

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.

Coloured covers/  
Couverture de couleur

Coloured pages/  
Pages de couleur

Covers damaged/  
Couverture endommagée

Pages damaged/  
Pages endommagées

Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées

Cover title missing/  
Le titre de couverture manque

Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées

Coloured maps/  
Cartes géographiques en couleur

Pages detached/  
Pages détachées

Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/  
Transparence

Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur

Quality of print varies/  
Qualité inégale de l'impression

Bound with other material/  
Relié avec d'autres documents

Continuous pagination/  
Pagination continue

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

Includes index(es)/  
Comprend un (des) index

Title on header taken from:/  
Le titre de l'en-tête provient:

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.

Title page of issue/  
Page de titre de la livraison

Caption of issue/  
Titre de départ de la livraison

Masthead/  
Générique (périodiques) de la livraison

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
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# THE ILLUSTRATED JOURNAL OF AGRICULTURE

PUBLISHED BY THE DEPARTMENT OF AGRICULTURE FOR THE PROVINCE OF QUEREC.

Vol. III.

MONTREAL, OCTOBER 1881.

No. 6

## Table of Contents.

Exhibition, the Provincial of 1881.....	81
Horses at the Exhibition.....	83
Tent Caterpillar, the (with engravings).....	84
Shrubs, ornamental (with engravings).....	84
Beechsheld vineyard, the.....	87
Newell Grinder, the (with engraving).....	87
Live and carcase weight of stock.....	87
Ammonia, cheap.....	89
Live stock in Virginia.....	89
Butter yield, large.....	88
Jerseys at home.....	90
Canadian Commissioner on English markets.....	90
Phosphatic experiments, Jamieson on.....	91
Scotch cattle for America.....	91
Paris letter on Agriculture.....	92
CORRESPONDENCE.—Brady on cows.....	93
POULTRY DEPARTMENT.—	
Fattening poultry.....	94
The Ovoscope (with engravings).....	94
Dairy school, a British.....	95
Fairy lore about cows.....	95

## THE EXHIBITION OF 1881.

We are certainly improving; not in one branch of our agricultural pursuits, but in several. Those of us who remember the miserable displays of 20 years ago, will bear me out in saying, that in every breed of stock, in every style of implement, and in every article of farm produce, the present exposition is so far superior to the earlier ones that the wildest anticipations of the most sanguine prophet are more than realised.

There have always been, among the cattle, two or three good specimens; but it was reserved for this year to show herds of four different breeds that would with difficulty be equalled in Britain. The Shorthorns, the Ayrshires, the polled Angus, and the Herefords, were worthy of a place at any exhibition in any country. The glory of the yard, however, were the Angus-cattle. I am not about to impugn the correctness of the Judges' decisions. The polled stock are not commonly seen, and it is not every one who is capable of appreciating their peculiar merits. Very few people are conversant with Devons; Herefords are almost strangers to the Province; Jerseys are in the hands of only three or four breeders, and not one in a hundred is capable of distinguishing between a Galloway and a Polled Angus. And so with sheep; the short-wooled breeds are little understood, though Leicesters and Cotswolds are familiar objects enough. But what a lesson was taught, to all willing to learn, at our show! It was as if the Royal of England had combined with Highland of Scotland, and the Irish Agricultural, to hold one grand united Exhibition. Every one of the principal breeds was represented; and the specimens were of such a sort, that a good idea might be formed, if plenty of patience were exercised, of their points and relative value.

There was one fault, however, and a great fault it was: the cattle in the eastern row of stalls were so mixed up that great difficulty existed in contrasting one animal of the same breed with another. Here, was a Hereford bull, there, a Kerry cow; and I can fancy an inexperienced eye being rather puzzled by the phantasmagoric changes. All the breeds should be arranged in lots: bulls, cows, heifers, and calves; for no comparison can be made, in any reasonable time, if one has to run about from one part of the ground to another.

And what on earth was the meaning of putting Galloways and Polled Angus in the same class? They differ from one another as much as Sussex cattle differ from Devons, and I am sure that 99 people out of 100 went away convinced that Mr Hickson's animals were Polled Angus, as the prize-cards stated.

The Shorthorns, taken as a class, were as good as we often see them. Mr Cochrane's *Barringtons*, deep red in colour, took the eye at once. Royal Lind I never did like, and I do not find he grows upon me. Mrs Whitfield's white bull has become a fine beast, and always makes me regret the existence of the absurd prejudice against his colour on this side of the Atlantic. Most of the Rougemont cows are from deep-milking strains, and naturally did not make so fine a display of themselves as if they had been dried off shortly after calving.

There was a bull, 3rd prize two-years old, I think, which ought to have been expelled from the yard. He had every bad point a bull can have, and was fortunate in meeting no competitor in the ring. I do not see why brutes of this sort should be decorated, as it cannot possibly do any good to the country to have a lot of big-bellied, lumpy-shouldered, flat-sided, goose-rumped mongrels as the parents of our future herds. As a rule, the Eastern Townships' people are very careless about their male animals. It is a pity, for the land would not make default if a higher class of cattle were aimed at; and the universal opinion of the witnesses at the Agricultural commission at Ottawa was, that it would never pay to export the common stock of the country.

Mr Cochrane won the *Herd-prize* for Shorthorns, and I did not hear any remarks as to the justice of the decision.

Among the Herefords, I was very much pleased with Mr Cochrane's 3 years old. His rounds of beef, or steak-pieces as the Canadian butcher would call them, were superb. He is very like Mrs Edward's cow Leonora, a picture of whom was given some time ago in this journal, and, I imagine, must come from the same stock. The new importations of Messrs Dawes reflect great credit on their enterprize. The first prize for yearling bull, 2nd for 3 year-old cow, and one or two more, fell to their lot: an encouragement for the future. Mr Hickson's bull, 4 year-old, has good thighs, but his crops are poorish, and his under- and side-lines a great deal too soda-water-bottleish. Cochrane, again, *Herd-prize*.

In Devons, the Whitfield 3 year-old bull was preeminently

the best animal in the yard. He is, as are his harem, of the true *North Devon* breed, and would do honour to any show.

As I have said before, I am not learned in Ayrshires, but I have always had a *penchant* for Mr James Drummond's cows, and I was glad to see that they won the prize for the *best herd*—an honour, indeed, against such competitors as the Irvings, Dawes, Mousseaus, &c. (1)

Jerseys were a numerous, and, considering that they are so recently established, a good lot. I think Mr Reburn must have slept pretty comfortably after winning five prizes in the company of the Rougemont and Compton herds. The first 3 year-old cow (Whitfield) won last year as a two year-old, and a pretty blowing up the judges got for the decision. They did not care much, though. There was a coarseish *half-bred Jersey* shown that ought to have been kept at home. Diploma for Herd—Cochrane once more; and he was equally successful in the fat heifer and working oxen contest.

In the sheep-classes every thing yielded to the Compton flock. The Shropshire two-shear ram, and the shearling Oxford Down, were good enough to make all the other short-woolled muttons look poor by their side. I give one piece of advice to all intending future exhibitors: your sheep won't show themselves. Against such shepherds as they have at Compton you are too heavily handicapped, and you will find that the skilful use of the shears, and a little extra care in feeding, will add vastly to the appearance of your stock. At present the contest is like a trial in cookery between a country tavern and the Windsor: you have good stock, but you don't know how to prepare them. It is a fine, manly thing, to say: "I send my sheep in a natural state", but it won't fill your pockets with prize-money.

I remarked two new names in the South-down classes. M. Phaneuf has imported several rams from the College, at Guelph, Ont., and was the fortunate winner of first prizes for shearling and two-shear rams. Mr. Dawes, of St. Anne's, and Mr Moore, of Moore's Station, with Mr Featherstone, of Credit, Ont., took all the rest. If the ewes of this breed were better kept during their first winter the size of the lambs would be increased in a very short time. Mr. Casgrain, one of the judges of sheep, was taken ill just before they arrived at the Southdowns, and he informed me that he utterly differed from many of the decision of his brother judges. I do not wonder at it. I hope, some day, to see two sets of judges—one for short-wools and another for long-wools.

I have, at last, a commission to import a small flock of Hampshire Downs. We shall see, next year I hope, what sort of an animal it is. He won't *show* against the Shropshire, but for hardiness and general utility I will back him against all comers. Besides he is thorough bred, which they are not. Mr. Phaneuf, not contented with beating all his rivals in the South-down ram classes, takes first prizes for shearling ram, and for ewe lambs, in the Cotswold list, as well as second for old ewes, and third for two years old ewes, in the "other long-woolled" sheep.

As usual, in the classes of white pigs and Essex, Mr. Featherstone, Credit, Ont., carries every thing before him, winning every first prize in Essex, six out of seven firsts, in Suffolks, and most of the Yorkshires. In Berkshires, however, he only took one prize—first, between six and 12 months old. A good many Berkshires looked unlike the true breed, and one had a coat of hair as red as my own. He got a third prize, strange to say—I take him to be one of the Red Cheshires, a breed not uncommon in Shropshire and the

(1) Mr Drummond won 3rd prize, for three year-old cows; and the herd-prize, besides those with which he was credited in the papers.

neighbouring counties. They are sometimes called *Tamworths*.

There were multitudinous complaints about the difficulty of obtaining judges. Men won't come three hundred miles for five dollars, even to oblige the Province of Quebec. There was, too, a good deal of carelessness in the prize tickets hung up in the stalls. Two lots of *China Poland* pigs were labelled *Berkshires*.

The machinery exhibition contained some very useful articles. I was happy to see that a silver medal was granted to the *Universal Grinder* of Messrs Newell and Chapin—25 bushels of corn per hour into fine meal. It is also suited to the crushing of linseed or other grain, which, after crushing, never turn stale or sour; a blast of air cooling the meal as it is made. I saw the mill at work, and tasted meal eighteen months old which was perfectly sound and sweet. The rollers, or discs, are very easy to adjust, and breakage is almost impossible. Price \$150

I was fortunate enough to be shown over the *Working Dairy* by Mr. Jones himself, who gave me every information possible. I confess I was disappointed. What is the lesson to be taught by it? I saw no butter made, and I do not believe any was made during the week. An empty churn kept in motion by a steam engine does not teach much, and I can't see a great deal of good to be derived from the retailing of a two day old cheese at ten cents a pound. It might have answered as an advertisement, but it could have served no other end. It was a complete failure, and I hope will serve as a lesson against another year. I really think Mr. Jones must have been in error when he told me that the milk was brought in such a state of sourness, on the Friday, that no use could be made of it. This, if it really were the case, argues most reprehensible carelessness on the part of the purveyor. It is no light thing to excite the expectations of a number of people, deeply interested as our people are in all that concerns the proper working of a dairy, and then disappoint them. The low but deep growls of dissatisfaction audible throughout the annexe proved that they felt themselves to have been deceived, and the very thing that, properly managed, would have been the most popular part of whole exhibition, was a most consummate failure.

Mr. Jones is a strong advocate for allowing the cream to sour before churning. Now, Dr. Voelcker, in his last lecture in the working dairy at the Derby meeting, takes the opposite side. Something ought to be done to settle the question, for until it is settled, we are all working in the dark. I fancy we make about as good cheese, considering the quality of the soil, as can be found, but, as regards butter, we have still a good deal to learn. We have very little chance of beating the superior classes of cheese in England; but butter, requiring a very moderate amount of richness in the grass from which it is produced, may be made quite as good in flavour, here, as in Europe. In fact, the butter from Mr. Hare, Barrington, Que., was as fine as need be—a little salt, it is true, but the flavour was good, and the grain perfect. Mr. Reburn, St. Anne's who took second prize for two tubs of dairy butter, was accused of artificially colouring his exhibit. Now almost all that gentleman's cows are pure Jerseys—the rest are half-breds—and as he offered to pay for an analysis of his butter by Dr. Girdwood or Dr. Baker Edwards, I think we may fairly conclude that the colour, though almost orange, is perfectly natural.

Most of the cheese looked well. It was intended, I presume, to represent the Cheddar make, but it was too new to found a good judgment upon. Cheese less than six months old is too raw to be well flavoured, and too new to be digestible.

Mr. Irving, of Logan's farm, took the first prize for Fall

what; but it must have been a pretty difficult task to decide between the samples. I never could see the good of these prizes. Every body knows that quality of grain depends infinitely more on the soil than on the cultivation: in the south of England, we cannot grow oats like the Scotch, neither can the *plastic clay* of Kent produce a sample of malting barley.

I was disappointed at not seeing more tobacco. The roots were as fine as usual, that is, as fine as possible. The first prize for swedes was, very properly, given to roots of fine quality, though little more than half the size of those that received the second prize. The mangels and Kohl rabi were superb.

Grapes were well represented, though the season has been against them. The bunches shown by Mr. Graham, Ottawa, were the largest out-door grapes I ever saw. There would be no easy victory in beating Mr. Donnelly's 15 varieties, of which *Belinda*, a new white sort, *Herbert*, and *Hebermont* were the best flavoured. *Pocklington* very fine indeed, but alas, not ripe. Graves of Côte St. Antoine showed some gorgeous plums, gages, &c.; in pears the *Doyenne Bussock* (?) was beautiful to look at, and the apples were, of course, magnificent.

There was nothing very new in the implement yard. A large and very complicated *threshing machine* of Sawyer & Co's, Hamilton, was in motion, driven by an engine by Waterous. The attendant told me that it would take 12 horse power to work on long-strawed wheat! Some error in construction, I should think, as Clayton and Shuttleworth's 8 horse power Engine used to drive a finishing machine with elevator, threshing our long-strawed English wheat with a five and a half feet drum. I ought to know, as I had three sets of them. Wheat, in England, is often more than six feet high, and very much stouter in the straw than any here. Mr. Evans had, as usual, a very varied and well selected collection of implements. How many prizes he received I did not inquire, but no doubt their name was legion.

I thought it possible that there might have been a few Canadian cows shown, if only as extra stock. If Mrs. Whitfield, to whom I offer my congratulations, wishes to do a popular thing, I would counsel her to collect a small herd, say, four cows and a bull of the purest Canadian stock she can find, and show them next year by the side of the Jerseys and Kerries, their cousins. Is patriotism so dead here that no wealthy merchant will offer a prize for the encouragement of his poorer countrymen's homebreds?

It strikes me very forcibly that some of the exhibitors of stock misunderstand the condition of age. When it is said that animals are to date, as regards age, from the 1st of January, what is meant is, that a calf born on the 20th of March 1881 becomes a yearling on the 1st of January 1882, and a two year-old on the 1st of January 1883.

ARTHUR R. JENNER FUST.

#### Horses at the Exhibition of 1881.

Taken altogether, the show of horses this year was certainly very good; better than last year in my opinion; though in some classes there was a decided falling off, and I am sorry to say that in no class was this more evident than in the thoroughbred stallions. This year there were only four shown, and none of these appeared to me to be the sort of animal that I should chose to breed from, certainly not in the condition in which they were shown. The first and second prize horses are both good specimens of the *race horse* and are, I believe, as good as they look, but I certainly prefer "Terror", the second prize, to "One Dime." Does not the sporting owner of this fine horse think he is worth more than a "six penny" name? He has a better and handsomer head and neck, is not so upright on his pasterns, and, to my mind, looks more the gentleman than his rival. I was un-

fortunate in not seeing these horses out of their stables, so I can say nothing about their action. The horse to which the third prize was given is a *trotting* animal, and, I cannot keep thinking, was quite out of place in this class; and besides this, the pedigree which was attached to his stall did not seem to be what it ought to have been, for from what I could make out it was the pedigree of his sire, and not his. And though I have seen the well known "Tubman" look better, he certainly deserved to have been mentioned by the judges.

The *thoroughbred colts and fillies* were good, especially a filly with a decided "Tubman" look about her; there was also a fine yearling colt, though perhaps a little "leggy"; both of these, as also several others, hailing from the Messrs. Dawes' farm of Lachine. The brood mare and foals made a good show; one shown by the Lieutenant-Governor of Quebec is a remarkably handsome, showy mare, and has a fine "Astronomer" colt at her foot. Let me here remark, with all due reference to the manager of this Department, that it is a great pity that the classes are not kept more separate; for among the thoroughbreds there were several Clydes! and although boards were put up and labelled "Thoroughbred, Clyde, Suffolk, &c., &c.", it did not in the least follow that you found the named animals under their proper headings (1).

The show of *Clydes* was really magnificent. The first prize animal would have held his own in any ring, and I am sure the judges must have had anything but an easy task in awarding the prizes; for when all were so good it must have been difficult to decide which should be first. One of these grand specimens of horse-flesh, I was told, weighed 1980 lbs.!! though to see him moving, one would hardly have believed it. Mr. Cochrane showed a fine three year old colt, but he did not appear to find favour with the judges. The *pairs of heavy draught horses* were very fine, especially a pair of grays, shown by the Sheddon Company, and a pair of bays, shown by Mr. Hickson; the way in which these two pairs were turned out was perfect. I wish I could say as much for the carriage horses, but these appeared to me to be merely trotting horses, and to my mind did not deserve any prize, as carriage horses, for they had no action, were not harnessed as carriage horses should be, and, to crown all, had tails almost, if not quite, touching the ground! But now we come to something more like the real thing, and this is a *pair of cobs* (a stallion and mare) imported and shown by the Hon. M. Cochrane of Compton, and they are worth taking a long journey to see, the mare is a perfect little beauty, and one which you would never tire of looking at; such a set of legs one seldom sees, grand quarters, head clean and well set on, a splendid shoulder, nice short back, and in fact, as near perfection as possible, and to see her moving about as quiet as a lamb was a treat. There was also a very handsome English pony shown by the same gentleman. The *jumping in the ring* was, as usual, very attractive to the public, but that is about all that can be said for it! One horse ridden by Mr. C. Alloway was a perfect fencer, and to see the way he got his hind legs under him proved him to be no novice at this business, and, having the man he had on his back, it was no wonder that he got over his jumps in a masterly style. Mr. Coghlin's chesnut has improved since last year, and had his rider only let him have his head more, and had the horse only had a sensible bit and bridoon on, instead of that inevitable (in this country) snaffle and tight martingale, he would have shown to better advantage. There were about a dozen horses in the ring at the same time, and out of this lot, I could only see two (Mr. Cochrane's and Mr. C. Alloway's) whose horses were turned out as they should be for riding. It is a pity that in judging both saddle and carriage horses more consideration is not given to the way in which horses are turned out, as is done at home. In the *farmers' horses* competition for jumping, Mr. Drummond's little grey had it pretty much his own way and really he jumped capitally. I cannot help, however, remarking upon the extraordinary conditions for jumping laid down in the programme, which were, that the heavy weight carrier was to jump 3 ft. 6 in., the light weight carrier 3 ft. 3 in., and the farmer's horse only 3 feet! Why there should be a difference in the weights to be jumped is quite a mystery; because a horse has to carry a heavy weight must he jump higher than one who has to carry a light weight, and are farmers' necks so fragile,

(1) Just the same with the cattle, all mixed up together, and no sooner had the eye got accustomed to the Devon, than it was dodged by a Shorthorn.

A. R. J. F.

or are they such poor riders, that they must not be asked to jump more than a paltry 3 feet? Let me suggest that instead of hanging up a ladder with a few branches tied to it for horses to jump over, a light gate or hurdle reaching down to the ground be used; this would be safer both for the riders and for the horse.

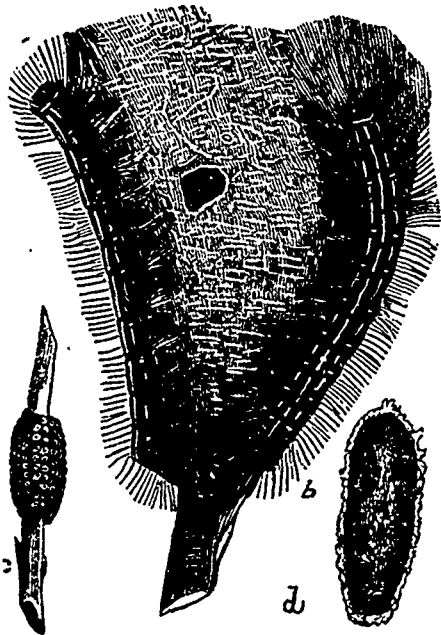
Manor House, St. Hilaire.

E. A. C. CAMPBELL.

#### The Tent Caterpillar.

I wish to put our farmers on their guard against one of the worst enemies of trees in general, and of fruit trees in particular. I mean the *Tent Caterpillar*, or *Clisiocampa Americana*, which multiplies so rapidly in our country parts, and which, if they are not carefully watched, will commit such fearful ravages in so short a time.

This insect is produced by a reddish-brown moth about one inch and a half across the wings. Crowds of them may be seen in midsummer evenings, fluttering round the houses, and often burning themselves in the flames of the lamps or candles. They prefer laying their eggs on the apple or cherry tree; thousands of them they deposit in the forks made by the intersection of branches or boughs, and always in the form of a ring. (See engraving at c). In the spring the eggs hatch, and as soon as the larvæ are out they set to work



Eggs (c), larvæ (b) and cocoon (d) of the Tent caterpillar.

to net themselves a nest among the branches of their native tree, a nest which looks like a mass of spider-webs, crossing frequently from one branch to another, and showing beneath innumerable larvæ or caterpillars hard at work. (See eng. a and b, larvæ, of the natural size in the tent or nest). They live for five or six weeks in this form, devouring the leaves and stripping the branches of the tree, if it be a small one, and the effect is, that the tree, thus deprived of its organs of life, cannot perfect its fruit, and frequently dies from the attacks of this terrible enemy.

To destroy this pest, it must be attacked in all its metamorphoses. Fires should be lighted towards nightfall in the orchard, in which the brutes, attracted by the flames, perish by thousands. The nest may be destroyed by means of a sponge dipped in *liquor ammoniac*, of the greatest possible strength, tied to the end of a long pole. The caterpillars can't stand the ammonia. A small bundle of thorns fastened to pole may be passed or rolled over the nest, and

the whole may thus be pulled down and crushed or burnt; but both these methods must be practised before 9 a. m., as after that hour the caterpillars are out after food. The destruction of the larvæ at this stage is very important, as if they escape they immediately set about preparing a new generation of destroyers. They are in the cocoon state (see d) in July. Immediately after the fall of the leaf, the infested trees should be carefully examined, and all the rings of eggs destroyed, and thus the insect devourer may be kept under, if not entirely eradicated. The horrid ravages of the cabbage caterpillar, which has prevented the growth of that vegetable, in many places, for years, should incite us to extensive operations of defence against all other insect enemies, or else, perhaps, our orchards may have to be left as unproductive as our cabbage gardens.

J. C. CHAPAIS.

#### Ornamental Shrubs and small trees.

Last July, I published an article on the planting of ornamental trees round our houses, and I gave a list of the subjects proper for this purpose. I now purpose to complete that article, by describing the shrubs best suited to the ornamentation of our abodes, feeling sure that no finer effect can be found than that afforded by flowers mixed with shrubs, amid the umbrageous green masses of forest trees. A list is first



Fig. 1.—Virginia Creeper—flower and fruit.

presented of all the ornamental shrubs and small trees that succeed within a limit of 90 miles below Quebec; and afterwards I will describe the special merits of each individual.

The Virginia Creeper is a climbing plant; I know of no other hardier or better suited to our climate. It suits all soils, all exposures; it fears neither drought, humidity nor frost, and for hardiness it is unequalled. It sends out, with incredible



Fig. 2.—Honeysuckle—group of flowers.

vigour, masses of luxuriant verdure, which in autumn become a brilliant scarlet, and contrast well with the dark colour of its berries, which are borne in a cluster, like a bunch of grapes, and are about as large as peas. The house in which I live is surrounded on all sides by plants of this creeper, and though they have only been planted four years

and the land is abominably poor, the building is completely hidden in the rank foliage. Fig. 1 represents a leaf and a bunch of the berries of the plant.

The *Badder-Senna* is a shrub of from four to six feet high with subovate leaves of a sea-green colour, bearing its flowers grape fashion. It blooms during nearly the whole summer, and forms a greenish pod, like a blister in appearance, which bursts with a loud report when squeezed between the finger and thumb.

The *Climbing Honeysuckle*, an excellent ornament for arbours and trolises, has a luxuriant foliage, and bears, in spring, a great quantity of yellowish flowers, with red

interiors, which exhale a delicious perfume. Fig. 2 is a representation of a group of these flowers.

The *Non-climbing Honeysuckle* is a pretty large shrub, seven or eight feet in height; the leaves are nearly heart-shaped, and the flowers rose-coloured outside, and white inside. It flowers early, and its fruit is a small red berry. There are several varieties, but their merits are about equal.

The *Red Dogwood* is a shrub with ovate leaves, ending in a point. The branches are red, which gives a bright appearance to the plant in winter. The flower, which shows itself in spring, is white, and the fruit is of a blackish-red.

NOMS BOTANIQUE FRANÇAIS.		TABLEAU DES ARBUSTES ET		ARBRISSEAUX D'ORNEMENT.		NOMS ANGLAIS.	
		NOMS BOTANIQUE LATINS.		NOMS VULGAIRES FRANÇAIS.			
Ampelopside vigne-vierge.....	.....	Ampelopsis quinquefolia.....	.....	Raisin-doux.....	.....	American Ivy or Virginia Creeper.	.....
Baguenaudier arborescent.....	.....	Colutea arborescens.....	.....	Faux-séné.....	.....	Bladder Senna.	.....
Chèvrefeuille à tige grimpante.....	.....	Lonicera Caprifolium.....	.....	Chamécisier.....	.....	Honeysuckle or Woodbine.	.....
Chèvrefeuille à tige non grimpante.....	.....	Chamocerasus.....	.....	Hart-rouge.....	.....	Standard Honeysuckle.	.....
Cornouiller sanguin.....	.....	Cornus sanguinea.....	.....	Bois-joli ou Bois-gentil.....	.....	Dogwood	.....
Daphné mézéréon.....	.....	Daphne mezereum.....	.....	Weiçgâlie.....	.....	Pink Mezereon.	.....
Deutzia à rameaux grêles.....	.....	Deutzia gracilis.....	.....	Weiçgâlie blanche.....	.....	Slender-branched Deutzia.	.....
Dierville du Japon.....	.....	Diervilla Japonica.....	.....	Vinettier.....	.....	Rose-colored Weigelia.	.....
Dierville Desbois.....	.....	Diervilla Desboisi (alba).....	.....	Vinettier pourpre.....	.....	White Weigelia.	.....
Epine-Vinette.....	.....	Berberis vulgaris.....	.....	Quatre-saisons hivernant.....	.....	Berberry bush.	.....
Epine-Vinette à feuilles pourpres.....	.....	Berberis purpurea.....	.....	.....	.....	Purple-leaved Berberry.	.....
Hydrangée à grandes fleurs en panicules.....	.....	Hydrangea paniculata grandiflora.....	.....	.....	.....	{ Large Panicle-flowered Hydrangea.	.....
Lilas commun.....	.....	Syringa vulgaris.....	.....	.....	.....	Common Lilac.	.....
Lilas commun blanc.....	.....	Syringa vulgaris alba.....	.....	.....	.....	White Lilac.	.....
Lilas de Perse.....	.....	Syringa Persica.....	.....	.....	.....	Persian Lilac.	.....
Mahonie à feuilles de houx.....	.....	Mahonia aquifolium.....	.....	.....	.....	Ashberry.	.....
Prunier à feuilles trilobées.....	.....	Prunus triloba.....	.....	.....	.....	Double-blossomed Plum.	.....
Seringa des jardins.....	.....	Philadelphus coronarius.....	.....	.....	.....	False Syringa.	.....
.....	.....	.....	.....	.....	.....	{ Double-blossomed Plum-leaved Spiræa.	.....
Spirée à feuilles de prunier.....	.....	Spiræa prunifolia flore-pleno.....	.....	.....	.....	Billard's Spiræa.	.....
Spirée de Billard.....	.....	Spiræa Billardi.....	.....	.....	.....	Snowberry.	.....
Symphorine à grappes.....	.....	Symphoricarpus racemosus.....	.....	Boule de cire.....	.....	.....	.....
.....	.....	{ Symphoricarpus parvi flora } ou vulgaris.	.....	.....	.....	Indian Currant.	.....
Symphorine à petites fleurs.....	.....	Ligustrum vulgare.....	.....	.....	.....	Privet or Prim.	.....
Troène commun.....	.....	Viburnum Opulus sterilis.....	.....	Boule de neige.....	.....	Snow-Ball.	.....
Viorne Obier Stérile.....	.....	.....	.....	.....	.....	.....	.....

The *Pink Mezereon*, a low shrub, hardly three feet high, is covered with bunches of rose-coloured, sweet-scented flowers, almost before its leaves are visible

The *Slender-branched Deutzia* blossoms towards the end of June. Its flowers are borne grape-fashion, and the shrub, which is about five feet high, is very lovely and graceful. (See fig. 3.)

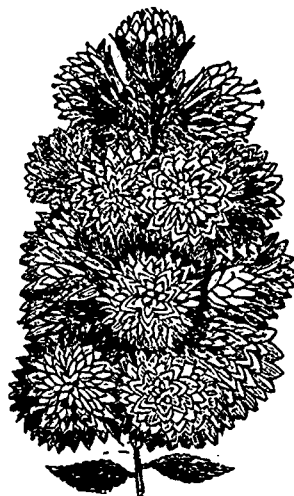


Fig. 3.—Flower of the Slender-branched Deutzia.

The *Japan Weigelia* is a very hardy shrub, from four to six feet in height, covered with rose-coloured flowers. These spring in groups from the axils of the leaves, and from the ends of the branches, giving a charming appearance to the plant. (See fig. 4.)

The *White Weigelia* only differs from the preceding in having white flowers.

The *Berberry* is covered, in spring, with bunches, (*grappes*) of yellow flowers which are succeeded by fruit which adorns it in winter (1). It is a hardy

shrub, about four to six feet high.

The *Purple-leaved Berberry* is very ornamental, on account

(1) And which can be made into delicious preserves if tied in bunches and, after boiling till clear, kept in syrup.

of the rich colour of its foliage. As regards other points, it is just like the common sort.

The *Hydrangea Paniculata* bears its flowers in masses of rich colour, and in our climate forms a pretty bush, about five feet high. It is covered with splendid white flowers, arranged pyramidally in the form of *panicles*, or little baskets, the effect of which is most lovely. It blossoms towards the end of August, a season when our gardens and laws are generally denuded of the beauties of their flowering shrubs. (See fig. 5).

The common and white Lilacs and the Persian Lilac, are so well known, that it is only necessary to recall the beauty of their flowers, and the sweet odours they spread abroad over the country in the spring. No shrub is easier of cultivation, which is, perhaps, the reason why it is so common in the province of Quebec.

The *Holly-leaved Mahony*, or *Ashberry*, is an evergreen, about two or three feet high. The leaves are covered with little spikes, and are of a beautiful greenish bronze lustre. In spring, it is covered with brilliant yellow flowers.

The *Double-blossomed Plum* is so covered with rosy-white flowers in spring that the leaves are hardly visible. It is very hardy, and grows to the height of three to four feet. (See fig. 6).

The *Syringa* is that freely growing bush, which on early summer evenings exhales such a powerful scent (1).

The *Plum-leaved Spiræa* is a pretty little bush, with leaves of a glittering green above, and silky or downy beneath.

(1) The stem of the leaves has a taste exactly like that of cucumbers.

The branches are fine, and, in spring, they are covered with the most dazzling white flowers.

*Billard's Spiræa* is a rose coloured variety which blossoms



Fig. 4 — Japan Weigalia.

Fig. 7.—Billard's Spiræa

through almost the whole summer. The flowers, rose-coloured, are placed on a long spike. (See fig. 7.)



Fig 5 — Hydrangea paniculata.

The *Snowberry*, a shrub well known here under the name *Boule de cire* (wax-ball) is covered with a mass of rose-

coloured flowers, which are succeeded by a white berry, about as large as a cherry; these remain on the bough long after the fall of the leaf.

The *Indian Currant* is a variety of the preceding, with a very small fruit and tiny leaves. The berry is red and about as large as a currant; they cling long to the tree, like the fruit of the other.

The *Privet*, generally employed for hedges, has spikes of pretty white flowers, followed by bunches of small black berries something like currants.

The *Snowball* (*Boule de neige*) deserves its appellation since it is covered, in spring, with balls of white flowers. When backed by masses of large trees it produces its most ornamental effects. Its cultivation is very simple. (See fig. 8)



Fig. 6.—Double-blossomed Plum.

All the shrubs and bushes which I have just described flourish in our province as far as 90 miles below the city of Quebec. They have almost all been tried by M. Auguste Dupuis, at the nursery Des Aulnaies, and have succeeded well. Many other shrubs flourish equally well, here, if covered in winter. I have not described them, knowing that their cultivation is difficult, and out of the reach of the greater number of the inhabitants of the province.

If these shrubs are planted with discrimination, they can be managed so as to have some of them in bloom during the whole summer. In order to facilitate this result, I subjoin a list, in which each plant is named according to the order of its coming into flower.

Mezereon  
 Honeysuckle  
 Upright Honeysuckle  
 Common Lilac  
 Common White Lilac  
 Persian Lilac  
 Ashberry  
 Double-blossomed Plum  
 Plum-leaved Spiræa

flowers from 1st to 15th of May.

flower from 15th May to  
 15th June.

Red Dogwood  
 Deutzia  
 Weigelia  
 Berberry  
 Syringa  
 Snowberry  
 Indian Currant  
 Privet  
 Snowball  
 Billard's Spiræa  
 Hydrangea  
 Bladder Senna

flower from 15th June  
 to 15th July.

The above are for the district of Montreal. For Three Rivers to Quebec a fortnight or three weeks must be allowed.

In conclusion, I may add that all ordinary garden soils are suited to these plants; they should be set with the same care as fruit trees require, and all the pruning they want is to keep them compact in appearance, and to remove the useless and dead limbs. Climbers, such as the Honeysuckles and the Virginia Creeper, should not be allowed to mount too rapidly; for in that case, the stem is sometimes left bare, and all the foliage is at the top. Every autumn, for three or four years, the plants should be cut back one third, at least; and afterwards all the wood beyond a certain height should be kept regularly pruned down after the fall of the leaf.

J. C. CHAPAIN.



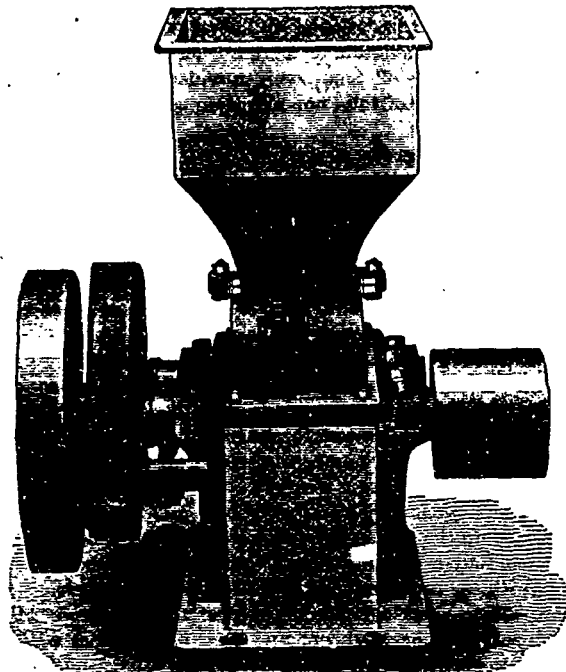
Fig 8.—Flower of Snowball.

**Beaconsfield Vineyard.**

I have only just time to say that on Monday, Sept. 26th, I visited this establishment, and was fairly surprised at the amount of work done since its commencement in the spring of 1880. There are about 70 acres of vines, and vine-outtings, of which 40 are of the variety called Beaconsfield. Many of the plants were in bearing, and though the earliest grapes were past their best, the Lindley and one or two others were in perfection. Moore's Early, Lindley, and Brighton, are to be the grapes, at least in my opinion, though the earliness of the old Beaconsfield must always tell in its favour. I observe that, in the French Journal, M. Provancher says that he doubts the regular ripening of the grape in this province.

How it may be in the lower part I do not know, but in the Island of Montreal all doubts are over; the vine has ripened its fruit regularly for the last three seasons: Hartford Prolific, Dutch Sweetwater, and Beaconsfield, to my certain knowledge, by the 20th of September at latest. On heavy clay, and where the trenching, pruning, covering before winter, &c., are neglected, I dare say vines don't answer; and, as far as I can see, that sort of treatment is what they have to expect in most parts of the province. As for wine, it is next to certain that dessert grapes will not do. We shall see next year, what sort of stuff the Italian grapes at Longueuil turn out. They are expressly wine grapes, and their produce ought to decide the question.

Between each two rows of vines are being planted a row of strawberries; Wilson's, Captain Jack, Sharpless, &c.; and there are about 10 acres of gooseberries and currants, besides a plantation of evergreens. The whole will be a sight to be seen, next year. A. R. J. F.



**The Newell Universal Grinder.**

This mill, which received a silver medal at the exhibition held last month at Montreal, is, now, in the hands of its proprietors Messrs. Newell and Chapin, New-York. The power required to drive the mill suited to farmers' work is two horses, and the meal produced is as fine as need be. Price \$150. The larger sizes are capable of crushing any thing, from quartz to paint. The agency for Montreal is at 118 Bonaventure Street.

The Randall Harrow is a most effective tool, in its proper place. On a ploughed surface, whether after grain or after grass, it grinds and pulverizes the soil as no other implement we have seen can do it. As a preparation for drilled crops, potatoes, &c., we can honestly recommend its use.

**Live and Carcase Weights of Stock.**

The eminent chemist, Mr. J. B. Lawes of Rothamsted, has kindly forwarded a pamphlet published twenty years ago, giving experiments made by him and his able colleague, Dr. J. H. Gilbert, on "The composition of oxen, sheep, and pigs, and of their increase whilst fattening." This pamphlet is a reprint from the Royal Agricultural Society's Journal (vol.



21, part ii.); and, although the experiments were made many years ago, the conclusions arrived at by Messrs. Lawes and Gilbert are still of vital interest to the present generation of stock owners and feeders. The main conclusions from the whole inquiry may be summarised as follows.

#### I.—FOOD AND INCREASE.

1. Fattening oxen, fed liberally upon good food, composed of a moderate proportion of cake or corn, some hay or straw chaff, with roots or other succulent food, and well managed, will, on the average, consume 12 to 13 lbs. of the dry substance of such mixed food, per 100 lbs. live-weight per week; and should give 1 lb. of increase for 12 to 13 lbs. dry substance so consumed. Sheep fattening under somewhat similar circumstances (but with a less proportion of hay or straw,) will consume about 15 lbs. of the dry substance of the mixed foods, per 100 lbs. live-weight per week; and should yield, over a considerable period of time, one part of increase in live-weight for about nine parts of the dry substance of their food. If the food be of good quality, oxen and sheep may give a maximum amount of increase for a given amount of total dry substance of food, even provided the latter contain as much as 5 parts of total non-nitrogenous to 1 of nitrogenous compounds.

2. Pigs fed liberally upon food composed chiefly of corn will consume from 26 to 30 lbs. per 100 lbs. live weight per week of the dry substance of such food. They should yield 1 part of increase in live weight for 4 to 5 parts of the dry substance of the food. They may give a maximum amount of increase for a given amount of dry substance of such food, if it contain as much as 5 or even 6 parts of total non-nitrogenous to 1 of nitrogenous compounds.

[The cereal grains contain on the average rather more than 6 parts of total non-nitrogenous to 1 of nitrogenous compounds; and the leguminous seeds often not much more than 2 parts to 1. Oilcakes and foreign corn contain rather more than six-sevenths, and home-grown corn, hay, &c., rather less than six-sevenths of their weight of "dry substance." Common turnips generally contain about one-twelfth; swedes about one-ninth, mangolds about one-eighth, and potatoes about one-fourth of their weight "of dry substance."]

3. With as much as 5 or 6 parts of total non-nitrogenous to 1 of nitrogenous compounds, in the dry substance of the fattening food of oxen, sheep, and pigs, the increase will probably be very fat. In the earlier stages of growth and feeding, a lower proportion of total non-nitrogenous to nitrogenous compounds is desirable.

4. Taking into consideration the cost of the foods, and the higher value of the manure from those which are rich in nitrogen, it is frequently the most profitable for the farmer to employ—even up to the end of the feeding process—a higher proportion of nitrogenous constituents in his stock foods, than is necessary to yield the maximum proportion of increase in live weight for a given amount of dry substance of food.

#### II.—PROPORTION OF PARTS.

1. In proportion to their weight, oxen contain considerably more of stomachs and contents than sheep, and sheep considerably more than pigs; pigs considerably more of intestines and contents than sheep, and sheep more than oxen. Oxen, sheep, and pigs, have nearly equal proportions of the other internal organs—namely, heart and aorta, lungs and windpipe, liver, gall-bladder and contents, pancreas, and milt or spleen, taken together. They have also nearly equal proportions of blood, but the pig rather the least.

2. In proportion to their weight, sheep yield rather more internal loose fat than oxen, and pigs very much less than either.

3. As oxen, sheep, and pigs mature and fatten, the internal

organs increase in actual weight; but they diminish in proportion to the weight of the animal.

4. Of the internal offal parts, the loose fat alone increases both in actual weight and in proportion to the weight of the body, as the animals mature and fatten.

5. As oxen, sheep, and pigs mature and fatten, the total "offal" increases in actual weight, but diminishes in proportion to the weight of the body; the "carcasses" increase both in actual weight, and in proportion to the weight of the body.

6. Well bred and moderately fattened oxen should yield 58 to 60 per cent. carcase in fasted live weight; excessively fat oxen may yield from 65 to 70 per cent. Moderately fattened sheep (shorn) should yield about 58 per cent. carcase in fasted live weight; excessively fat sheep may yield 64 per cent., or more. Moderately fat pigs, killed for fresh pork, should yield (including head and feet) about 80 to 82 per cent. carcase in fasted live weight; large well-fattened pigs, fed for curing, will yield a considerably higher proportion. In each of the three descriptions of animal, the proportion will, however, vary much according to breed, age, and condition.

7. Of the increase over the final six months of liberal feeding, of moderately fat ( $1\frac{1}{2}$  to  $1\frac{1}{2}$  year old) sheep, 65 to 70 per cent. may be reckoned as saleable carcase. Of the increase over the final six months of liberal feeding of very fat ( $1\frac{1}{2}$  to 2 year old) sheep, 75 to 80 per cent. may be reckoned as saleable carcase. Of the increase over the final two or three months of liberal feeding of moderately fat pigs, about 90 per cent. (including head and feet) may be reckoned as saleable carcase.

8. When the fattening food of oxen, sheep, and pigs, contains less than about 5 parts of non-nitrogenous to 1 of nitrogenous compounds, the proportion of gross increase for a given amount of dry substance of the food, will not increase with the increased proportion of nitrogenous compounds; the proportion of carcase to the live weight will probably be somewhat less; and the carcasses themselves will be somewhat more bony and fleshy, and less fat.

#### III.—CHEMICAL COMPOSITION OF THE ANIMALS.

1. Of total dry substance (excluding contents of stomachs and intestines,) the entire body of a calf contained about 34, of a fat ox  $48\frac{1}{2}$ ; of a fat lamb nearly 44; of a fat sheep about 50; of a very fat sheep nearly 60; and of a moderately fat pig about 55, per cent. Of leaner animals, the body of a half-fat ox contained  $40\frac{1}{2}$ , of a store sheep,  $36\frac{1}{2}$ , and of a store pig  $39\frac{1}{2}$ , per cent., of total dry substance.

2. Of dry nitrogenous compounds, the entire body (including therefore, besides flesh, the pelt, hair or wool, bones, and internal organs,) of a fat calf contained about  $15\frac{1}{2}$ ; of a fat ox  $14\frac{1}{2}$ ; of a fat lamb  $12\frac{1}{2}$ ; of a fat sheep  $12\frac{1}{2}$ ; of a very fat sheep 11; and of a moderately fat pig 11 per cent. The store animals contained from 2 to 3 per cent. more nitrogenous compounds than the corresponding fat ones.

3. Of dry fat, the entire body of a fat calf contained about  $14\frac{1}{2}$ ; of a fat ox 30; of a fat lamb  $28\frac{1}{2}$ ; of a fat sheep  $35\frac{1}{2}$ ; of a very fat sheep  $45\frac{1}{2}$ ; and of a moderately fat pig 42, per cent.

4. In the store condition, the entire bodies of calves will probably contain from  $3\frac{1}{2}$  to 4 per cent.; of oxen from  $4\frac{1}{2}$  to 5 per cent.; of sheep from 3 to  $3\frac{1}{2}$  per cent.; and of pigs from  $2\frac{1}{2}$  to 3 per cent. of mineral matter.

5. In the fattened condition, the entire bodies of calves and oxen will probably contain from  $3\frac{1}{2}$  to 4 per cent.; those of lambs and sheep from  $2\frac{1}{2}$  to  $2\frac{3}{4}$  per cent.; and those of pigs from  $1\frac{1}{2}$  to  $1\frac{3}{4}$  per cent. of mineral matter.

6. The mineral matter of the entire bodies of the animals may be reckoned to contain, on the average, nearly 40 per cent. of phosphoric acid, and about 6 per cent. of potash,

7. The mean composition of 6 animals analysed in a condition fit for the butcher, shows about 3 per cent. mineral matter, 13 per cent. nitrogenous compounds, and 33 per cent. fat; in all about 49 per cent. total dry substance, and 51 per cent. water, and contents of stomachs and intestines.

8. Even in a reputed store or lean condition, the entire bodies of oxen, sheep, and pigs, may contain more dry fat than dry nitrogenous compounds.

9. The entire body of a moderately fat ox contained more than twice as much; that of a fat lamb more than twice as much; that of a fat sheep nearly three times as much; that of a very fat sheep four times as much; and that of a moderately fat pig nearly four times as much dry fat as dry nitrogenous compounds.

10. The proportion of mineral matter in the bodies of oxen, sheep, and pigs, rises and falls with that of the nitrogenous compounds.

11. The carcasses of moderately fat beef will probably contain from 50 to 55 per cent.; of moderately fat mutton from 55 to 60 per cent.; of very fat mutton 65 per cent. or more; of moderately fat pigs 60 to 65 per cent.; and of very fat pigs more still, of total dry substance. The carcasses of fat lamb about 50 per cent.; and veal carcasses only from 35 to 40 per cent., of total dry substance.

12. The carcasses of moderately fat beef will probably contain from 2 to 2½ times; of moderately fat mutton from 3 to 4 times; of very fat mutton from 5 to 6 times; of pigs killed for fresh pork about 4 times, and of pigs fed for curing, a considerably larger proportion of fat to 1 of nitrogenous compounds.

#### IV.—COMPOSITION OF INCREASE.

1. The increase of liberally fed oxen, over six months or more of the final fattening period, will probably consist of 70 to 75 per cent. total dry substance; of which 60 to 65 parts will be fat, 7 to 8 parts nitrogenous compounds, and about 1½ parts mineral matter.

2. The increase of liberally fed sheep, over 5 or 6 months of the final fattening period, will probably consist of 75 per cent. or more, of total dry substance; of which 65 to 70 parts will be fat, 7 to 8 parts nitrogenous compounds, and about 1½ parts mineral matter.

3. The increase of pigs fed for fresh pork, over the two or three final months on fattening food, will probably consist of 67½ to 72½ per cent. total dry substance; 60 to 65 per cent. fat, 6½ to 8 per cent. nitrogenous substance, and considerably less than 1 per cent. mineral matter. The increase over the last few months of high feeding of pigs fed for curing, will contain considerably higher percentages of fat and total dry substance, and lower ones of both nitrogenous compounds and mineral matter, than that of more moderately fattened animals.

#### V.—RELATION OF CONSTITUENTS IN INCREASE TO CONSTITUENTS CONSUMED.

1. Sheep, fattening for the butcher on a good mixed diet, will seldom carry off more than 3 per cent. of the consumed mineral matter. The exact proportion will depend very much on the proportion of the mineral matter to the digestible organic constituents of the food. They will probably carry off less than 5 per cent. of the consumed nitrogen, if the food be comparatively rich, and more than 5 per cent. if it be comparatively poor, in nitrogen. They should store up about 10 parts of fat for every 100 parts of non-nitrogenous substance consumed.

2. Pigs, liberally fed on fattening food, will probably carry off from 6 to 10 per cent. of the consumed nitrogen. The proportion will be the less the richer the food, and the greater the poorer the food in nitrogen. They should store up about

20 parts, or more, of fat, for every 100 parts of non-nitrogenous substance consumed.

3. Sheep, fattening for the butcher on a good mixed diet, should give about 9 parts dry increase—consisting of about 8 parts fat, 0.8 to 0.9 parts nitrogenous substance, and about 0.2 part mineral matter—for 100 parts total dry substance consumed. More than 90 parts of the dry consumed substance are, therefore, expired, perspired, or voided.

4. Pigs, liberally fed on fattening food, should give 15 to 18 parts of dry increase—consisting of 13 to 16 parts fat, 1½ to 2 parts nitrogenous substance, and less than 0.2 part mineral matter—for 100 parts total dry substance consumed. There will, therefore, be 82 to 85 parts of the consumed dry substance expired, perspired, or voided.

5. Pigs were found to store up four to five times as much fat as was supplied ready formed in their food. If the produced fat were formed from starch, about 2½ parts would be required for the formation of 1 part of fat. If the fat were so formed, about one-third of the total dry substance of the fattening food would contribute in a pretty direct manner to the formation of about half that amount of dry increase. In the sense here supposed, only about two-thirds (instead of 82 to 85 per cent.) of the dry substance of the food would be expired, perspired, or voided, without directly contributing to increase.

The comparative value of our current fattening food-stuffs, as a source of saleable animal increase, depend more on their amount of digestible and assimilable non-nitrogenous, than on that of the nitrogenous constituents. But, as a source of manure, their value will be the greater, the higher their proportion of nitrogenous compounds.

#### Cheap Ammonia.

It seems that there is, at last, a chance of getting a supply of ammonia at a lower rate than heretofore. A new process of treating coal in gas-making has been invented, and is working successfully at Bessèges, and also at the works of the Great Western Railway at Paddington, London. It is reported by Mr. N. Angus Smith, inspector under the Alkali Acts, that the increased production of ammonia per ton of coal converted into coke is something prodigious. As the gentleman in question is a practical man of science, I am inclined to think there is something in it. It won't, I presume, make much difference to us, as we shall probably send our sulphate of ammonia to England as usual.

A. R. J. F.

#### Live Stock in Virginia.

A most welcome thaw set in on the 8th inst., and the snow is rapidly going away. We have had eight weeks very severe weather, most trying to man and beast, and, as little winter shelter is provided here for stock, losses in sheep, lambs, and cattle have been very heavy, even when liberally supplied with fodder, which has been most difficult to do, as the negro will hardly turn out in the cold to dig out and handle corn-stalks, one mass of snow and ice. Many of the lambs of forward ewes were frozen stiff as soon as dropped; and one morning, with the thermometer at 19° below zero, we had several ewes frozen in their lairs. Our imported sheep, especially the *Hampshires*, stood the cold and sleet better than the natives, and, with their lambs, are doing nicely.—*Live Stock Journal*.

#### Large Butter Yield.

I notice that one of your correspondents is disposed to doubt that a Jersey cow in the United States produced 778 lbs. of butter in a single year; but what will he think of a friend of the owner of the said cow asserting as his belief,

that if an account had been kept of her yield. the preceding year, it would have amounted to at least *nine hundred pounds!* Please recollect that America is a big country.

The English Agricultural Commissioners, in a report of what they found in their line, in a visit to the United States in 1879, said that our turkeys were very small, and that none ever attained, as in England, the weight of 40 lbs. I regret to say that this is a great mistake in their report; for a poultry breeder, in Kentucky, affirms—and he is ready to make oath to it—that he has one that weighs *fifty-two and a half pounds!* I beg the Commissioners to make a note of this, and hereafter be a little more careful in under-rating the products of America.

Pray did they never hear of the famous Colonel Nimrod Wildfire of Kentucky, who modestly dubbed himself half horse and half alligator? He declared he could run faster, swim farther, dive deeper, stay under longer, and *come out drier* than any man in "old Kaiatuck." He also had the handsomest wife and the prettiest children, and could whip his weight in wild cats (these last are the ferocious lynx of America), so judge of his prowess!

The Kentuckians are called the Gascons of the United States; but what is Colonel Nimrod Wildfire in comparison to a couple of French Gascons? A pair of these one day, in a confab together, were boasting of their superior faculties. One declared that his eyesight was so acute that he could see a mouse taking his round on the top of a fortress wall *four miles distant.* His companion, not to be outdone by this marvellous faculty, replied that he could not see quite so far, but he could *hear* the mouse *trot!* *Live Stock Journal.* (Eng.)

### Jerseys at home.

THEIR QUALITIES AND MANAGEMENT.

Jersey is but a small island; if it were square, it would just be  $6\frac{1}{2}$  miles each way. Yet this little spot manages to support about 12,000 cattle, that is, roughly speaking, one for every two acres of its surface (rocks, roads, and wastes, and house-room for 60,000 people included). And it has done this for the last twenty years, at least; for the census of 1861 gives the number of cattle in Jersey as 12,037. What is still more remarkable, it exports every year above 2,000 head (the average export, by the Customs' returns, for the last eighteen years being 2,049), nearly one for every ten acres. Now the total number of cattle in England only averages one head to ten acres; it therefore follows that, in proportion to its size, Jersey exports, every year, as many cattle as England contains. In other words, if England were to export cattle at the same rate, her whole stock would be swept away in a single year, not a hoof would be left behind.

The system that enables Jersey to do this must be worth considering, particularly in these days, when the English farmer is at his wits' end what to do, as his sheet anchor, wheat-raising, lets him drift upon the rocks. But another, and not less striking, result of our management is the

### BREED OF CATTLE

it has produced. Hitherto it has been the accustomed fashion in England to look upon Jerseys as the curled darlings of fortune—pretty playthings for the rich—lovely little objects for the lawn—yielding a small quantity of very rich milk, cream, and butter, for those wealthy enough to afford such extravagance. That they are small, we admit—beautiful, we grant. But why shouldn't they be small? and why shouldn't they be beautiful? Is the Fox-terrier less plucky, less useful, less fit for his especial duties, because he is not a Mastiff? Fitness for the work is the thing; all the rest, tinsel and buckram. The office of the Jersey is to convert grass and

roots into butter, not beef. She is not bred to be eaten; she is too valuable as a butter machine. Then, why should she be larger? And, far from being the rich man's luxury, she is, more than any other breed, the poor man's necessity, the small farmer's best help. This is very easily and simply proved (in a general way) by our Island experience. We have seen that 12,000 cattle are here kept in a place six miles square, where rent averages £9 *an acre*, where the farms are smaller than anywhere else in the world, where every farmer works with his own hands, and is brought face to face with the wolf he must keep from the door. What do we see?—the island eaten up with cows, and the farmers beggars? On the contrary, the whole island is like a garden, thickly strewn with comfortable well-to-do houses and homesteads; we find ease and comfort everywhere, poverty and want unknown, beggars none. I do not say this is all the produce of cows, but I do say that our farmers (who have so close a fight, and yet are so wonderfully successful, must understand their business, and do not keep 12,000 cattle at a loss. If Jerseys pay here, with land at £9 an acre, can they be unprofitable in England, or anywhere else where butter finds a market? But we go much further; we hold that the Jersey cow is the most beautiful of her species, and the most profitable.

### HER MERITS.

We will sum them up as shortly as we can. We hold that the Jersey is the most profitable of butter cows—she will yield more butter (for her size and the food consumed) than any other breed whatever; that a good Jersey will yield half her own weight of butter in a year—she rarely exceeds 800 lbs. in weight, and her average here is about 700 lbs.—cows that yield half that weight of butter in a year are to be found in every good herd; that her milk is richer than that of any other breed, six quarts very commonly producing a pound of butter—there is therefore less water to handle, to milk, manage, and find pans for; that her butter is better in colour, better in texture, and better in flavour, and commands a higher price; that she comes into profit early, her first calf being commonly dropped when she is two years old, and often before; that she is gentle and docile, easily managed (in Jersey at least) by the women and children of the household, who lead her to the field, tether her, lead her home again, milk her, and manage her generally, without any assistance from the stronger hands, which are left free for other work.

Lastly, that she is equally at home in the arctic cold of Canadian winters, and the tropical summers of the Gulf of Mexico. Letters now lie before me from the Secretary of the Jersey Cattle show at Mobile, were they succeed perfectly; and from Mr. Burnham (purchaser of the famous Coomassie) in Connecticut, who finds them do equally well in the Northern States; and there are several large herds in Canada, to which the Hon. Mr. Cochrane (of Shorthorn fame) is just adding another. May we not fairly challenge the world to produce another breed with such credentials?—*Langley House, Jersey.*

### A Canadian Commissioner reporting on British markets.

In the summer of 1880 Mr. Richard Gibson, a member of the Ontario Agricultural Commission, visited England, and during a brief stay made observations of the British market for Canadian agricultural products. From these observations, embodied in the report of the Commission, we extract the following:

"In conversation with several butchers and dealers, they all took the same view of the Canadian cattle trade, viz.: That the best time to ship is from February to August; that

the grass fed stock should, for a few weeks previous to shipping, be fed some grain, and so gradually prepared for the change to the dry food used on the voyage; that the stall fed cattle arrive in good condition without loss of flesh, but that the grass fed lose considerably. Unanimously they all speak out loud. 'Why don't your people use better bulls?' We know that you can grow as good cattle as can be found anywhere, for we have seen some sell in public this spring for £45 each, but not one in ten of the ordinary stock you send has paid for his keep. Send them of good quality and breeding, and then, if any accident happens so that they are bruised too badly to slaughter for market, they will sell for all that they are worth to be grazed for a few weeks; but no English grazier would ever think of buying such rough, coarse specimens as most that you send, and if your farmers had to pay rent for, instead of owing their farms, they would soon be compelled to breed better stock.' 'Again, a good trade could be done in stores, if we could get them of right quality. Two-year-old steers such as we describe, would be worth more in public market than the rough old cows and steers you have sent.' I made some inquiries as to the benefit Canada derives from the live stock trade. The general opinion was that it was worth fully one cent per lb. over the American cattle, but that owing to the large competition for space, and the limited shipping accommodation from Montreal, or rather the monopoly of the carrying trade by one or two wealthy companies, our farmers lose that benefit, as the shipper has to pay about that amount extra per head over what the American shippers were paying from New York.

'Sheep'—same complaint as to quality. 'Why do your farmers send us nothing but rams and old ewes? Wethers are worth from five to eight cents more per lb.' 'Why?' 'Because they contain so much more flesh that is lean meat of a much superior quality. To obtain the highest market price your sheep breeders should use a Down cross on your common stock, and save your ram lambs for wethers.' 'Which variety of the Down would you recommend?' 'Southdown or Hampshire, because they contain the most flesh. Your sheep have large enough frames, but carry too much useless fat or tallow. The larger Downs, such as Oxfords or Shropshires, would not give you the lean meat as readily or satisfactorily as the smaller and purer varieties of Downs.'

Along with Mr. Dyke, Dominion agent, Liverpool, I called upon some of the largest American produce importers. We were kindly received, and every opportunity was afforded us of examining and testing the different brands of cheese and butter. The best makes of butter are from the Western States; a splendid consignment had just arrived from Illinois: we examined several kegs, and found them uniform in quality, taste, and colour—in fact, as the merchant observed, 'One is a sample of the lot. I can send the whole of that consignment out to my customers with perfect confidence without opening a keg, they are always alike.' Upon asking to see some Canadian—several kegs were opened, but not one was uniform, except, I am sorry to say it, uniformly bad—soft, bad flavoured, and of different colours. Upon asking the question, 'What is our remedy?' 'Your only remedy is to establish creameries; formerly butter from this very district, pointing to the lot from Illinois, 'was no better than yours—now it is the finest brand imported into Liverpool—better than any we get from Ireland.' N. B. Agriculturist.

#### Jamieson on Phosphatic experiments.

We cannot pretend, in the brief space at our disposal in this column, to convey to the reader all the interesting and valuable points in Mr. Jamieson's report. A few of the salient features, however, may be indicated. Three year ago experi-

ments with crops in rotation were introduced alongside the continuous turnip-producing plots. The former, of course, possess most value to the farmer. Beginning with turnips in 1878, oats sown out with grass seeds in the usual way followed in 1879. Last year, therefore, the experimental crop was hay. Taking the results of the season's work, both on the rotation and the other plots in 1880, Mr. Jamieson assures his readers that he has as yet no reason to alter or modify the general conclusions announced a year or two ago, the principal of which were—(1) that phosphates of lime decidedly increase the turnip crop, but that farmers need not trouble themselves to know whether the phosphates are of animal or mineral origin; (2) that soluble phosphate is not superior to insoluble phosphate to the extent that is generally supposed; (3) that nitrogenous manures have little effect on turnips used alone, but when used along with insoluble phosphates increase the crop; that the addition of nitrogen to soluble phosphates does not seem to increase the solids or dry matter in the crop; that there is no material difference between the effects of equal quantities of nitrogen in nitrate of soda and sulphate of ammonia; (4) that fineness of division seems nearly as effective in assisting the braird and increasing the crop as the addition of nitrogenous manures. Hence the most economical phosphatic manure for turnips is, probably, insoluble phosphate of lime, from any source, ground down to an impalpable powder.

Mr. Jamieson wishes it to be distinctly borne in mind that when speaking of insoluble mineral phosphate he refers to the "well-known massive forms of phosphate of lime coprolite), and not to crystalline forms of phosphate of lime." Nor will, he adds, their Aberdeenshire conclusions apply to *apatite*, or to "phosphate of alumina and phosphate of iron, our experience of both of which is that their action is *nil*, or so slight and slow as not to be regarded as having manurial value."

Mr. Jamieson is the great promoter of the theory that finely ground undissolved phosphate is equal in effect from beginning to end of the turnip growth, i. e. in quickly starting the germination to the final production of a full crop, to the dissolved phosphate; but he holds the same opinion that I expressed so strongly last August (not for the first time), that our Canadian phosphate (crystalline) or *apatite* is worth literally nothing unless dissolved in sulphuric acid. A. R. J. F.

#### Scotch Cattle for America.

In the end of last week another very valuable consignment of Scotch cattle were shipped at Liverpool for Mr. Whitfield, of the Model Stock and Dairy farm, Rougemont, Province of Quebec, Canada. On the 30th of June last year, it may be remembered, the very important consignment of forty-eight head of different breeds of cattle, which were mostly selected by Mr. John Grant, Bogg of Advie, Strathspey, were shipped at Glasgow for the same gentleman. On this occasion, Mr. Grant was requested to send something that would likely take a good position at the Dominion Show at Montreal in the month of September, after ninety days of quarantine. With a view to this, the following selection has been made, viz:—Four promising shorthorn heifers, bought from Wm. Duthie, Collynie, Aberdeenshire, 'Beauty 20th,' roan, and 'Florette,' red, by the Upper-mill-bred bull 'Bromley' (36,289); 'Young Baroness,' red, by the Sittyton-bred bull 'Clapham' (37,999); and 'Nancy Lee,' roan, by the Booth bull 'Rapid Foggathorpe' (43,868), bred by Lord Polwarth; also a shorthorn bull calf, roan, calved 30th December 1880, dam 'Mysic,' by 'Red Errant' (22,780), sire 'Duke of Cambridge,' bred by Mr. Bruce, Myreton, by 'Cambridge' (33,268). The following polled cattle make up the consign-

ment.—Three of the valuable Erica family from the herd of Mr Robertson, Mains of Aberlour, comprising the six-year-old, sweet, stylish cow 'Etta' (2,225), and a cow calf at foot, by 'Souter Johnny' (1,615), also her one-year-old heifer 'Effie,' by 'Moraystown' (1,439). The above form a grand family group, and, mated with the bulls already in Mr. Whitfield's herd, viz, the famous 'Judge' (1,150), and 'Rougemont,' out of 'Siren' (1,915), by 'Young Viscount' (736), both bred at Ballindalloch, no doubt something will be heard of in course of time. From Ballindalloch goes an excellent two-year-old heifer, 'Maid of Cyprus' (4,177), dam 'Maid of Orleans 2nd' (1,177), by the Erica bull 'Elecho' (595). From Auchindellan goes 'Gipsy' (4,006), a stylish four-year-old cow, sire 'Judge' (1,150), dam 'Lily' (1,249).

### AGRICULTURE.

Paris, July.

Mr. Pasteur's discovery for the protection of sheep and cattle against the decimating malady *charbon*, is naturally making practical way. That eminent scientist found that the cause of the disease in question, was due to animalcules which infected the blood, feeding on the globules, extracting from the latter their vital principles, which after exhaustion, death ensues. A drop of the infected blood introduced to the system of sheep and cows, invariably produced death within 24 or 72 hours, and if that drop of blood were mixed with a volume of water as large as the earth, the germs of the disease, that is to say, the animalcules, would still retain their destructive powers. But if that drop of virulent blood was heated to 109 F., it lost its venomous property, and more extraordinary still, if an animal was inoculated with blood so prepared, it acted as a preservative vaccine. The explanation is, that the animalcules propagate themselves in two manners; first, that of threads, like mushrooms or the leaven of beer, and second, that of corpuscles or spores, atoms as small and as shining as particles of sand. Now the temperature of 109 degrees has the effect of preventing the animalcules passing into the second or spore stage, or at least changing the conditions necessary for exercising their poisonous influence. The agricultural society of Melun placed sheep, hullocks, and cows, at the service of Mr. Pasteur to be experimented upon. All the animals were healthy; those inoculated with the virus of charbon died without exception: those inoculated with the same virus, but whose virulence had been modified by heat, perfectly resisted the infection.

M. Lesage, of Fresne, in the department of the Loiret, is repeating the experiments of M. Pasteur on 139 sheep, 8 oxen, and 4 cows: so far the results have been identical, and more important for the preservative efficacy of the vaccine, as the region of Fresne is notorious for the prevalence of the *charbon* malady. M. Pasteur has asserted, that the germs of the disease are brought up by worms, from the soil where animals that have died from the plague have been interred, stock subsequently grazing over such ground catching the infection. To test this important point, several agriculturists have buried, in portions of pasture land, stock that have died of charbon; these spots have been enclosed, and next year healthy animals will be penned therein, and so test the theory of Pasteur.

Influenza exists very extensively among horses, in and around Paris. M. Bouley, the chief Vet. in France, recommends the immediate separation of the afflicted animals, placing them in bivouac, and administering during a week, 3½ ounces of Glauber's salts and acetate of ammonia, on alternate days, either in mashes or drinks. The stalls vacated by the diseased horses, ought to be well disinfected.

The harvest has commenced in the south of France: this

is some weeks earlier than usual, and due to the exceptionally warm season. Some of the new grain has been threshed. It is impossible to express a definite opinion about the yield, as the granary of France has not yet come under the sickle. Two facts worthy to be noted. The general employment of reaping machines, and of steam for threshing, as well as for lifting water to irrigate meadows, and flood vineyards—the real preservative against the phylloxera. The reaper cuts and makes the corn into sheaves better than either scythe or sickle, the demand is now to invent a mechanical plan for tying the sheaves (1). The comet, to judge from the opinions of the peasantry, is a happy omen, in fact it is considered to have more influence on harvests and vintages than the sun has.

Farmers by dire necessity have of late been compelled to never purchase any fertilizers without having the analysis of a sample, and paying according to that analysis. The same salutary measure is being applied to concentrated aliments imported for fattening stock. The difference in nutritive value is so marked, that an agriculturist who buys merely on the name of a product, may experience a serious deception. In the case of rice flour, the per centage of protein matters may vary from 5 to 12 per cent, and of fatty substances from 2 to 11 per cent. In the cases of oil cakes and distilling refuse, the difference between these nutritive materials may, and do, vary, from 12 to 36 per cent; yet vendors not the less demand a common price. Let agriculturists then purchase feeding concentrated stuffs, following analysis, and take from the latter, as criterion of value, the largest percentage of protein and fatty matters.

In the north of France and Normandy, very many farmers cultivate their beet for forage, by sowing in nurseries, and then transplanting; this year the drought has so told on the nurseries, that cultivators have been compelled to sow directly. The white carrot, with green crown, is very promising and has escaped the attacks of insects: forage parsnips and cabbages are splendid. In the apple districts the orchards present two periods of flowering, so that if the first blossoming falls a victim to atmospheric influences, the second generally escapes. Apple growers begin to find it is more remunerative to export the fruit, than to convert it into cider. An agriculturist of the Vosges states, that when July is dry, and root crops next to a failure, with a skim plough and harrow he freshens the soil and sows buck wheat which will be ready for cutting at the end of August and supply forage up to November; in August, after the grain is removed, he ploughs in a light manuring, sows winter turnips, and has excellent feeding during March and April (2).

A curious change in agricultural manners is taking place in France. Before railways, fairs, fixed but not frequent, were a necessity, as well as a good: at present it has been found that there are too many fairs, hence too little attractions for buyers, who cannot be expected to attend a rendezvous, where there are only a dozen of fat sheep and a pair of fat cows offered. The expense of transporting less than a waggon load of animals by rail, is heavy for a buyer; the consequence is, sellers are left at the mercy of local butchers, or they must try a more distant fair. This parcelling out of commercial transactions is bad. Again; the frequency of fairs induces the farmer to quit his operations, to incur expens, and risk dissipation.

Mr. Ricciardi attributes the fertility of the soils derived from Mt. Etna, and generally lands of volcanic origin, as in the Auvergne, to the predominance of phosphoric acid. Professor de Gasparin joins issue with this conclusion, assert-

(1) This seems to be perfectly well done by the new string-binder shown at the R. A. S. of England's Derby show; McCormick's twist-binder.

(2) The common practice on all English sheep farms.

ing, that the superabundance of phosphoric acids counts but for little in the phenomena of vegetation. Very fertile soils reveal only from one to two-thousandth parts of phosphoric acid. The soils around Etna owe their richness to their muddy formation and climate, the latter accelerating the decomposition of the lava, and facilitating a provision of organic matters. The soil of the celebrated vineyard of Laeryma-christi contains 21 per cent of organic substances (1).

At the Versailles regional agricultural show, the display of implements was very superior. Among novelties, was an improved plan for protecting the hands of workmen feeding a threshing machine: it consists of a box containing a shaft, which has a vertical and horizontal motion, to seize the straw from below upwards, then throwing it forwards, so that it may arrive behind springs which will send it into the mouth of the beaters. The same machine was provided with an automatic apparatus for weighing, bundling, and tying (still with wire unfortunately) the straw on leaving the shaker.

The phylloxera battle continues; "no surrender" appears to be the motto of the combatants: the insect progresses in its invasion, followed by insecticides, of more or less efficacy; these it is now demonstrated, do not suit all soils alike.

A discussion is taking place as to the discoverer of the artificial incubator; the Egyptians hatched eggs in the sun, and others, by means of boiling water: but it was only in 1873, that the idea was practically solved by M. Rouillier, who, instead of obtaining only 7 per cent of chicks, secures 70 by his hatchers. He employs 80 workmen to supply orders for the latter, and despatches 40,000 chicks yearly, in batches of 25,50 and 100, by rail, and to every part of Europe. The incubators are estimated to supply 15 millions of barn-door fowls annually to the market.

## CORRESPONDENCE.

### The Management of Cows.

Sir—Having made a few remarks through the Journal of Agriculture on the subject of dairy stock, I am again called upon to contribute something more to that honorable branch of husbandry. I call it honorable because it is presided over by the most honorable class of, not only our great dominion, but of the whole of the agricultural world, namely *Farmers' wives and daughters*. Now Mr Editor, there is no branch of dairy farming can compare in importance with the management of cows; the highest success will depend very much upon it, whatever breed be selected, and whatever amount of care and attention be given to the points of animals; for experience will show that very little milk comes out of the bag, that is not first put into the throat. It is poor economy therefore, to attempt to keep too many cows for the amount of feed we have; for it will generally be found that one good cow, well bred and well fed, will yield us much as two ordinary cows kept in the ordinary way, while a saving is effected both in labour and room required, and in the risks on the capital invested. If the larger number in poorer feed is urged for the sake of the manure, which is the only ground on which it can be put, it is sufficient to remark that it is a very expensive way of making manure. It is not too much to say that a proper regard to profit and economy would require many an Eastern Townships' farmer to sell off nearly half his cows, and to give the whole of his hay and roots to the remainder.

Now, sir, let me give you the statement of a German farmer, who was one day visited by some Swiss dairymen from over the border, who desired to buy of him all the milk of his cows for the purpose of making cheese. Not being able to agree upon the terms, he finally proposed to let them take the entire charge of his cows, and agreed to furnish feed amply sufficient, the Swiss assuming the whole care of feeding it out and paying a fixed price by measure for all the milk. "I found myself at once," says he, "under the necessity of selling almost half my cows, because the Swiss required nearly double the quantity of fodder which the cows had

previously had, and I was well satisfied that all the produce I could raise on my farm would be far from sufficient to feed in that way the number of cows I had kept. I was in despair at finding them using such a quantity of the best quality of feed, though it was according to the strict letter of the contract, especially as I knew that I had given my cows rather more than the quantity of food recommended by men in whom I had perfect confidence: while Von Thaer names twenty-three pounds of hay, or its equivalent, as food sufficient for a good sized cow, I gave mine fully twenty-seven pounds. But if the change effected in the management of my cows was great, the result was still more striking; the quantity of milk kept increasing, and it reached the highest point when the cows attained the condition of the fat kind of Pharaoh's dream. The quantity of milk became double, triple, and even quadruple, what it had been before; so that if I should compare the product with that previously obtained, a hundred pounds of hay produced three times more milk than it used to produce with my old mode of feeding. Such results of course attracted my attention to this branch of my farming; it became a matter of pleasure, my observations were followed up with great care, and during several years, I devoted a large portion of time to it. I even went so far as to procure scales for weighing the food and the animals, in order to establish exact data on the most positive basis."

The conclusions at which he arrived were, that an animal, to be fully fed and satisfied, requires a quantity of food in proportion to its live weight; that no feed could be complete that did not contain a sufficient amount of nutritive elements: hay, for example, being more nutritive than straw, and grains than roots. He found, too, that the food must possess a bulk sufficient to fill up to a certain degree the organs of digestion, or the stomach; and that to receive the full benefit of its food, the animal must be wholly satisfied; as, if the stomach is not sufficiently distended, the food cannot be properly digested, and of course many of the nutritive principles it contains would not be perfectly assimilated. An animal regularly fed eats till it is satisfied, and no more than is requisite. A part of the nutritive elements in hay and other forage plants is needed to keep an animal on its feet, that is, to keep up its condition; and if the nutrition of its food is not sufficient for this, weight decreases, and if it is more than sufficient, the weight increases, or else this excess is consumed in the production of milk or in labour. About one-sixtieth of their live weight in hay, or its equivalent, will keep horned cattle on their feet; but in order to be completely nourished, they require about one thirtieth in dry substances, and four thirtieths in water, or other liquid, contained in their food; the excess of nutritive food, over and above what is required to sustain life, will go in milch-cows generally to the production of milk, or to the growth of the fœtus, but not in all cows to an equal extent, the tendency to the secretion of milk being far more developed in some than in others.

With regard to the consumption of food in proportion to the live weight of the animal, however far it may apply as a general principle, it should I think be taken with some qualifications. The proportion is probably not uniform as applied to all breeds indiscriminately, though it may be more so as applied to animals of the same breed. Bakewell's idea was, that the quantity of food required depended much on the shape of the barrel, and it is well known that an animal of a close, compact, well rounded barrel, consumes less than one of an opposite make.

The variations in the yield of milch cows are caused more by the variations in the nutritive elements of the food than by a change of the form in which it is given. "A cow kept through the winter on mere straw," says a practical writer on this subject, "will cease to give milk; and when fed in spring on green forage will give a fair quantity of milk; but she owes the cessation and restoration of the secretion to, respectively, the diminution and the increase of her nourishment, and not at all to the change of form or of outward substance in which the nourishment is administered. Let cows receive through winter nearly as large a proportion of nutritive matter as is contained in the clover, lucerne, and fresh grasses, which they eat in summer, and no matter in what precise substance or mixture that matter may be contained, they will yield a winter's produce of milk quite as rich in casein and butyraceous ingredients as the summer's produce, and far more ample in quantity than almost any dairyman with old fashioned notions would imagine to be possible. The great practical error on this subject consists, not in giving wrong kinds of food, but in not so

(1) *Haud credo*!—A. R. J. F.

proportioning and preparing it as to render an average ration of it equally rich in the elements of nutrition, and especially in nitrogenous elements, as an average ration of the green and succulent food of summer. We keep too much stock for the quantity of good and nutritious food which we have for it, and the consequence is, cows are, in nine cases out of ten, poorly wintered, and come out in the spring weakened, if not indeed positively diseased; and a long time is required to bring them into a condition to yield a generous quantity of milk. It is a hard struggle for a cow reduced in flesh and in blood to fill up the wasted system with the food which would otherwise have gone to the secretion of milk; but if she is well fed, well housed, well littered, and well supplied with pure fresh water and with roots, or other moist food, and properly treated to the luxury of a frequent carding and constant kindness, she comes out ready to commence the manufacture of milk and butter under favourable circumstances."

I will now bring my letter to a close by advising my brother farmers to keep the cows constantly in good condition; this is the great secret of profit.

I will say a word in my next letter as to the result of the butter factory started in this municipality last year, namely the municipality of L'Avenir, county of Drummond.

THOS. BRADY.

Durham, 30 June 1881.

## Poultry Department,

### Fattening Poultry.

France does not yield the palm to any country in the world so far as fattening poultry is concerned. Those who have visited Sarthe, Orne, Aisne, Saône and Loire, Haute Garonne, etc., assure us of this fact. But this business (says *La Basse-Cour*) is neglected elsewhere as much as it is encouraged in the localities mentioned. In a large number of French villages there is no poultry fit to be seen. With their feathers on the birds look well enough, but plucked they are nothing. They are not either fat or fleshy; they are only fit to have their bones hidden in the sauce of a ragoût, and they are quite unfit for the spit. It is well to make the best of things, however; and, perhaps, if one knew what was best, this would be done. It will be well therefore to talk over the matter, and be careful not to ask housewives for what they cannot give us. We know quite well that if we were at the outset to take it into our heads to advise them to buy an incubator, or even to feed the poultry by hand, as is customary in Brasse or Maine, they would not listen to us. We will therefore be more moderate in our demands. We only want them to begin in a small way with half a dozen, or a dozen fowls, and to go to the expense of a coop for each bird that is to be fattened.

But they will say, What is a coop? It is a sort of box or cage made of boards or wicker-work, large enough for the bird to be in it without feeling uncomfortable, but still straight enough to prevent its turning round. There should be bars in front, between which the hen can easily push its head, and peck its food from a trough placed close to the coop, and within reach of its beak. Behind, there should be an opening, through which the droppings—which will fall into the ashes or pit prepared for them—can be removed. At one end of the coop there should be a door, which can be opened when it is necessary to carry the bird away, or to replace it. Surely the inhabitants of our villages could construct these little cages in their leisure hours. The coops might be made separate, or if preferred, a number could be made together, and they could be divided by boards. That is a detail which might be left to individual convenience.

The coops should be put somewhere out of the cold, and also where the birds would not be disturbed excepting at meal times. The fowls should be allowed three meals per day—that is, first thing in the morning, at noon, and in the

evening before the sun sets. It is especially important that birds which are being fattened should be kept perfectly quiet.

The best food that can be given them will be unbolted buckwheat, barley, oats, and maize. Rye will not do the poultry any good. If preferred, various kinds of meal can be mixed together, and a sort of paste can be made moistened with as much milk as is necessary. The paste ought to be tolerably stiff, and yet soft enough to be made into balls about the size of a walnut. One hundred grammes of paste would be enough for each bird at one meal. It is also very important that the diet should be varied, and therefore cooked and mashed potatoes may be given for the second meal. The meal balls or cooked potatoes should be put into the seed-trough hung before each coop, and the birds may be left to take what they want. When they have finished, a little fresh water should be given them, and then the trough containing the food that is left should be carefully carried away, for if left it would become sour, and would hinder the fattening.

Cleanliness and regularity are of the utmost importance in this business. There should be a fixed time for each meal, and the birds should never be kept waiting for their food. At the same time, the coop should be kept scrupulously clean. The sweepings should be carried away, the perches washed, and the wooden pit or soiled ashes should have bran spread about or have fresh ashes sprinkled over. It is for the purposes of ensuring this perfect cleanliness that it is convenient to have a change of coops.

It will be acknowledged that there is no difficulty in all this. The method of fattening poultry which has just been described is very simple, and may be carried on by everybody. All that is wanted for it is great regularity and daily attention. Birds which are subjected to this treatment will be in good condition of fat at the end of twenty-five or thirty days. It is generally supposed that it is absolutely necessary to perform an operation in order to obtain what are called fat pullets. This is a mistake. The operation in question is only suited to cocks which are to be caponised, but the ovaries of hens can be destroyed without it. The larger proportion of the birds known as fat pullets have not been thus operated upon. The hens have merely been put apart when young, and kept entirely from the cocks. In this way, they can be fattened early and under very favourable conditions.—*Ex.*

### (1) The Ovoscope.

(Translated from the French.)

At this season of the year, every good housekeeper is preparing her provision of eggs for the winter. In spite of all the care my readers may take in the selection of the eggs they wish to preserve, it often happens that they buy eggs that have been set upon for a longer or shorter period, and have thus become unfit for the purpose, and in a short time utterly useless.

To do away with this annoyance, a little instrument, called an *ovoscope*, has been invented, by means of which the state of every egg, as to its freshness, can be infallibly determined. M. Voitellier, a French manufacturer, has had the politeness to send me a pamphlet, entitled "Artificial Incubation," a subject which, from his great experience in artificial hatching, he should thoroughly understand. From this little work I submit the following extracts for my readers' information.

"The *ovoscope*," it is M. Voitellier who is speaking, "is composed of a wooden egg-cup, with a handle for its support, and a metal plate, black on one side and white on the other, which surrounds both the egg and its receptacle.

(1) *Ovoscope* means "Egg-Inspector."

A little band of cloth is fitted to the exact shape of the egg, so that when the whole is submitted to the flame of the candle or lamp, the cloth prevents the rays from striking the eyes of the operator, and the whole light is concentrated on the egg."

"The instrument is used as follows: taking the ovoscope in the right hand, with the thumb on the fluting of the cup,



Fig 1.—The Ovoscope.

hold it upright before a candle, as near as possible to the flame; then place the egg in the cup, thick end upwards, and turn it gently round, pressing, at the same time, with the right thumb, on the flutings of the cup. If the egg has been sat up, the germ, which, is not unlike a spider in shape, will be distinctly visible.

To understand this description, consult fig. 1. The

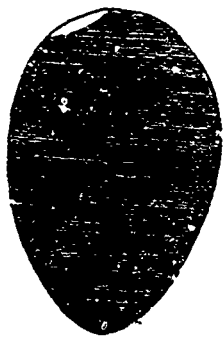


Fig. 2.—Egg perfectly fresh.

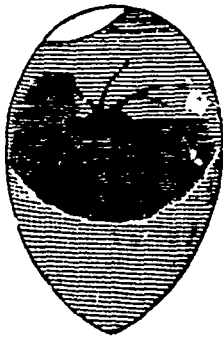


Fig. 3.—Egg after three days' incubation.

Engraving 2 represents the perfectly fresh egg as seen in the ovoscope, and 3 shows an egg that has been sat upon for three days.

With this instrument the choice of eggs for preserving is no

longer difficult. And this is not its only advantage, for with it, three days after setting a hen, it is easy to see which of her eggs are barren. All those that do not show the spider-like germ (fig. 3) should be rejected and replaced by others—it will not be too late.

The instrument is so simple, and the description by M. Voitellier so clear, that any ordinary turner could make one for a mere trifle.  
J. C. CHAPUIS.

### A British Dairy School.

See what the British farmer has to bear, even from his friends! I am afraid our tempers would be sorely tried, if the truth were told us about our faults in such uncompromising terms.

"Almost every fresh fact, and almost all discussion, tends to prove that the British agricultural future must lie more and more in the direction of dairy products. In that direction the case is different almost to every other. In others we are undersold; but in butter, and often in cheese, the British producer is beaten in the race by foreigners, who manage to displace him at a higher price. There is a market for him at even better prices than he gets at present, if he will only send to market a produce good enough to deserve it. If foreign conditions gave foreign producers any advantage, there would be nothing more to be said. But it is not so. British pastures, and British milk, and the cool British climate, are capable of producing the very best butter and cheese in the world; and that any better should displace these in our own markets, is simply owing to an ignorance and carelessness which has got behind other nations. In this field, at least, British farmers are beaten simply and solely because they deserve to be; and they must continue to be beaten until they deserve better success by the same methods which give France and Denmark theirs." *Live Stock Journal.* (Eng.)

Like the horse, the cow enters into fairy lore. According to a legend current in Carmarthenshire, there was in days gone by a band of elfin ladies who used to haunt a lake in the neighbourhood of Aberdovey. They usually appeared at dusk, clad in green, accompanied by their milk-white hounds and their droves of beautiful white kine. One day an old farmer had the good luck to catch one of these mystic cows, which had fallen in love with the cattle of his herd. From that day the farmer's fortune was made. Such calves, such milk, such butter and cheese as came from the milkwhite cow had never been seen in Wales before. The farmer, therefore, soon became rich, and the owner of vast herds. One day, however, he took it into his head that the elfin cow was getting old, and that he had better fatten her for market. On the day appointed for its slaughter people came from all sides to see this wonderful animal; but as the butcher's bludgeon was severing its head a fearful shriek resounded through the air, and the astonished assemblage beheld a green lady crying with a loud voice—

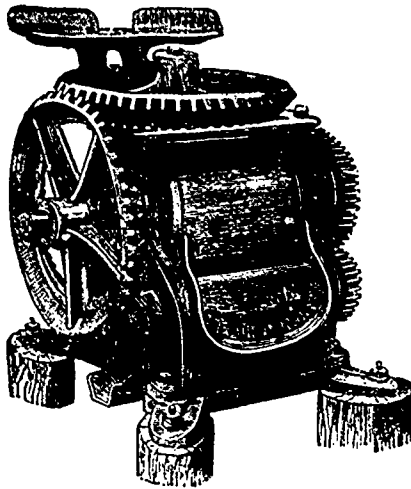
"Come, yellow anvil, stray horns,  
Speckled one of the lake,  
And of the hornless Dodin,  
Arise, come home."

Whereupon not only did the elfin cow arise and go home, but all her progeny went with her, disappearing in the air over the hill-tops. Only one cow remained of all the farmer's herds, and, lo! she had turned from milky-white to raven black. The farmer, in a fit of despair, drowned himself, and the black cow became the progenitor of the existing race of Welsh black cattle.

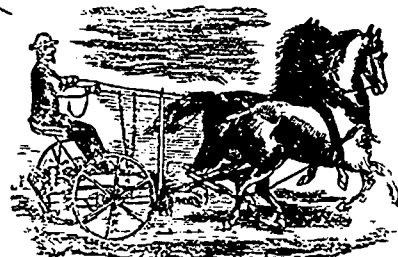


**FOR SALE—TWO FINE AYRSHIRE BULL CALVES**—Price: \$35.00 et \$30.00 Apply to E. A. C. CAMPBELL, St-Hilaire.

**AT THE "MANOR HOME FARM" St-HILAIRE, P. Q.**—The imported thoroughbred stallion "Rejoinder" by "Kettledrum" out of "Repartoo" will stand for the season of 1881, \$25.00 per in. Pasture at 25 cts. per day.  
P. Address: CAPT. CAMPBELL, St. Hilaire.



**IMPLEMENTS FOR THE MANUFACTURE** of syrup and sugar from Sorghum.—Crushers with three cylinders.—Carbonic acid gas engines, Racking-tubs Evaporators, Thermometers, Arcometers.—FOR SUGAR. Vacuum pans; Crystallizing boilers, Mixers; Centrifugals, &c.  
As we ourselves are makers, on a large scale, of sugar and syrup from Sorghum, we are in a position to give every information on the subject of these new products. A circular will be forwarded if requested.  
E. S. MANNY, Beauharnois.

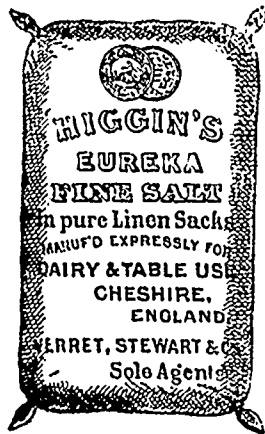


**FARMERS!** See Cassitt's Mowers Reapers and Horse-rakes. The best and cheapest! For sale everywhere. Head Office, 81 McGill St., Montreal R. J. LAIMER, Manager.

**CANADIAN PROVISION PACKING Co.,** OF-ice and works, 30, Henderson Street (Palais), Quebec Preserved Meats, Fish Vegetables and Fruits, Wholesale only. Awards: **FIRST PRIZE** and **DIPLOMA**, Quebec Provincial Exhibition, 1877. **THREE FIRST PRIZES**, Two **MEDALS** and a **DIPLOMA**, at the Dominion Grand Exhibition, Ottawa, 1879.

**THE BEST  
PLASTER**  
For the land.  
**SUPERPHOSPHATE**  
Of the best quality.  
**EXCELLENT  
PARIS GREEN**  
Pure, or mixed with ground plaster.

FOR SALE AT  
**MESSRS. LYMAN, SONS & CO.,**  
332 to 386, St. Paul St., Montreal.



**HIGGIN'S EUREKA SALT,**

Made by HIGGIN'S PATENTED PROCESS, is the only salt from which Pancale, Lime, etc. has been completely and entirely removed. It is the only salt upon which Dairy men can rely for entire freedom from pancale and lime in any shape or form.

It is made by the only known process which ensures the removal of pancale and other impurities in large pieces, and prevents them from being broken up and becoming mixed with the salt, and that process is patented, preventing it being used by other manufacturers.

The maker of Higgins' "Eureka" challenges searching examinations of the salt, and is satisfied that years hence the truth of the statements now made respecting it will be verified by every maker of the finest dairy products.

The importance of good salt to Dairy men cannot be over-estimated, and since the introduction of Higgins' Eureka, a want has been supplied, so that those making choice butter and cheese, can always rely upon getting a thoroughly pure and perfectly uniform article.

The Eureka is used in the best creameries and cheese factories in Canada and the United States, and gives the utmost satisfaction, also at Her Majesty the Queen's Model Dairy Farm, Windsor, and by makers of the finest dairy products in Great Britain. It is also used extensively in Scandinavia, where butter-making has long been studied scientifically.

The first order of merit has just been granted to the Higgins' Eureka salt at the Melbourne Exposition.  
**VERRET, STEWART & CO.,**  
Sole importers for the Dominion.

**THOROUGH BRED SHORT-HORNS, AYRSHIRE CATTLE** and Berkshire Pigs, all from imported stock, and entered in Canadian and American herd books. For sale cheap, by **JOHN L. GIBB,** Compton, P. Q.

**WE CONTINUE TO GROW YOUNG APPLE-TREES** for sale. We shall have nearly ten thousand trees for sale in spring, amongst which are 30 varieties, and we hope to be able to satisfy the taste of our customers.  
**P. SIMON LACOMBE,**  
Côte des Neiges, Montréal.



**BURNELL'S** four point steel barb wire fencing.—The best and cheapest Farm and Railway Fence.

Send for circulars and prices to

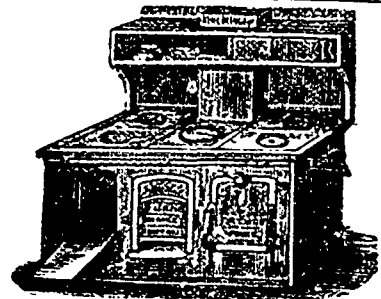
**H. R. IVES & Co.,**  
Manufacturers of  
**HARDWARE, Iron,**  
Railings.  
**QUEEN STREET**  
Montreal.

**FOR SALE.—A FEW THOROUGH BRED** Jersey Bull Calves, from imported cows and good milkers. On reasonable terms. Apply to **H. STEPHENS, Jr.,** St. Lambert, Q.

**ESTABLISHED 1839.—FROST & WOOD—**Smith's Falls, Ont. Manufacturers of Mowers & Reapers, Horse Hay Rakes, Steel Ploughs, Cultivators, Field Rollers &c. &c.  
For particulars. Address:  
**LARMONTH & SONS**  
33 College Street, Montreal.

**WILLIAM RVANS, IMPORTER & GROWER** of Field, Garden and Flower Seeds. Nurseries and Seed Farms, Broadlands, Côte St. Paul.—Fruit and Ornamental Trees. Shrubs, Roses, Greenhouse and Bedding Plants, Vegetable Plants, Small Fruits, &c. **Agricultural Implements, Fertilisers, &c.** Warehouses, Nos. 39, 91 & 93 McGill Street (corner) 106 & 108 Foundling Street and over St. Ann's market, Montreal.—Catalogues free on application.

**HOMES IN TEXAS,** is the title of a new illustrated pamphlet, descriptive of the country along and tributary to the line of the International & Great Northern R. R. and contains a good county map of the State. It also contains the names and addresses of Farmers and planters in Texas who have Farms for sale or rent, and those who will want Farm Hands for this year. A copy of this book will be mailed free to those who desire reliable information about Texas, upon application by letter or postal card to **ALLEN MCCOY,** Gen'l Freight and Pass'g Agt. **PALESTINE TEX.**



**FRENCH ECONOMICAL RANGES.—THE** most convenient ranges or cooking, combining great economy in fuel with perfect work and great durability. They are absolutely perfect in every respect. We can arrange them to warm, by means of hot water, all the rooms of a large house at once, as well as performing all the requirements of the kitchen. We have our furnaces, at Montreal, at the St. Lawrence Hall, Ottawa Hotel, City Club, the Convent of Hochelaga, Good Shepherd, St. Brigit and in the houses of Messrs. Alfred Piuson, Earl, Ed. Barnard, (Director of Agriculture) Varonnes, and hundreds of others who allow us to refer to them for confirmation of the above statements.

For more ample information, apply to the undersigned.  
**BURNS & GORRELLY,**  
676, Craig St., Montreal.

**FOR SALE THOROUGH BRED AYRSHIRE** Stock, and Berkshire Pigs. Address **Mr. LOUIS BEAUBIEN,** No. 16, St. James Street, MONTREAL.

**THE HILLS STOCK FARM, FRELIGH'S BURG** P. Q.—Thoroughbred Ayrshires, South-Down sheep, Berkshire pigs. Catalogues on application **N. S. WHITNEY,** Montreal, P. Q.

**DAWES & CO., LACHINE, P. Q.—BREEDERS** and importers of THOROUGH BRED and CARRIAGE horses, AYRSHIRE cattle, and BERKSHIRE pigs.

The Illustrated Journal of Agriculture is sent gratuitously, by the Department of Agriculture and Public Works for the Province of Quebec, to every English speaking member of the County, Agricultural, or Horticultural society in the Province, French speaking members being entitled to receive the **Journal d'Agriculture Illustré.** The two journals will be entirely distinct publications. Any person, not a member of such society may obtain either Journal, on payment of one dollar per annum, strictly in advance.

**20,000 copies, for free distribution.**—All who wish to reach the best farmers, in any part of the Province of Quebec, will find it to their advantage to advertise in the Illustrated Journal of Agriculture.

**Advertisements.**—Each insertion in both journals 20 words, \$1, and 5 cents for each additional word.—10 lines, and over, 30 cts a line.—In one journal only: 60 cts of the above.

25 cts discount on annual advertisements.  
Address: **ED. A. BARNARD,**  
DIRECTOR OF AGRICULTURE, P. of Q.  
10 St. Vincent St., Montreal.

**To Agricultural Societies and others.**—Printing, Book Binding and Wood Engraving, on the most favorable terms do ne by the Printer of the *Illustrated Journal of Agriculture*, E. SENECAU, 10 St. Vincent St., Montreal.