty. I shall therefore only state what soil of ordinary quality may be brought to produce in ordinary seasons, under a judicious system of husbandry and good management:—Wheat, in consequence of the wheat fly, has, for the last few years, been an uncertain crop; but even within that period I have known it frequently to produce 30 bushels per arpent. But between 20 and 30 bushels of spring-sown wheat is very commonly produced per arpent on land properly cultivated, but without any extra expenditure in cultivation. Fall-sown wheat succeeds occasionally, but is too uncertain a crop to warrant cultivation to any great extent.

Barley from 25 to 40 bushels per arpent.

Rye not much cultivated.

Oats from 20 to 40 bushels per arpent.

Peas from 15 to 25 do do

Beans about the same.

Indian Corn from 25 to 60 bushels per arpent.

Potatoes, free from disease, from 100 to 200 bushels per arpent.

Carrots, Parsnips, Mongold Wurtzel and Turnips, produce very good crops, except the latter, which is very liable to damage by the Turnip fly. Flax and Hemp produce large crops under proper cultivation; but neither plants, particularly the latter, are cultivated to any great extent.

DWELLING HOUSE AND FARM YARD.

In connection with the plan of a farm, I submit the plan of a dwelling house, farm yard, and other necessary buildings. I do not expect these plans to be perfect or suitable in every situation and circumstance. A dwelling house is a matter of taste, and parties who build have generally a plan of their own, which they will prefer to any other. My plan is of an ordinary farm house, and when more extensive and expensive buildings are required, there will be no difficulty of procuring plans to suit the taste and requirements of the party building.

When the situation is favourable, it is desirable to have a full underground story, provided it can be sufficiently and conveniently drained. An underground story may always be a very useful part of the dwelling house in Canada; cool in summer, and warm in winter. I think it much preferable to having a second story overground, in a country house. A balcony, or gallery, along the front of the house, is ornamental as well as useful. I would also recommend that the roof should extend at the rear, so as to cover a wash house at one end, and the shed might be left open in the part not required for this purpose.

The internal arrangement I propose, may not be satisfactory, and therefore I shall not enter into any elaborate explanation, but leave it to the parties who may build to sub-divide the house to suit their own taste and convenience. If I would venture to submit my own ideas on the subject, perhaps no two parties who would read them would agree with me. Covering with slate, iron or tin, should by all means be adopted in preference to shingles, if the expense can be afforded. In case the gravel roofing should be adopted, a dwelling house will not look well unless it is raised above one story.

The dairy marked on the plan may be constructed of a size suitable to the requirements. I propose that it should be provided with a place for keeping ice at one end, or in the centre if of large dimensions. I have seen lately a building of wood, of, I think, about 24 feet long, by 18 wide, entirely overground, that had ice in excellent preservation at the time, which I was told had been four years there. The building was lined with wood on the inside, and the interval between that and the outside covering was, I

think, 18 inches, which was filled with waste bark from a tannery, (and perhaps saw-dust would answer where waste bark could not be procured); the space over the ice, and between it and the roof, was also filled with the same material. A part of this building was appropriated to a dairy, and answered exceedingly well. A dairy might be constructed in this way, and have a flat gravel roofing, which I believe keeps a building cool in summer, but in every case the sides and even over the ceiling, should be filled with waste bark. Two doors to the entrance would be necessary, and ample ventilation.

A shed for wood, and shelter for a horse and carriage occasionally, should be situated convenient to the dwelling house, and it may be covered with gravel roofing.

The well house should be placed, if possible, between the dwelling house and farm yard; and the live stock watered from it by a trough placed in the yard. If parties are disposed to water stock in the house, other means may be adopted to do so.

The granary should be placed on stone, iron, or wood piers, two feet high above the surface of the ground to keep out vermin. It should not be too near other buildings, and ought to be furnished with bins for the different varieties of grain.

The farm yard and buildings are laid down upon a scale that would be suitable for a farm of about 200 arpents. The size, however, may be increased or diminished to suit a larger or smaller farm, and any other alterations made, which convenience or other circumstances might demand. I believe it a considerable advantage to have a farm yard properly arranged, and so constructed as to afford shelter as well as convenience. It is also desirable to have all the necessary buildings form one square, so as to be directly brought under the farmer's eye and inspection. I have endeavoured to show how the manure may be covered and protected from rain and snow, without incurring a heavy expense. The sheds arranged on each side of the yard I propose to have covered with gravel roofing, and sloping outwards, so as to throw the water from the roofs outwards, and not into the farm yard. I proposed to have sheds outside the farm yard, sufficient to cover all the manure, until required to be taken to the fields. Covered farm yards are being adopted in England lately, and I have seen the report of an experiment made with manure that was kept under cover until brought to the field for immediate use, with manure kept in the ordinary way, uncovered until made use of in the drill, and the result is more than I could have thought possible in favour of the manure kept under cover, and the increased produce of crops, extended to three successive years after the manure was applied, each crop being in excess over those produced from manure kept in the ordinary way, more than a third, upon land of the same quality, and cultivated exactly in the same manner. It cannot escape the observation of any in-

telligent farmer, that manure must be considerably deteriorated by exposure to rain, snow, and the atmosphere for a long time before it is put into the soil.

I copy a description of gravel roofing lately introduced in the city of Montreal, and adopted in covering several manufactories in the neighbourhood of Montreal. This description has been very kindly handed to me by Wm. Footner, Esq., Architect, who is well acquainted with this mode of roofing, and recommends it strongly for covering farm buildings. I have constant opportunities of seeing that the manufactories roofed in this way near Montreal do not retain the snow upon them; it is carried off by the first wind, and will not remain upon the roof while falling if there is much wind. I think this kind of roofing would answer admirably on the side buildings of the farm yard, and on the shed at the rear of the barn, the cattle house, cart shed, and also the wood shed in rear of the dwelling house. Mr. Footner says this roofing will not cost more than about half that of shingle roofing; and there is another circumstance in its favour, that it is not so exposed to injury by storms or from fire.

Montreal, Feb. 27th, 1855.

DESCRIPTION OF THE GRAVEL ROOFING LATELY INTRODUCED INTO MONTREAL.

Roofing may be of the commonest description of boards, laid with spruce boards, and laid to a declivity of one inch to the foot; the length of the run makes no difference.

Fitting is very coarse brown paper, with a mixture of wool cloth stuff, or any such like materials, (though plain coarse brown paper is used in Her Majesty's dock yards.) This fitting can be bought in any quantities in the towns of the United States.

The fitting is laid on so as to completely cover the boarding, after the manner of shingling or slating, beginning always at the eaves, the joints being kept down with small strips of wood an inch wide and one-eighth of an inch thick.

Pitch and coal tar is then mixed together, the greater portion being pitch. This is laid on in a fluid state with a mop, beginning, as before, at the eaves, and on this coating is to be thrown, with a wooden shovel, small gravel, (*dry*), all over to be raked or spread evenly with a wood scraper, so as to have all over about one inch of gravel.

OBSERVATIONS.—Should any leak occur, scrape off the gravel on the spot shewing defect, and put a little of the pitch composition and gravel as before.

If any difficulty is found to get felt, then old ship canvas, or even coarse grey cotton, will do. Or further, get a sugar kettle, and warm some gas tar, and while warm saturate coarse brown paper therewith, in the following manner:—Take a slip of wood of the length of the sheet, or a little longer, and secure the paper to the strip, then gently lower the paper into the warm tar, and as manly as the kettle will hold,

then remove them as you want them to the roof, and fix with cut tacks. This is in case of great hurry; otherwise it is better to allow the tar to dry on the paper before putting on the roof, and better still to give it a second immersion.

WM. FOOTNER,
Architect.

The arrangement I propose may not suit the requirements or taste of all Agriculturalists, but they may be modified to any extent desired. The internal arrangements must, of necessity, be altered to circumstances, and also the external appearance. Some parties may condemn the plan as being too expensive for anything like general adoption; others may find it not equal to their taste or desire. I have not given any fixed height for the barn ranger or cattle house adjoining. I have adopted 30 feet as the usual width. The height and width, however, may be determined by parties building, to suit their own wishes and convenience. It is necessary to have a cellar under the barn for roots, and from which there may be communication to the cattle house. This accommodation may be had sufficiently large for ordinary farms without incurring any great expense. Of course it must have means of drainage, but if the drains upon the farm are kept in good order, the cellar under the barn may be drained. If the cellar cannot be excavated much below the surface it may rise over the surface, and be made sufficiently safe from extreme cold to preserve roots. Such cellars should not exceed 32 degrees of heat if it could be kept about that temperature. If not built with stone, the excavation might be lined with cedar or plank, and there should be certain means of ventilation provided. A cellar or other convenient root-house is a necessary appendage on every farm where roots are provided for feeding live stock.

I shall now give a concise description of the farm buildings, as they are enumerated in the plan:

1. A coach house to open towards the dwelling house, and not into the farm yard.
2. Tool house, with necessary appendages for small tools, nails, &c., and with a lock on the door.
3. Fowl house, fitted up in a proper manner, with lock on the door. It would require a long notice to give a full description of what a fowl house should be, and as the fancy of the lady who may be the mistress of the establishment will probably have considerable influence in the manner of arrangement, I shall not presume to offer my suggestions, but leave it to the good management of the ladies who may take a very laudable interest in such matters.
4. Fowl yard.—I propose on the plan that the shed in rear of Nos. 1, 2 & 3 should be closed in by wire fence, or laths of wood, to keep the fowls confined when thought necessary, and this yard might be divided if it was required. There should be an outer door to this yard, facing the dwelling house, to allow ladies to visit the establishment without going

through the farm yard. This yard is the suitable place for feeding, except in very cold weather. Means should be adopted to keep the fowl house sufficiently warm in winter; situated, as proposed, next to the horse stable may contribute to this.

5. Horse stable for 6 horses, with stalls 6 feet wide and ceiling 8 feet high; the mangers for hay placed on a level with flooring; the trough for oats, water and roots above the first; the manure put out in the rear.

6. Covered shed for manure.

7 and 8. Harness room, and room for grain and other provender, &c. Doors from stable to harness room.

9. Covered sheds for carts, &c., with a gate-way from the farm yard.

10. Cattle house for two rows of cattle, fronting each other, with a passage between 6 feet wide. I recommend separate stalls for each, extending backwards about half the length of the animal. I have found this mode advantageous, as it prevents animals from interfering with each other in feeding. Three doors are necessary,—one to each end for the cattle, and one to the centre passage. The manure to be all put out at the rear, into the covered shed. There should be two or three small windows with glass. The loft should be 8 feet high, with means of ventilation through it, and out at the roof. Hay and straw may be supplied from the loft, let down to the passage at the one end of it. Roots may be supplied from barn cellar by the passage marked No. 14.

11. Covered shed, extending for 60 feet in rear of cattle house, barn, &c., for keeping manure.

12. Calf house, to be arranged in a suitable manner, with racks for hay, troughs for milk, roots, or grain. Two separate boxes should be provided for veal calves, sufficiently large for the calf to stand and lie down, but not turn round. Doors from cattle house to calf house.

13. An hospital for a cow near calving, or an animal requiring to be separate; door from passage No. 14; window in front to light Nos. 12 and 13.

14. Passage to cellar under barn.

15 and 16. Two feeding-boxes, with 2 doors from passage No. 14. These divisions I propose for stall-feeding two animals at a time. There should not be any flooring, and they might be excavated two or three feet below the level of the flooring. The manure is not to be removed until the animals are raised too high in the boxes. They are to be kept well littered, and ventilation may be had by connection with that from the cattle house. One small window, with glass placed in the rear, would light both boxes. Means for removing the manure, when necessary, should also be provided from the shed in the rear.

17. Barn of a size to suit requirements. There should be a communication from the barn to supply hay and straw, when necessary, to the lofts over cattle houses, &c. I propose to have two batteries or threshing floors.

18. Covered shed in rear of sheep and other houses, and extending the whole length of farm yard on that side, for manure. This shed might have a part of it appropriated to other purposes, such as shade for horses, calves, sheep, &c.

19. Sheep house, separated from the larger sheep house No. 20. This I propose for sheep requiring to be separated, with lambs, or for any other cause. A yard might be allowed to this division during winter taken from the shed in the rear.

20. Sheep house, with yard. Both house and yard should be furnished with racks and troughs for feeding, but it is not necessary to describe them.

21. Yard to sheep house No. 20.

22. House for young cattle, to be furnished with necessary appendages for feeding, &c., &c.

23. Yard for young cattle in No. 22.

24. House for mares and colts, or young horses, with necessary mangers, &c., also to be divided if required.

25. Yard for accommodation of No. 24.

26 and 27. Pig-stye and yard, to be arranged and suitably furnished for feeding swine.

28 and 29. Pig-stye, and yard for store pigs. I would propose to have the entrance door to Nos. 26 and 28 towards the boiler house and kitchen. A passage should be made at the rear wall next the back shed, for feeding the pigs, and the troughs should be so arranged that the animals would be shut out from the troughs while the food was being supplied. Manure to be removed by barrow or cart to back shed.

The farm yard should have a good road made in front of all the buildings. The surface of the yard should slope inwards towards the centre, and the drainage, if any, conveyed to some hollow place outside the yard, to mix with compost, weeds, wastes, earth, &c., and if any moss or bog earth could be procured, it should form part of the compost. This hollow reservoir might be cleaned out annually for top dressing. I have made no provision for saving liquid manure, as I fear it might be more expensive than profitable, if not well carried out and attended to. I beg to recommend that all the stock be well and con-

stantly littered with straw, and if they are, there will not be much loss of liquid manure. A small separate building, convenient to the dwelling house, or connected with the boiler house, would be the proper place for keeping the ashes. All the other wastes of the dwelling house and wash house should be brought to the reservoir, or to some reservoir conveniently placed.

I regret that I had not sufficient time to prepare this description of a farm, farm buildings, &c. I could not attend to this description until immediately before the Exhibition was to open, and I was so occupied with other matters, that I could not apply the consideration and attention that was necessary for the subject. I may however have a future opportunity of correction and amendment. It will be a source of great satisfaction to me if this humble attempt to promote agricultural improvement may be favourably received by agriculturists. I did not presume to compete for any of the prizes offered by the Executive Committee. I only took upon me to contribute my mite in the Agricultural Section of the Local Exhibition at Montreal. I am indebted to Messrs. Ostel and Footier, for putting my plan into a suitable form to appear before the public, and I beg to return them my best thanks for the assistance they have kindly rendered me on this occasion.

In conclusion—It may be objected that my plans are too expensive for ordinary agriculturists; but any parties may carry out so much of the plans as their means will admit. I thought it would be proper to make the plans to suit parties who would have means to carry them out fully. Those who have not means to construct extensive buildings may, at all events, adopt my suggestions for the division and management of farms, and if they do carry it out properly, their circumstances may soon be so improved, as to enable them to erect any buildings they require. I have often seen a large expenditure on farm buildings where there was not any attempt at arrangement or uniformity. My plan can be carried out on a large or a small scale, according to the means and requirements of the parties building.

MONTREAL :

PRINTED BY JOHN LOVELL, AT HIS STEAM-PRINTING ESTABLISHMENT,

ST. NICHOLAS STREET,

1855.

