Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original 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.

L'Institut 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.

- ☐ 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.

- ☑ Additional comments / Commentaires supplémentaires: Continuous pagination.

BOARD OF AGRICULTURE FOR LOWER CANADA.

Montreal 9th February 1859.

The Board met this day pursuant to notice given to the members.

Present.—Messrs John Yule, President, E. J. DeBlois, Vice-President, Hon. P. J. O. Chauveau, P. E. Dostaler, Rev. J. Guilbeault, F. M. F. Ossaye, Rev. F. Pilote, B. Pomroy, J. C. Taché, R. N. Watts.

Mr. Yule took the Chair.

A letter was read from the Secretary of the Bureau of Agriculture, intimating that the Members of this Board retiring this year, had been reelected by the Agricultural Societies.

1.—Proposed by Mr. Dostaler :

That Mr. Turgeon be elected President of the Board. Agreed to.

2.—Proposed by Mr. Dostaler :

That Mr. DeBlois be reelected Vice-President.—Agreed to.

3.—Proposed by Mr. Taché :

That it is unnecessary to reelect yearly, as heretofore the Secretairies of this Board, who are ipso facte and will be held by this Board as permanent Officers, chosen *à bon plaisir*, by this body.

4.—Proposed by Mr. Watts :

That the expense of the Board for the Secretary and Editors of the Journal for the current year shall not exceed £250.

For.—Messrs Watts and Dostaler.

Against.—Messrs Chauveau, DeBlois, Guilbeault, Ossaye, Pilote, Pomroy, Taché.

Mr. Taché proposed the following resolution :

That the President be requested to demand from the Government an appropriation similar to that granted to the Board of Agriculture of Upper Canada, in consideration of the publication of a monthly report in the Journal of Agriculture ; and moreover to confer with the Minister of Agriculture upon the necessity for granting to this Board an annual supplementary grant in addition, in consequence of the obligation placed on it to publish an Edition in English of all its printed Transactions and Publications, in addition to that in the French Language.—Agreed to.

Proposed by Mr. DeBlois :

That the President of the Board of Agriculture with Messrs Yule and Ossaye be named a Committee to audit the accounts of the Board, and report to the next meeting.—agreed to,

Proposed by Mr. DeBlois :

That Major Campbell, with Messrs Pomroy and Watts be named a Committee to prepare the Premium List, and report to the next meeting.—Agreed to.

Reports were read from the Local Committees appointed to take into consideration the propriety of erecting permanent buildings at Quebec and Montreal for the holding of the Provincial Exhibitions.

Report of Local Committee appointed for considering the propriety of erecting permanent buildings at Montreal for holding the Provincial Exhibitions.

REPORT OF LOCAL COMMITTEE APPOINTED FOR TAKING INTO CONSIDERATION THE PROPRIETY OF ERECTING PERMANENT BUILDINGS AT MONTREAL FOR HOLDING THE PROVINCIAL EXHIBITIONS.

Your committee appointed in virtue of a resolution passed by your Board of Agriculture, at its meeting of the 12th of November 1858, has the honour to report :

That your committe has entered into communication with the Board of Arts and Manufactures for Lower Canada and the Council of this city through the members of a special committee appointed to take into consideration the possibility of erecting in Montreal permanent buildings for the holding of the Provincial Exhibitions.

That at a meeting of the representatives of your Board of Arts and Manufactures, and City Council, it was recommended : That the city of Montreal do erect permanent buildings in this city for exhibition purposes, on the condition that the exhibition be held in Montreal once every two years, but not less than once every three years.

By order,

J. PERRAULT,
Secretary.

Montreal January 27 1859.

REPORT OF LOCAL COMMITTEE NAMED FOR TAKING INTO CONSIDERATION THE PROPRIETY OF ERECTING PERMANENT BUILDINGS AT QUEBEC FOR HOLDING THE PROVINCIAL EXHIBITIONS.

Your Committee appointed in virtue of a resolution passed by your Board of Agriculture, at its meeting of the 12th of November 1858 has the honour to report :

That your Committee understood it had been thus constituted, for the purpose of serving as a convenient medium of communication between your Board and the city of Quebec. In fact this Committee was elected by the public-voice, charged with the general interests of the Country, and therefore could not be regarded as a special organ of a locality.

The duty of your Committee, then, has been to endeavour to obtain the public opinion of Quebec, and with this view enter into communication with his Honour the acting Mayor of the city, and through him with the Corporation of Quebec; and your Committee have the honour to transmit, appended, a letter from Mr. Garneau, City Clerk of the city, accompanied by a resolution passed by the Corporation of Quebec.

Your Committee conclude from their labours, the corporations and citizens of Quebec are disposed to do what might be expected of them to aid your Board towards the holding of the Provincial Exhibitions within the limits of the city at periods which your Board propose to fix in conformity with the rights of each, and conform also to the rule of justice, and the views entertained by the members of your Board of the administrative limit, it becomes their duty to recognize and set upon,

Your Committee are of opinion that they should not withold the expression of their sense of the deep mortification experienced by the citizens of Quebec at the decision of the Board of Agriculture, in fixing, for the third time, the place of the Provincial Exhtbition at Montreal, and your Committee think that the resolution adopted by your Board, on this snbject, at their last meeting, is calculated to give general satisfaction.

J. C. TACHÉ, President.

Quebec 8th February, 1859.

CITY HALL,

Quebec, February 7th 1859.

At a special meeting of the City Council held on the 4th inst. it was resolved: That this Council is ready to grant a site for the erection of Permanent Buildings for the holding of the Provincial and Local Exhibitions, and at sametime to contribute its share, along with the Citizens of Quebec to aid in carrying out that object.

(Certified.) F. H. GARNEAU,
City Clerk.

The Board took into consideration the Reports of the reorganization of County Agricultural Societies for the year 1859.

10. *Resolved.*—That there shall be two Agricultural Societies in the County of Charlevoix; one who shall stand as Socieiy No. 1 shall be at Malbaie, and the other shall stand as Society No. 2 shall be at Baie St. Paul.

11. *Resolved.*—That there shall be only one Agricultural Society in the County of Chicoutimi, and that it shall be at Chicoutimi.

12. *Resolved.*—That there shall be but one Agricultural Society in the County of St. Maurice, and that it shall be at Yamachiche.

13. *Resolved.*—That there shall be but one Agricultural Society in the County of Timiscouata, and that it shall be at l'Ile Verte.

14. *Resolved.*—That there shall be but one Agricultural Society in the County of Iberville, and that it shall be at St. Athanase.

15. *Rssolved.*—That there shall be but one Agricultural Society in the County of Vercheres, and that it shall be at Vercheres.

Thereupon the Board adjourned.

By order,

J. PERRAULT.
Secretary.

MARCH.

We must now seriously set about preleminary preparations so far as practicable, to relieve the necessity for undue haste in the first busy month of spring. The cattle should have special care, as any neglect now may produce lasting injury—sometimes irreparable. Cows about to calve should receive generous feeding—if possible roots, meal, and cut-fodder, with abundance of pure water. Working horses should be kept in good order—alternating their dry feeding with roots stewed if possible. Your oxen should also be kept in working order. Take care that your young stock are well looked to, that they may come out to pasture in good condition. Your sheep should receive special attention particularly, if lambing or about to lamb early. Feed and litter your hogs amply, and supplying to your littering sows a little animal food or offal—with a supply of salt—if either can be obtained. Provide your fowls, as we advised last month, with lime, powdered oysters shells and a portion of animal food, if you desire a constant supply of eggs.

Having the materials, as already recommended, at hand and in readiness for use, lose no time in repairing your fences—and there should remain at all times an ample supply for every accident and emergency and complete the preparation of wood of every description for summer use. Have your tools and implements minutely inspected and repaired when necessary. See that your fodder is doled out plentifully but yet economically—taking care shall be no waste. Be preparing and procuring your seed-corn—cleaning it thoroughly for use—as we have described in a previous number—and testing its quality where there is any necessity or reasonnable doubt. Keep your potato seed from warmth and light. Be careful to encrease, by every means, and accumulate your supplies of manure, – seeing that nothing runs to waste. Tap your sugar maples at the proper moment on the sunny side. The harvest comes at a season of the year when other work is not especially pressing ; and where you have a good supply of rock maple an abundance of sugar and molasses for family use. and for sale may be procured at a cheap rate. But great care should be taken to spare your rock maples,—as, in spite of other novel sources, they may still prove the cheapest resort for sugar.

J. A.

MAPLE SUGAR.

This month the sap begins to move, and the sugar harvest of the North is about to be gathered. The trees are tapped on the sunny side—the elder spouts are inserted, and the liquid nectar flows into the rough recipients their contents carried to the boiling house in pails, or poured into barrels, and drawn by oxen—the sap sugared off into pans of various sizes, and made into solid cakes. Work, at this season, is not pressing. and besides supplying family consumption, many prepare large quantities for sale to the confectioners, and for city consumption, scrupulous attention to cleanliness and carefulness in the process of crystalization will not go unrewarded.

In the rough rocky, mountainous soils of the north, the maple flonrishes admirably, and in such lands for many a day to come, such lands will most probably pay better in forest, than under any culture. Maple furnishes the best of fuel —affords an excellent timber for cabinet work and agricultural implements. We should then be careful of our bush,—and who does not know that in most instances, at present, it meets with but little attention. Would it not be well to spare our noble forest while we have it in our power—favouring the introduction of anthracite. If we should fail to be conservative and provident when we may, the day is coming when we shall have nothing to console us but vain regrets for such wilful neglect.

The following and simple directions for sugar making are from the useful little work of Mrs. F. C. P. Traill, authoress of "The Back-Woods of Canada" ; Forest Gleanings, &c., &c., &c.

This little volume would be incomplete unless it contained some instruction on the making of maple sugar, though the manufacturing of this Canadian luxury, is no longer considered so important a matter as it used formerly to be ; the farmer, considering that his time can be more profitably employed in clearing his land, will not give his attention to it, for maple sugar is less an article of trade than it used to be. Still there are situations and circumstances under which the making of maple-sugar may be carried on with advantage. There will always be a class of emigrants who, for the sake of becoming proprietors of land will locate themselves in the backwoods, far from the vicinity of towns and villages, who have a little money to expend, and who are glad to avail themselves of so wholesome and so necessary a luxury at no greater cost than their own labour.

With the assistance of the children and the females of the house, a settler may, if he have a good sugar bush, make several hundred weight of sugar in a season, besides molasses and vinegar. Many a stout boy of fourteen or fifteen, with the aid of the mother and young ones, has made sugar enough to supply the family, besides selling a large quantity. In the backwoods the women do the chief of the sugar making ; it is rough work, and fitter for men ; but Canadians think little of that. I have seen woman employed in stronger work than making sugar. I have seen women underbrushing, and even helping to lay up and burn a fallow, and it grieved me, for it was unfit for them.

We will suppose that the settler has resolved upon making sugar. The first thing is to look out for a good sugar bush, where he can be sure of a hundred or two hundred of good trees standing not very far from each other. In the centre of his bush he should fix upon a boiling place : a fallen pine, or any large tree should be chosen : if there be not one ready felled, he must cut one down, as he needs a good lasting back log against which to build his fire at the boiling time, but there are other requisites to be attended to : a certain number of troughs, hollowed out of small pine, black ash, basswood, and sundry other kinds of wood ; one or more troughs to each tree ; if the trees be large, two, and even three troughs are placed, and so many incisions made in the bark with the axe, into which spills of cedar are inserted ; these are made with a hollow sort of chisel ; but some do not take such pains, and only stick a flat slip of shingle, slanting from the gash in the bark, to direct the flow of the sap to the trough. The modes of tapping are various ; some use the augur and bore a hole, which hurts the tree the least ; some cut a chip out across the bark, and cut two sweeping lines down so as to give the sap two channels to flow in ; others merely gash the bark with a slanting cut, and insert the spill.

My brother, Mr, Strickland, in his work on Canada, gives very good instructions on this subject.

There should be a large trough hewed out almost as big as an Indian canoe, or barrels, placed near the boiling place for a store trough ; into this the sap is collected : as fast as the smaller ones fill, the boys and women empty their contents into pails, and the pails into the large receptacle. The boiling place is made by fixing two large stout forked posts into the ground, over which a pole is laid, stout enough to support the kettles ; ironwood is good for this purpose ; on this the kettles are hung at a certain height above the fire. A hoop, with a piece of clean coarse serge or flannel sewed over it, serves for a strainer : the edge of the pots should be rubbed with clean lard to prevent the sap boiling over. It is a common plan, but I think by no means a nice one, to keep a bit of pork or fat bacon suspended by a string above the sap kettles : when the boiling sap reaches this it goes down : but I think my plan is better, and certainly more delicate. If possible have more than one kettle for boiling down ; a constant change from the pots facilitates the work : as the first boiling decreases, and becomes sweeter, keep adding from the others, and filling them up with cold sap. A

ladleful of cold sap thrown in at boiling point, will keep it down. Attention and care is now all that is required. The one who attends to the boiling should never leave his business ; others can gather the sap and collect wood for the fires. When there is a good run, the boiling down is often carried on far into the night. If heavy rains occurs, it is better to empty the sap-troughs, as the sap would be too much weakened for boiling. The usual month for sugar-making is March, thongh I have known some years in which sugar was made in Februray. By the middle of April the sap is apt to get sour if kept many hours, and will not grain. If you have sap kept rather long, put salaratus in till it foams a little ; but it is seldom that good sugar is made from acid sap. A handful of quick-lime, some prefer to cure sour sap. The best run of sap occurs when a frosty night is followed by a warm sunny day. If cold weather set in after the trees have been tapped, it is sometimes necessary to tap them a second time.

After the sap has been boiled down to thin molasses, it is then brought in to be sugared off. The syrup must be carefully strained through a woolen strainer ; eggs are then beaten up, with the shells, and poured into the cold syrup, which is now ready for boiling into thick syrup, or for sugaring off.

Where the sugar bush is far from the house, some persons prefer having a small shanty put up, of logs, and thatched with bark ; it may be built so as to enclose a large stump, to which may be affixed a wooden crane, by means of a socket in which, the upright part of the crane can be made to move ; to the cross beam of the crane the pots can be hung, and a fire, with a few large stones or a great log at the back, fixed, lighted beneath. The advantage of the crane is this ; that if the syrup boil too fast to be kept down ; by aid of a wooden hooked stick, or a bit of chain affixed to the upper limb, it can be moved forward in an instant from the fire.

Care must be taken to watch the syrup, ladle in hand, till the scum is seen to rise in a thick mass, which it does just a minute or two before boiling commences; this scum is then to be taken off with a skimmer or laddle, and if this part of the business be well done, the sugar will be good and bright, and clear looking. It is the want of care in clarifying the sugar, that gives it the dark look and bitter taste that many persons object to in maple sugar. Keep removing the scum as it rises from time to time ; if it has been well scummed the syrup will look as clear as the finest Madeira wine. Rub the edge of the kettle with clean lard or butter when you first set it over the fire, but do not depend on this preventive for boiling over, as when near sugaring, the liquid is very thick, and rises rapidly. It is prudent always to keep a little cool stuff by you to throw in, should it rise too fast. Towards the close of the boiling, the greatest care and watchfulness is required. When the syrup boils in thick yellow foam, and the whole pot seems nothing but bubbles, the sugar is nearly come ; it then drops ropy from the ladle, and experienced sugar makers can tell by blowing it off the edge of the ladle, if it be done ; it then draws into long, bright threads that easily stiffen when cool. Others drop a little into a pail of cold water, when, if it hardens, they say it is ready to pour into pails or pans, or any convenient vessel. Most persons grease the pans or moulds before they pour the syrup into them, that it may turn out easily.

Much maple sugar is spoiled in its quality by being over-boiled. It is true it hardens more readily, but loses in excellence of grain and colour.

In the course of two or three days the sugar will be formed into a solid cake, and may be turned out ; but if you wish to have a good fine grained sugar, after turning it out of the moulds, pierce the bottoms of the cakes, and set them across sticks, over a clean vessel ; a sugar through will do, and the wet molasses will drain out, which will lmprove the look of your sugar, render it easier to break up for use, and remove any coarse taste, so that you may put it as a sweetener into cakes, puddings, tea or coffee, and it will be as nice as the best muscovado.

The larger coarse-grained maple-sugar, which looks like sugar candy, is made by not overboiling the syrup, pouring it into shallow pans, and letting it dry slowly in the sun, or a warm room. This I like better than the cake sugar, but it is not so convenient to store. To those who have few utensils or places to put things in, as a sweetmeat for eating, the dark heavy looking sugar is liked the best, but I prefer the sparkling good grained sugar, myself, for all purposes.

The Indian sugar, which looks dry and yellow, and is not sold in cakes, but in birch boxes, or mowkowks, as they call them, I have been told, owes its peculiar taste to the birch bark vessels that the sap is gathered in, and its grain to being kept constantly stirred while cooling. I have been told that a small bit of lime put into the syrup whitens the sugar. Milk is used to clarify, when eggs are not to be had, but I only made use of eggs. Four eggs I found enough for one boiling of sugar.

As I know of no better authority for the process of making sugar than that of my brother, Major Strickland, I shall avail myself of his directions, and abridge from his last volume, 18th chapter, such passages as may add to the settler's knowledge, what I have already collected from my own experience, and other sources.

He says, "The settler having selected his sugar bush, should underbrush, and clean the surface of the ground, by removing all rotten logs, and fallen trees. It should be surrounded by a fence, to hinder the cattle from drinking the sap, and upsetting the sap-troughs, which they are very apt to do to the great loss and annoyance of the sugar-boiler. The boiling site should be as near to the centre of the bush as possible, from which roads wide enough to admit of the movements of a sleigh and oxen, should be cut in every direction."

"Settlers commonly suspend the boilers over the fire, from a thick pole, by means of iron chains; but this is liable to accidents. The best plan is to build the sugar kettles into an arch,* either in the open air, or in a small shanty built for the purpose of sugaring off."

"A store trough should be made from the trunk of a large white pine, capable of holding from fifty to one hundred pails of sap. This should be placed near the boilers, and any empty casks or barrels may also be mustered in case of a good run."

"In a good season from eight to twelve hundred pounds of sugar and molasses can be made with five hundred sap troughs. Let the troughs be made of pine, black ash, cherry, or butternut, capable of holding three or four gallons each."

"No sap wood should be left in making the troughs as it is sure to rot them.—As soon as the season is over, let the boys collect all the troughs, and set them upon end and against the North side of the tree, which preserves them from crackling with the sun."

"If the farmer desires, as of course he will, to preserve his sugar bush, the best way is to tap the tree on the South, or sunny side, with an inch and quarter auger, and use hollow spills. Care must be taken to set the trough directly under the drop, and as level as possible. Many use the axe only, in tapping, but this soon kills the tree.

"The sap runs best after a frosty night, followed by a warm sunny day, and brisk westerly wind. The tap should be made in the early part of the season, on the South, and when it requires removing later, on the North.

"The most expeditious way of gathering the sap is to drive through the roads with the ox sled, on which a puncheon or barrel is securely fixed; in the bunghole of this receptacle, a wooden tun dish should be inserted, large enough to hold a

* This no doubt is a good plan when sugaring is carried on with good help, and on a large scale: but where the women and boys do the work, it would hardly, I fear, be carried into effect.—Ed.

pail of sap; in the hollow of this a bit of tin or iron punched full of holes is inserted to act as a strainer."

"As soon as a sufficiency of sap has been stored, and the kettles filled, the fires are lighted, and boiling begins, and should now be kept boiled down into thin molasses. It is then allowed to cool, and settle, and should be poured into the sugaring vessel, free of the sediment. Eggs are then beaten up—Six will clarify fifty pounds of sugar. The beaten eggs are stirred into the cool liquor, the pot hung on the crane, and *as it rises to the boil*, the thick scum, must be instantly removed. If properly scummed, the liquor will be bright and clear as white wine."

"Great attention must now be paid bv the sugar-boiler; he must not leave his station, unless his post be taken by a careful hand. The liquid, as it thickens, is continually rising to the surface, and unless watched with care, would boil over; it is well to keep a little always cooling at hand to dash in case of a sudden rise."

"To the unitiated, the greatest difficulty is to know when the liquid has attained a sugaring point. When it boils in one continued yellow froth, throwing up jets and puffs of steam, it is not far from being ready; but to try this, take a thin bit of wood,in this make a narrow hole an inch long, and an eighth of an inch wide, if this is dipped into the molasses, a fine thin film will fill the hole, which, if blown, will throw out a long-shaped bubble, if the sugar is sufficiently boiled. Some can tell by blowing a thread of it from the edge of a ladle, or by dropping it on the snow, when, if hard, it is done, and the sugar may be poured out into pans to granulate."

"Sugar-making," adds the writer of the above, "is one of the most laborious occupations, while it lasts, yet a vast quantity of maple sugar is yearly made in the back woods by the joint operations of the settlers' wives, and their children; and though it take place at the most changeable and unpleasant season of the year, when the frosts and thaws are alternate, and the work is done in the wet snow, it is very rarely that you hear of ague attacking the sugar-makers. March and April a e not the seasons for ague; it is in the hotter months disease prevails."

NOTE.—I have given this useful extract from Mr. Strickland's work, "Twenty-seven year's experience in Canada West," because it embraces some valuable points of advice on the subject, very clearly expressed, and as the price of his book places it beyond the reach of a large proportion of the emigrants and poorer settlers, I considered it was conferring a benefit upon my readers.

MAPLE SYRUP.

This beautiful addition to the table is simply a portion of the syrup, taken out when it begins to thicken to the consistency of virgin honey. It sells at nine pence or ten pence a-quart readily; if for use in your own family, boil it rather longer, and cork it tight, setting it by in a cool cellar to keep it from fermentation. It is used as sauce for pancakes, puddings, and to eat with bread. Those persons who do not think it worth their while to make sugar, will often make a gallon or two of molasses. Some call it maple honey, and indeed it comes nearer to honey in taste, and consistency, than to treacle.

1.—THEORY OF AGRICULTURE.

We have now at some length brought before our readers the subject of soils—their origin, composition and application—as well as the general features and characteristics of the soils of Nova Scotia. Our extracts have been mainly

drawn from Principal Dawson's "Contributions towards the improvement of Agriculthre in Nova Scotia" which contain a large amount of valuable scientific and practical knowledge. We now proceed to the subject of Manures,—a subject perhaps of even greater importance to the farmers than soils. These are usually divided into two great classes, *organic* and *inorganic* or *mineral*. We of course begin with the former. Were the following remarks by Mr. Dawson on the subject of stable manures carried into effect throughout the Province it has been computed that a saving of at least £100,000 per annum would be secured.

ORGANIC MANURES.

Under this head, I group all those fertillizing substances which have formed parts of animals or plants, and are restored to the soil, whence, or by the aid of which, they were obtained; though some of them cannot, in strict chemical language, be termed organic.

Stable Manures.—Agricola long ago said, "More than one-half of the manure made in the Province, is absolutely wasted, from ignorance and inattention; and the other half is much more unproductive than it would have been under more skilful direction. We have almost no pits, dug upon a regular plan, for the collection and preservation of the dung which, from time to time, is wheeled out of the barn. Sometimes it is spread out on the green sward; sometimes carelessly in a court, or adjoining yard; but seldom is an excavation made, purposely for retaining the juices which run from it. These are suffered either to stream along the surface, or sink into the earth; and in either case, their utility is sacrificed to inattention or ignorance. This is no more, however, than half the evil. The exhalations which arise from the ardent influence of the summer's sun, or from the natural activity of fermentation, are permitted to escape freely, and to carry with them all the strength and substance of the putresible matter." There is, no doubt, much more attention given to this important subject just now; but still, the waste of barn-yard manure, both solid and liquid, is a great loss, and a fruitful cause of agricultural poverty, and failures of crops. About two years ago, I had referred to this subject in a public lecture, and happened, immediately afterward, to drive ten or twelve miles into the country, with an intelligent friend, who doubted the extent of the loss. We were driving through one of the oldest agricultural settlements in the Province, and by way of settling the question, determined to observe the capacity of each barn yard that we passed, for the preservation of manure. It was in early spring, and we found scarcely one barn that had not its large manure heap perfectly exposed to the weather, and with a dark stream oozing from its base into the road-side ditch, or down the nearest slope; while there was evidently no contrivance whatever for saving the liquid manure of cattle. Here was direct evidence, that a large proportion, probably not less than one third, of the soluble part of the solid manure, and the whole of the liquid manure, which all agricultural chemists think to be equal in value to the solid part, was being lost. In other words, each farmer was deliberately losing between one-half and two thirds of the means of raising crops, containod in his own barn-yard. What would you think of a tradesman or manufacturer, who should carelessly suffer one half of his stock of raw material to go to waste; and the waste of such farmers is precisely similar. The results of chemical analysis will enable us to form more precise ideas of the nature and amount of this waste.

Composition of Solid Stable Manure

(RICHARDSON.)

Carbon	37,40
Hydrogen	5,27
Oxygen,	25,52
Nitrogen,	1,76
Ashes,	30,05
	100.00

Composition of the Ashes of Stable Manure (lb.)

Potash	3.22	Soluble in water.
Soda	2.70	
Lime	0.34	
Magnesia	0.26	
Sulphuric Acid	3.27	
Chlorine	3.15	
Cilica,	0.04	
Phosphate of Lime,	7.11	Soluble in Hydrochloric Acid.
" of Magnesia,	2.26	
" of Ox. of Iron,	4.68	
Carbonate of Lime,	9.34	
" of Magnesia,	1.63	
Silica,	27.01	
Sand, &c.,	34.96	
	100.00	

Composition of Liquid Manure.

(BOUSSAINGAULT.)

Urea	31.00	18.48
Hipurate of potash	4.74	16.51
Lactare of Potash	20.09	17.16
Carbonate of Magnesia,	4.16	4.74
" of Lime	10.82	0.55
Sulphate of Potash	1.18	3.60
Chloride of Sodium,	0.74	1.52
Silica	1.01	
Water, &c.,	910.76	921,32
	1000.00	1000.00

Urea, the principal orgonic ingredient of Urine consists of—

Carbon,	20.0
Hydrogen,	6.6
Oxygen,	46.7
Nitrogen,	26.7
	100.0

It is, therefore, very rich in Nitrogen. In decomposing, it changes into carbonate of ammonia, which rapidly escapes, unless prevented by some absorbent material, as charcoal, or by the chemical action of sulphuric acid or gypsum.

In the above table, we see that the liquid manure contains large quantities of potash and soda ; and that a large portion of it is urea, a substance very rich in nitrogen, and, in fact, quite similar to the richest ingredients of guano. Johnston estimates the value of 1,000 gallons of the urine of the cow, to be equal to that of a hundred weight of guano. The farmers of Flanders—who save all this manure in tanks,—consider the annual value of the urine of a cow, to be $10.

In the solid manure, we perceive that there is little nitrogen.—This element, so valuable for producing the richer nutritious parts of grain and root crops, is principally found in the liquid manure. The little that is present, however, in the solid manure, is soon lost, in the form of ammoniacal vapors, if the dung be allowed to ferment uncovered. The other organic matters are less easily destroyed, unless the dung be allowed to become "live-fanged," in which case the greater part of it is lost. In the ashes, or inorganic part, we find all the substances already referred to, as constituents of fertile soils ; and many of the most valuable of them are, as the manure decomposes, washed away, and, along with a variety of organic matters, appear in the dark-colored water which flows from exposed dung-hills. It is not too much to say, that the loss of the volatile and soluble parts of manure, on ordinary upland soils, cannot be repaid by any amount of outlay in the purchase of other manures that our farmers can afford : and we can plainly perceive, that the prevailing neglect in this one particular, is sufficient to account for the deterioration of once fertile farms. How, then, is this waste to be prevented ? In answer to this, I shall merely indicate the principles on which the means adopted for saving manures should be founded, with a few general hints on the best modes ef carrying them to effect.

1. The solid manure should be covered by a shed, or roof, sufficient to protect it from rain and snow. Its own natural moisture is sufficient to promote, during winter, a slow, and beneficial fermentation. Snow only prevents this from going on ; rain washes away the substance of the fermented manure.

2. The ground on which the manure heap rests, shouid be hollowed, and made

light below with clay or planks ; and in autumn a thick layer of bog mud, or loam, should be placed on it, to absorb the drainings of the manure,

3. When the manure is drawn out to the field, it should be covered as soon as possible, either in the soil, or, if it must stand for a time, with a thick coating of peat or loam,—a pile of which should be prepared in autumn for this purpose. All unnecessary exposure should be avoided.

4. Where gypsum can be procured cheaply, it should be strewed about the stables, and on the manure heap for the purpose of converting volatile ammoniacal vapors into *fixed* sulphate of ammonia. This will also render the air of the stables more pure and wholesome.

5. It must be borne in mind, that the richest manures are the most easily injured. For example, many farmers think horse manure to be of little value. The reason is, that when exposed, it rapidly enters into a violent fermentation and decay, and its more valuable parts are lost. Such manures require more care than others, in protection and covering, so as to moderate the chemical changes to which they are so liable, and to save the volatile and soluble products which result from them.

6 The liquid manure should be collected, either in the pit or hollow intended for the other manure, or in a separate pit prepared for the purpose. The latter is the better method. If a tight floor can be made in the stable, it should be sloped from the heads of the cattle, and a channel made, along which the urine can flow into the pit. If the floor is open, the pit should be directly beneath it or, the ground below should be so sloped as to conduct the liquid into the pit. In whatever way arranged the pit should be tight in the bottom and sides, and should be filled with soil, or peaty swamp mud, to absorb the liquid. Gypsum may also be added with great benefit ; and the urine pit may very well form a receptacle for door cleanings, litter which may accumulate about the barn and every other kind of vegetable or animal refuse. These additional matters may occasionally be protected by adding a new layer of peat or soil to the top. The pit for liquid manure should be roofed over. A method much followed in Britain and the continent of Europe, is to collect the urine in a tank, and add sulphuric acid to prevent waste of ammonia. When used, the liquid is diluted with water, and distributed to the crop by a watering cart. This is too expensive for most of our farmers, but when it can be followed, it will be found to give an astonishing stimulus to the crops, especially in the dry weather of spring. Gypsum may be put into the tank, instead of sulphuric acid.—*Journal of Ed. and Agr. Nova Scotia.*

RAISING POTATOES UNDER STRAW

MESSRS EDITORS.—In the May no. (151st page) of your excellent "Cultivator" I requested your subscribers to try the experiment of raising potatoes under straw promising that I would do so and give the result. On the 8th June I put about half a bushel of very small potatoes in a corner of the field, on the sod, and covered them with about 8 or 9 inches of straw. A few days after we had rain, and the potatoes grew astonishingly, so that this fall I collected about a bushel of large and sound potatoes. I was obliged to take them up early, on the 5th Sept., as the field was cleared of grain and stock turned into it. Four persons of this county have tried the same experiment, and succeeded beyond their most sanguine expectations. This is certainly a cheap way of raising potatoes, and pieces of land, which, from stones or stumps, would be lost, are thus turned to profit N.—*St. M., Canada East.*

EXPERIMENTS UPON SWEDES—AWARD OF CHALLENGE CUP.

Artificial and Imported Manures.

The following experiment arose from a conversation at the Farmers' Ordinary, at Briggs, a noted market town in Lincoln. It was conducted by T. M. Richardson, Esq., assisted by a committee of farmers.

The field selected for the experimental trial of swedes was certainly inferior to the one where the common turnips were grown, both from its deficiency of soil and a lighter and more sandy nature. Two acres measured were out to each competitor. The land was ridged upon the manure sown broadcast by hand, without any admixture of ashes, and the seed (Skirving's improved green-top) drilled on the ridges at the rate of two pounds per acre, on the second day of June. Each experimental plot occupied thirty-three rows of equal length, viz., eighteen chains. All the plots were sown on the same day, by the assistance of my neighbours (to whom I now offer my warmest thanks for their valuable assistance,) thereby rendering this public trial much more complete ; and all the plots, as regards hoeing, singling, cleaning, &c., were afterwards treated in precisely the same manner. In addition to the manures sent by the competitors, I experimented with eight others in the same field, of one acre each—manures strongly recommended to the notice of farmers as valuable fertilizers, viz., Lawe's superphosphate, Hodgson and Simpson's nitrophosphate, Peruvian guano, Fernande's manure, bones dissolved by acid in a dry state, bones ditto applied with the liquid drill, good cake farm-yard manure, guano and dissolved bones mixed and these certainly do not disgrace the swedes grown by the competitors, but in many instances outweigh them. On each plot a good plant was obtained, and with the exception of the powerful ammonical manures came quickly and evenly up to the period of singling ; but the water drill plants had a decided start of some four or five days, which, however, did not carry them through, although the manure was applied at the same expense (clearly showing its use is more adapted for clay land than for light soils.) The swedes were pulled out and weighed in the presence of C. Nicholson, Esq., of Staniwells House, John Stephenson, Esq., of Burnham, and M. Maw, jun., Esq., of Cleatham, who most carefully weighed each lot, and placed them according to their respective weights in the following order, viz.,

No.		£.	s.	d.
1.	Phospho-Peruvian Guano, entered at	13	0	0
2,	Morris and Greeves' Superphosphate	7	0	0
3.	Odam's Blood Manure	7	10	0
4.	Odam's Superphosphate	6	10	0
5.	Nicholson's Cuero Guano	8	0	0
6.	Smalley's Ammoniacal Manure ..	9	0	0
7,	Stephenson's Blood Manure ..	8	0	0
8.	Miller and Johnson's Superphosphate	10	0	0

The latter manure was sent from London, and two bags being detained at Retford beyond the day of trial, it was sown at the rate of 5 cwt. only, instead of 7¼ cwt., its price being only £6 10s. per ton.

The judges, consequently, again awarded the cup to Mr. J. B. Horner, of incoln, as agent for the Phospho-Peruvian Company, thereby again introducing) the notice of the public a manure which, being entered about thirty shillings er ton beyond its present value in the market, proves its highly fertilizing owers ; and if the opinion of our highly respectable chemists is of any use, we nd that, from the analysis of Professor Voelcker, Way, Anderson, Herapath, Apjohn, Cameron, and Hodges, this is the most valuable fertilizer, whether na-

tural or artificial, which has as yet ever been offered to the public, but which, of course, like Peruvian guano, is very liable to be adulterated, unless obtained from men of high standing and integrity. I also trust that the importers, Messrs. Dixon, of Liverpool, and the brokers, Messrs. Seagrave, will not relax in their efforts and vigilance to protect the farmer from the machinations of fraudulent dealers; by adopting the same course of conduct as Messrs. Gibbs, of London, all dishonest trading would eventually be rendered unprofitable.

The conclusion I have arrived at from these and other experiments plainly shows that some of the artificial manures applied, though deficient as turnip manures, may distribute their nourishing food through the different rotations of cropping, (such will be attended to.) Some, on the contrary, have acted too rapidly and evanescently for a swede crop; and others (and they the successful ones) have combined in a remarkable manner the permanent and the evanescent, inasmuch as they effected not only a rapid development in the first growth of the plant, but also retained sufficient strength to carry it on to maturity.

I must now conclude, merely adding that these experiments and trials have been most carefully conducted under the superintendence of a neighbour, Mr. Thorpe, of Kirton, who has bestowed the greatest labour and much valuable time in the management of the plants as regards the singling, cleaning, &c.

I ought to have stated that the swedes were grown at an expense to the competitors of only fifty shillings per acre—a cost recommended by G. Nelson, Esq., of Limber (the chairman of the ordinary at Briggs,) as he stated he considered that man the best who grew the greatest weight of swedes at the least expense —Most faithfully yours, T. M. Richardson, *Hibaldstowe, Nov. 30th*, 1858.—*Stamford Mercury.*

THE PROGRESS OF THIRTY YEARS.

In general systems of tillage, improvement has been very great. Thirty years ago, rotation of crops—known then by thinking men to be as important as every one confesses it now—was not *practiced*—we might almost say that it was unheard of by the majority of cultivators of the soil. Now there are few who have any pretensions at all as farmers, who will not be ready to tell you of a certain regular course of cropping they have decided on, for a part or all their fields. Thirty years ago, how many were there who made it a settled plan to manure their farms,in comparison with the number who have now at least grasped that first obvious fact, that a barn should not be placed over a stream for convenience of the removal of its deposits, and that, now and then, the soil *does* require a little refreshment beyond the rains and dews of heaven and the thin stubble of the last harvest? And are there not some at this day in almost every neighborhood, who go much farther than this; who systematically stock their farms to enrich them, and judiciously economize the numerous supplies of animal and vegetable matter which Nature is constantly offering for the same purpose?

The whole guano trade, too, has grown up within the period referred to—a fertilizer that has entirely reorganized, if we may so speak, the agriculture of some parts of the country. Superphosphates, poudrettes, sulphates, and the long list of concocted and concentrated manures were then unknown, and even bones themselves little if at all in use. It may be twenty-five years since the late Judge Buel, seeing the bones collected in this city and in New-York for trans-

portation to our wiser English brethren, persuaded Mr. COULSON of Albany, to establish his bone-mill. What, however, did the farmers then want of bone-dust? There was no demand, and we believe after its efforts the machinery lay a long time idle. But for a number of years past, it has been taxed to its utmost we are told, and all that it could turn out found a ready disposal, generally to dealers at wholesale.

Another important direction in which progress here occurs to us, is in the better tilth which land now receives. The sub-soil plow, and plows of other kinds, the more thorough use of the harrow, the roller, too, are every day effecting more and more in this respect. The depth and fineness of the soil, increased by these and other means, place within the reach of the growing plant, food which it could not otherwise obtain; and one of the great wants, perhaps the greatest of the present day, is for machinery still further to cheapen and perfect our present modes of reaching the requisites in question.

Farm buildings have shared the benefit of general improvement. Very few farms had more than a simple unplaned, unpainted, weather-beaten, "thirty by forty" barn, with perhaps a short cow-shed attached, except in the older regions along the sea-board; at the present moment, complete ranges of well built barns, stables, sheds and other convenient structures, are seen in every direction. The large, square, bleak two-story farm-houses, with their rows of numerous windows are now rapidly giving place to neater, more modest, and more home-like dwellings, and ornamental planting and the neat embellishment of door-yards, are every day becoming more justly appreciated—more nearly regarded as Heaven intended they should be, by intelligent beings placed upon a world full of natural beauty.

And if we go to these better out-buildings, of which we have spoken, or to the broad pastures beyond them, is there no amelioration to be seen in the domestic animals which form an item so important in the farmer's livelihood? Notwithstanding the celebrated achievements of the Oakes' cow, we should like to call some of the Dairymen of Lewis and Washington counties in this State, and of Ohio, as well as other states, to the witness stand on this point. We should like to have the testimony of the New-York butchers of 1858 and of 1831 We should like to hear what the pork-packers, the wool-growers and manufacturers, and farmers themselves, have to say on the subject. Because, if the Collings, and Bates, and Davy, and Jonas Webb, and many other similarly infatuated Englishmen, have really been the subjects of unfortunate delusion, we should be happy to communicate the fact to them or to their present representatives. And if the long line of those Americans whose names will be found recorded in tables of statistics of "live stock imported from foreign countries," have spent their thousands without benefit to the country, we desire to warn them at once against continuing such wasteful prodigality. Seriously however, what a change for the better have the past score and a half of years seen in the stock of our American farms—a change which cannot be estimated in money, and of which mere statistics of importation and private expenditure and public sales,—had we room to gather them here on record—would give but a faint idea.

The progress of *fruit-tree planting* has been not less rapid. Common orchards twenty years ago, would hardly satisfy present cultivators. Some of the best of our standard apples, were then found in the more improved orchards, or where the old natural cider apples had given way to "grafted fruit," but numbers of our more valuable market varieties were nearly or quite unknown—among which may be named the Red Astrachan, Gravenstein, Melon, Peck's Pleasant Jonathan, Northern Spy, and through most of the country, the Baldwin. A few good collections had the Mayduke and Black Tartarian cherries, but no one had heard of the Downer, Black Eagle, Belle Magnifique, Governor Wood, and others

of our best sorts. The Seckel and Tirgalien pears have been planted—the Bartlett was known to but few: the Brandywine, Tyson, Giffard, Howell, Onondaga Sheldon and Lawrence were then in the—not "dark," but *bright* future; and again the Flemish Beauty, Louise Bonne of Jersey, Angouleme, Winter Nelis and Belle Lucrative were just beginning to grow in some rare gardens. Dwarf pears, that have raised such a tempest of controversy of latter days, had never been heard of, except by a few entreprising importers of rarities. But a greater improvement than the introduction of fine sorts, was subsequently made in accuracy of nomenclature, the names of fruits at that time being in almost interminable confusion. There were not three nurseries in the Union that were not full of propagated and propagating blunders, and to recieve a sort true to name was the exception and not the rule. Now, all well established nurseries of repute are generally accurate. The enormous increase in the number of trees is a more striking feature of progress than either the introduction of new sorts or accuracy of nomenclature. It was hard to find a ten-acre nursery twenty-eight years ago, in the whole Union, except one or two at Flushing; Alanson Thorp had just begun one of five acres at Syracuse, now increased to some two hundred acres; Elwanger & Barry had not yet commenced their six-acre establishment, which has now spread over four hundred and forty acres; one of an acre was soon afterwards planted at Hartford, Conn., which drew out the frequent inquiry, "What will you do with all your trees? At the present time, several thousands of acres are annually sending forth millions of trees.

There are a few who see evil in all these improvements. Farm machinery, especially, they regard as the enemy to general prosperity, by ultimately giving the whole management of land to capitalists, and making mere labourers of the mass of the people. We see no ground whatever for such an opinion. It is only when discoveries are kept *secret*, that the few can use them for the exercise of power over the many, as was espeeially the case in the days of ancient Egypt, before many of the arts which now puzzle moderns to imitate, were lost to the world; but happily that day has passed. The Press carries the knowledge of every agricultural improvement to every town in the Union, and if they chose, to every famiiy; and instead of labour being likely to be guided by the few, the avenue to success is opened to all who desire it. Simple and efficient machines, and not complex and costly, are the only ones that can generally succeed, and this inventors are fast discovering, to the heavy cost of some. Facilities for discovering are constlantly increasing, and every industrious and intelligent man finds it comparatively easy to avail himself of most that are really valuable. It is fortunate for farming, and adverse to its exclusive success in the hands of great land-owners, that it requires a constant supervision of almost innumerable operations, which a single individual cannot advantageously attend to on a broad scale and hence its greatest profits are reaped by the farmer of moderate extent, who sees with his own eyes all that is done, and often performs with his own hands, what a common workman or hired hand would do in a slow and bungling manner. So far, then, as agriculture and its various improvements keep pace, as they now must, with the general spread of information through the press and by other means, on which indeed they so much depend; and which they support, we have nothing to fear and much to hope, by way of improved cultivation, improved homes, general prosperity, and improved people, and the comfort and happiness of their children.—*Country Gentleman.*

FARMING IN FRANCE AND ENGLAND.

The following compact comparison of the agriculture of these two countries, found in Mr. Howard's letters from Europe, will be interesting to many of our readers :—

The change in the rural scene is particularly striking. Instead of the large square fields of England, devided by green hedges, and each field devoted to a particular crop, we see but few fences, except those along the road side; the land occupied by different crops, consisting of long narrow strips, which, particularly where the surface is uneven, gives a singular aspect to the country. It is not uncommon to see a strip of wheat, one of oats, one of lucern, clover, or grass, and one composed of patches of different kinds of vegetables—neither strip being more than a rood in width—all belonging to one occupant. Sometimes, but rarely we pass a farm where cultivation is pursued more on the English system. The absence of domestic animals is noticed at once. In England, the numerous flocks and herds add greatly to the interest and beauty of the landscape. In France we pass for miles without seeing a sheep or a cow. Herein is a difference which forms an important distinction in the agriculture of the two countries. The one strives to produce all the meat it can, and in so doing provide for the support (and even the increase) of the fertillity of the soil, and the greater production of breadstuffs. The other keeps the smallest number of domestic animals that it can get along with. The statistics of the two countries show the immense advantage of the english system.

Instead of the turnips and other root crops of England, we see the exhausting crops of hemp, sometimes of tobacco, and the cereal grains, without a proper supply of manures. The grain crops are evidently much less in yield than those of England, and what grass there is, much less luxuriant. Lucern is largely cultivated in some sections, and appears to flourish well. Along the Seine and on other alluvial deposits it affords four or five cuttings in a season. Under such circumstances it is an admirable crop. It would be a fine thing in America, if we could cultivate it with the same results; but I think numerous experiments have proved that the extensive drouth and extreme cold of our country, during the first year of its growth, are too severe for it.—*Country Gentleman.*

HORSES *v.* OXEN.

Which is the most profitable team for the farmer—horses or oxen? The questien has been variously debated, but we have seen no better statement of both sides of the case than that given by Thaer, in his *Principles of Agriculture.* He (in substance) says :—

Horses are capable of all kinds of farm labour; they adapt themselves to every road and every degree of temperature. When horses are kept, there is no occasion to select their particular kind of labour; they may be employed in any work, and be attached to any vehicle or implement of the farm.

Horses perform all kinds of work expeditiously as well as continuously, thus keeping those who labour with them more fully employed than is the case in working with oxen.

Horses though less steady at heavy draught than oxen, have the advantage of spirited, rapid motion, enabling them to overcome all obstacles of short duration, and such as would frequently stop oxen.

Oxen (on the contrary) can perform many kinds of farm labour equally as well as the horse, and when well fed are capable of enduring nearly as much fatigue. Many persons consider them better than horses for ploughing.

Oxen are kept much less expensively; their first cost is far below that of a horse; their harness is also much less costly, and their food of a cheaper character.

Oxen, when well fed and not over-worked, frequently lncrease in value, thus almost paying the interest on their original cost; horses, on the contrary, decrease in value with age, and finally become a dead loss to the owners.

Oxen are less liable to accidents and disease, and produce a greater amount of valuable manure than horses.

Another writer goes into a lengthened comparison of the cost of the same work when executed by oxen or horses, and states the ratio of the first to the last named as 4. 32-100 to 3 1-10—giving almost one-fourth advantage n the use of horses. This we think altogether too large, and that the economy in either case depends upon the work to be done, and the plentifulness or scarcity of appropriate food and work on the farm.—

SOILING STOCK AND GRAZING.

There are no indications of poverty, but on the contrary of the greatest abundance, and the family are worth, perhaps, eight or ten thousand dollars. Besides their farm, they have a birch-making establishment, keep cows and pigs, and have plenty of geese, hens and chickens. Al those animals are in pens, and do not see the light of day from year to year, yet they look fat and sleek. Green fodder is cut daily for the cows during summer, yet we cannot help thinking the milk lacks the sweet, fresh taste of that to which we have been accustomed, where the cows crop the green grass as it grows, and drink from the clear pebbly brook.

But this custom of keeping the cows and sheep in stalls all the year has been generally adopted throughout Germany, from its economy. A hundred years ago four fifths of the land was devoted to grains, and one-fifth to grasses or forage, and now only one-fifth is devoted to grains, and the other four-fifths to forage. By this reverse, the number of cattle is multiplied, and thus the quantity of manure increased with which to enrich the land, and continually renew its capacity for producing. Grains also derive less nourishment from the air than foraging plants, and, therefore, exhaust the soil more entirely from their original support, do nothing towards repaying the debt. Grasses live more upon the air, and leave a richer decayed substance to add to the value of the soil.

Very little space is devoted to grazing, because the same extent of surface will support ten times the number of cattle if devoted to clover, with which they are stall-fed. An acre, it is said, will be scarcely sufficient for one sheep in pasture, while it will support twenty if sown with the best of clover, and ten with that which is called Spanish, and is considered only half as good. The soil of England has been increased two thirds in value by this system since the middle of the 18th century; and Holland and Belgium have extensively adopted the same.

So we must be resigned to what seems a cruel bondage for the animals, and detracts infinitely from the beauty of the landscape, if both man and beast are

really in a more thriving condition thereby; for the earth must be made to yield to its utmost to snpply the wants of the fast increasing human family, and sheep and cows must patiently be restrained of their liberty, and submit to individual discomfort for the good of the whole. Exactly how they feel about it we do not know, but very wistfully they looked out from their dark cells as we opened the door, and the voice's of the lamkins were pitiful, as they plead for room to skip upon the geen. That they do not pine unto death is proved by their number having been quadrupled in the last seventy years.

But we have not heard of any benefit that led us to be resigned to those horrible manure yards under every window, and do not see how the value is increased by any such juxtaposition with human olfactories. Yet we have learned very interesting facts which would have escaped our observation if they had been farther off. So important is this branch of husbandry, that scientific engineers are employed to construct trenches for receiving all the waste juices of the house and barn, and any thing that can enrich the soil is as carefully preserved as the crumbs of the most costly food, and valued as silver and gold. We remember often in New England to have seen the only yard where the cattle could perambulate one vast pond, and when it became necessary to remove it, men were employed days in dipping it with pails. But from these trenches it is drawn by means of a suction pipe, some twenty feet long, and three or four inches in diameter, one end of which rests in the water, and the other connects with a large hogshead which stands in a car, and which a man fills in a few minutes with apparently little effort, and certainly with delecterious effects to himself and pantaloons.

Grazier and Breeder.

THE FEEDING OF HORNED AND POLLED CATTLE, AND THE PRODUCTION, (OR MANUFACRURE) OF BUTCHERS MEAT.

In the preceeding Articles, (Nos. 5 and 6 of *The Journal*,) we described the organs and process of digestion and assimilation—explained from the evidence afforded by chemical analysis, of what are the constituents of the various component parts,—their functious and their mutual dependence and reaction, each on the other. We described the proper treatment of calves, and we shall now continue the subject, by a short statement of the composition and feeding properties of the different kinds of food in common use. J. A.

Potato.—Those used for feeding cattle are either the common kinds or the yam and oxnoble, and are usually given with other roots, alternately, or with dry food. To prevent accidents in choaking, they should be smashed with a hammer, or other blunt instrument, and cut straw should also be mixed to prevent flatulence —the straw necessitating thorough mastication.

Dr. Fromberg has found that the potato contains 76 per cent. or three fourths of its weight of water, depending, however, on its state of ripeness—varying from 68. 6 per cent. in the ripest to 18 per cent. in the earlier stages of its growth;—the rose end containing most, the middle next, and the heel end least.

The proportions in the component parts of the potato vary much in the natural and dry state.

	Natural.	*Dry in round numbers.*
Water	75.52	
Starch	15.72	64
Dextrin	0.55	
Sugar	3.30	and Gum 15
Albumen, Casein and Gluten	1.41	Protein Compounds 9
Fat	0.24	1
Fibre	3.26	11
	100.00	100

The ash of the Potato consists of according to

	Boussingault.	*Fromberg.*
Potash	59.95	55.75
Soda	traces	1.86
Lime	2.09	2.07
Magnesia	6.28	5.28
Oxide of iron and alumina	0.59	0.52
Phosphoric acid	13.16	12.57
Sulphuric acid	8.27	13.65
Chlorine	3,14	4.27
Silica	6.52	4.23
	100.00	100.20
Per centage in the dry state	4.00	3·92

The ash of the fibrous parts consists of :

	Fibre.
Potash and soda with a little common salt.	3.72
Lime	50.84
Magnesia	10.21
Oxide of Iron	3.82
Phosphoric acid	19.66
Sulphuric acid	5.74
Silica	5.54
	99.53
Per centage of Ash	1.40

Professor Johnston remarks that the fibre leaves only one-third of the quantity of ash which is left by the whole Potato—consisting chiefly of carbonate and phosphate of lime. There the alkaline matter is found to exist chiefly in the sap—the phosphate of lime being chiefly attached in an insoluble state to the fibre ; so that growing stock would be most benefitted by the fibre, milk cows by the sap.

On comparison, the potato and yellow turnip are not found to differ much—the advantage—being on the side of the turnip:—the mangold-wurtzel exceeding the potato in protein compounds in the ratio of 15½ to 9. These compounds supply animals with the materials of muscle—the mangold-wurtzel containing 2½, while the potato averages only 2lbs.

Linseed.—The seed of the flax plant is a very nutritious substance, as well as safe and efficacious medicine in calving, and when converted into meal and jellied is a good auxiliary for the older calves, as a substitute, or partial substitute, for milk when weaned.

Its composition has been found to be as follows :

Oil	11.3
Husk, &c.	44.4
Woody Fibre and Starch	1.5
Sugar, &c.	10.8
Mucilage	7.1
Soluble Albumen, (Casein)	15.1
Insoluble Albumen	3.7
Fatty matter	3.1
Loss	3.0
	100.00

Besides oil, it contains a considerable proportion of gum and sugar, and soluble albumen, resembling curd of milk, and in this respect resembling the oat, instead of containing gluten ; so that the oil should render it fattening—the albuminous matter nourishing ; thus enabling it to favour the growth of the growing, and sustain the strength of the matured animals.

Composition of the ash of linseed—

	Riga *Johnston.*		*Dutch.* *Johnston.*
Potash	25.85	17.59	30.01
Soda	0.71	6.92	1.88
Lime	25.27	8.46	8.12
Magnesia	0.22	14.83	14.52
Oxide of Iron	3.67	1.25	0.68
Phosphoric acid	40.11	36.42	37.64
Sulphuric acid		2.47	2.16
Sulphate of Lime	1.70		
Chlorine		0.17	0.29
Chloride of sodium, (com. salt.)	1.55		
Silica	0.92	10.58	5.60
	100.00	98.69	100.90
Per centage of ash	4.63		

Oil Cake.—This is composed of the compressed seeds of linseed, after the oil has been expressed, and is formed into thin oblong cakes, which are broken to pieces properly by a machine, constructed for the purpose, and associated with cut roots straw, or hay, the latter to induce rumination.

The composition of the oil cake has been found to be as follows :

	English linseed cake.	*American linseed cake.*
Water	10.05	10.07
Mucilage	39.10	36.25
Albumen and Gluten	22.14	22.26
Oil	11,93	12.48
Husk	9.53	12.69
Ash and Sand	7.25	6.25
	100.00	100.00

Its protein compounds are thus nearly equal to peas and beans—though the opinion formerly was that it was chiefly valuable in laying on fat. The proportion of oil is greater than in any of the grains.

Oil Cake leaves 6 per cent of Ash—the composition as follows :

	Eng. linseed cake.	*American linseed cake.*
Alkaline salts	31.55	38.20
Phosphate of lime and magnesia	47.67	56.26
Lime	4.88	1.24
Magnesia	1.57	trace.
Silica	10.81	4.04
Sand	3.86	
	100.34	99.74

The American cake appears thus of pure quality,—the phosphate larger in quantity, and twice as valuable for making bone as oats or barley. The manure derived from its feeding is richer than from any kind of grain—containing a larger proportion of surplus phosphate, beyond that supply required by the animal, and of oil likewise. Johnston has prepared a mixture which could be manufactured to contain all the valuable ingredients of oil cake. It is as follows :

	lbs.
Bruised Linseed	40
Bean Meal	60
Bean meal	4
Ground Bones	
	104

The constituents of which are in every 100 lbs.

	lbs.
Starch	40
Protein Compounds	27
Fat	11
Saline matter	7
Water and Husk	15
	100

When our climate and soil are so well adapted to the growth of the plant, surely it cannot be too extensively cultivated.

Distillery Dreg.—Draff is the exhausted husks of the barley—dreg the refuse of the still—a thick or thin liquid. Taree gallons of thin, and two gallons of thick dreg yield 3 lbs. of dry food.

One gallon thin dreg gives 4.235 grains, solid matter containing

	grains.
Organic matter	3.871
Inorganic matter	364
	4.235

One gallon thick gives—

	grains.
Organic matter	10.290
Inorganic matter	594
	10.884

so that weight for weight of the thick dreg contains as much nourishment as the turnip.

	Thin dreg one gallon		*Thick dreg one gallon*	
	per ct.	*gr's.*	*per ct.*	*gr's.*
Potash and Soda, with muriatic and Sulphuric acids	46.24	168	38.36	226
Phosphoric acid, combined in the liquid with some of the above potash and soda	21.67	79	24.35	145
Phosphate of Magnesia and lime	28.88	104	15.90	94
Siliceous matter	2.56	10	20.95	124
Loss	0.65	3	0-44	5
	100.00	364	100.00	594

Alkaline phosphates and silicious matter abound—rendering it a valuable manure for corn and grass. It is given in large towns abundantly to dairy cows as a drink.

Brewers Draff or Grains, are less nutritive than Distillers'—there being an evident deficiency in the protein compounds. It is unnecessary to take up space with a detailed analysis—but we may state that albumen can be obtained cheaper in oil cake—though the draff affords the phosphates more economically. It is best accompanied with oil cake, turnips, or beans.

Use of Cotton seed Cake in Feeding Cattle and Sheep.—"A Meath Farmers" writes—Perhaps you would be kind enough through any of your numerous correspondents, to inform me of their experience of cotton-seed cake as food for sheep or cattle. I have lately lost some lambs, and am inclined to attribute their deaths to the use of the article in question. They were supplied with it in very small quantities, mixed with cracked oats and mill seeds. After death the large stomach was found to be full of food, and scarcely any in the lesser, where, after ruminating, the food ought to be; neither was there as much food in the smaller intestines as is generally to be found there. Has cotton-seed cake been properly analyzed and reported on? I strongly suspect it does harm."—Cotton seed cake has not been long in use for feeding cattle and sheep, and the experience of it has been very limited till within the last year or so, when it seems to have been more generally experimented on, the reports on which have not been yet made generally public. There is a report on its use by Mr. Peter M'Laren, published in the 45th number of the "Transactions of the Highland and Agricultural Society," which also gives a comparative analysis of the cotton seed cake and linseed cake, by Doctor Anderson, published in the above journal some time previously, which is as follows :—

	Cotton-seed Cake.		Linseed Cake.
Water	11.19	..	12.44
Oil	9.50	..	12.79
Albuminous compounds	25.16	..	27.69
Ash	5.63	..	6.13
Other constituents	48.93	..	40.95
	100.00		100.00

The experiment was a comparative one between linseed cake, cotten-seed cake, and bean meal, each in combination with swedes and straw; the result was highly favourable to the cotton-seed cake as a feeding stuff. Several others are recorded in the same article as having experimented with it, all of which reported favourably of it except Mr. Dudgeon, one of his beasts having died suddenly from it: but Professor Dick gave it as his opinion, upon examination, that the animal had died from surfeiting itself with the cake, as, by the analysis, there was nothing deleterious in it. We hope this inquiry will bring in reports from any of our correspondents who have tried the cotton-seed cake in feeding sheep and cattle, to which we shall gladly give insertion.

THE PLEURO-PNEUMONIA.

Various kinds of remedies have been proposed for this very often fatal complaint amongst horned cattle, and as I am not a veterinary surgeon, but a farmer, I think the following narrative of its history and treatment may be interesting to some of your agricultural readers at the present season, when the lung complaint is making such fatal ravages in some localities. It was my misfortune in the autumn of 1857 to purchase amongst other kinds of heifer stock 10 Irish heifers (of English origin), which I had previously known, as they had been throughout the summer in the neighbourhood. They at the time I bought them were in good condition, with no cough or appearance of disease; neither was the change great from where they had previously been; but they had not been in my possession more than a month before two of them showed every appearance of the lung complaint, and did in the course of a few days; another fell ill and died; these were all setoned and attended to by a veterinary surgeon. The unfortunate termination of the attack induced inquiry as to treatment from farmers who had been sufferers. The inquiry being overheard by a person in the market, he kindly gave me his experience of a remedy sent to him by a friend, which is as fol lows:—Immediately the first symptom of very hard breathing and an utter prostration of strength appeared was to put them in a warm place and give them 4 oz. of sweet spirits of nitre each, and clothe them quite warm; put a seton in the dewlap; after the expiration of 12 hours repeat the dose. If there is no improvement in their appearance, after eight hours give one pint of linseed oil. Continue the warm clothing until they get better. The dose must be regulated according to size and age of the animal; 4 oz. is sufficient for a two years old bullock. The success that attended the above treatment in the case of a person who favoured me with the remedy was as follows:—Out of a lot of 70 Irish heifers, 12 were attacked and died in the course of a fortnight. At this time he had been favoured with the receipt and manner of treatment, which proved perfectly succesful on eight more that were attacked; but they all recovered. In my case four were attacked with the same symytoms as those that died, three of them perfectly recovered, but the fourth I had slaughtered, as it did not recover its appetite; the three that recovered did perfectly well, and were sold fat to the butcher in September last from the grass. When they were under the treatment I found it necessary to keep up the system with warm flour and linseed gruel, until they could eat warm bran maches, &c.—*John Rivers, Giffards Farm, Gilston, Herts.*

MONTREAL RETAIL MARKETS.

FRIDAY, February 25th 1859.

	BONSECOURS.						ST. ANN'S.					
	s.	d.		s.	d.		s.	d.		s.	d.	
FLOUR.												
Country Flour, per quintal	15	0	a	16	6		0	0	a	0	0	
Oatmeal, per quintal	13	6	a	13	9		0	0	a	0	0	
Indian Meal, per quintal	0	0	a	0	0		0	0	a	0	0	
GRAIN.												
Wheat, per minot	0	0	a	0	0		0	0	a	0	0	
Oats, per minot	2	9	a	3	0		2	3	a	2	6	
Barley, per minot	3	6	a	3	9		0	0	a	0	0	
Pease, per minot	3	9	a	4	0		0	0	a	0	0	
Buckwheat, per minot	2	6	a	2	9		0	0	a	0	0	
Indian Corn, yellow	4	0	a	4	6		0	0	a	0	0	
Rye, per minot	0	0	a	0	0		0	0	a	0	0	
Flax Seed, per minot	7	0	a	7	3		0	0	a	0	0	
Timothy, per minot	9	0	a	9	6		0	0	a	0	0	
FOWLS AND GAME.												
Turkeys, (old) per couple	6	0	a	10	0		10	0	a	12	0	
Turkeys, (young) per couple	0	0	a	0	0		6	0	a	8	0	
Geese, (young) per couple	5	0	a	10	0		3	6	a	4	6	
Ducks, per couple	3	0	a	3	9		2	6	a	3	0	
Ducks, (wild) per couple	0	0	a	0	0		0	0	a	2	6	
Fowls, per couple	2	6	a	3	0		2	0	a	3	0	
Chickens, per couple	0	0	a	0	0		1	3	a	1	6	
Pigeons, (tame) per couple	1	3	a	1	6		0	0	a	0	0	
Pigeons, (wild) per dozen	2	6	a	3	0		3	6	a	4	0	
Partridges, per couple	0	0	a	0	0		0	0	a	0	0	
Woodcock, per brace	0	0	a	0	0		0	0	a	0	0	
Hares, per couple	0	0	a	0	0		0	0	a	0	0	
MEATS.												
Beef, per lb	0	4	a	0	9		0	4	a	0	8	
Pork, per lb	0	5½	a	0	6		0	6	a	0	6½	
Mutton, per quarter	6	0	a	12	0		7	0	a	12	0	
Lamb, per quarter	2	6	a	4	0		2	0	a	3	9	
Veal, per quarter	5	0	a	15	0		5	0	a	15	0	
Beef, per 100 lbs	30	0	a	45	0		30	0	a	40	0	
Pork, (fresh) per 100 lbs	30	0	a	35	0		27	6	a	30	0	
DAIRY PRODUCE.												
Butter, (fresh) per lb	1	3	a	1	6		0	11	a	1	0	
Butter, (salt) per lb	0	10½	a	0	11		0	8	a	0	9	
Cheese, per lb, skim milk	0	0	a	0	0		0	0	a	0	0	
Cheese, per lb, sweet do	0	0	a	0	0		0	0	a	0	0	
VEGETABLES.												
Beans, (American,) per minot	0	0	a	0	0		0	0	a	0	0	
Beans, (Canadian) per minot	7	6	a	8	0		0	0	a	0	0	
Potatoes, (new) per bag	3	0	a	3	9		4	0	a	5	0	
Turnips, per bag	0	0	a	0	0		0	0	a	0	0	
Onions, per bushel	0	0	a	0	0		0	0	a	0	0	
SUGAR AND HONEY.												
Sugar, Maple, per lb, (new)	0	5½	a	0	6		0	4	a	0	4½	
Honey, per lb	0	0	a	0	0		0	7½	a	0	8	
MISCELLANEOUS.												
Lard, per lb.	0	8	a	0	9		0	8	a	0	9	
Eggs, per dozen	1	6	a	1	9		0	8	a	0	9	
Halibut, per lb.	0	0	a	0	7½		0	0	a	0	0	
Haddock, per lb	0	0	a	0	2½		0	0	a	0	0	
Apples, per barrel	25	0	a	35	0		15	0	a	20	0	
Oranges, per box	0	0	a	0	0		0	0	a	0	0	
Hides, per 100 lbs	0	0	a	0	0		0	0	a	0	0	
Tallow, per lb	0	4½	a	0	5		0	0	a	0	0	
BREAD.												
Brown Loaf	0	11	a	0	0		0	9	a	1	0	
White Loaf	0	0	a	0	0		0	9	a	0		